

Factly Monthly

Compilation

2025

**For UPSC CSE Prelims
Exam**

April 2025

INDEX

Key Facts about Tonga.....	5
Tribhuvandas Patel.....	6
Fully Accessible Route (FAR).....	6
Karimpuzha Wildlife Sanctuary.....	7
Naini Lake	8
Nagarahole National Park	9
NITI NCAER States Economic Forum Portal.....	10
Arctic Council.....	11
ChaSTE PROBE.....	12
Sangama Dynasty.....	13
Key Facts about Chile.....	14
Vibe Coding.....	15
Cape Town Convention, 2001.....	16
North Sentinel Island	17
Heard Island and McDonald Islands (HIMI)	18
Biological Weapons Convention (BWC).....	18
Binturong.....	19
Ottawa Convention, 1997	20
Agasthyamalai Biosphere Reserve	21
Dhansiri river	22
Kannadippaya.....	23
CAPTCHA	24
New Pamban Bridge.....	26
Technology and Innovation Report, 2025	26
Jaya Sri Maha Bodhi Tree.....	27
UGC Equivalence Certificate Regulations 2025	29
BIMSTEC Summit, 2025.....	30
Hadean protocrust	31
Bear Market.....	32
Biomass mission	33
Woolly flying squirrel.....	34
INS Varsha.....	35
De-Extinction of Dire Wolf	35
Small Hive Beetle (SHB)	37

Factly Compilation April 2025

ZooWIN Portal	37
Key Facts about Slovakia	38
Professional Tax.....	39
Digital Threat Report 2024.....	40
Mount Kanlaon	41
SC verdict on Governor's assent to Bills	42
India Skills Accelerator initiative.....	44
Bandipur National Park.....	45
Modernisation of Command Area Development and Water Management (M-CADWM) scheme.....	46
Panchayat Advancement Index (PAI).....	47
IUCN Green Status assessments	48
PM POSHAN (POshan SHakti Nirman) Scheme	49
Mandovi River.....	49
Aravalli Range.....	50
Alfalfa Hay.....	51
Electronics Components Manufacturing Scheme	52
One-Horned Rhinos.....	54
Malabar Grey Hornbill.....	55
Framework for Extradition in India	56
Classification of Industries by CPCB and Blue Industries.....	57
Vitamin D	58
Carbon Tax.....	59
Beijing India Report 2024	60
BatEchoMon	61
Mk-II (A) Laser- Directed Energy Weapon (DEW) system (Sahastra Shakti).....	62
Long-Range Glide Bomb 'Gaurav'	63
Ramgarh Lake	64
Phawngpui National Park.....	65
Lichens.....	66
Morag Axis	67
Thangjing Hill	68
Sir Sankaran Nair.....	69
Q-Shield Platform	71
Khelo India Youth Games (KIYG) 2025	72
Meningitis	73

Factly Compilation April 2025

STELLAR Model	74
Ironwood TPU	76
Operation Chakra V	77
World Pandemic Treaty	77
Exercise DUSTLIK-VI	78
rt-LAMP Assay for Tuberculosis Diagnosis	78
Ranthambore National Park	79
Silkyara tunnel	80
Tuti Island	81
WAVES 2025: Anti-Piracy Challenge	81
India's First Seed Germination Database	83
Clinidium lalitae	84
Surat Emission Trading Scheme (ETS)	84
Vehicle-to-Grid (V2G) technology	85
International Big Cat Alliance (IBCA)	86
Gita and Natyashastra in UNESCO's Memory of the World Register	87
Exercise Desert Flag	88
Perovskite Solar Cells (PSCs)	89
Comprehensive Remote Sensing Observation on Crop Progress (CROP)	91
Kokborok Language	91
Operation ATALANTA	92
Scarborough Shoal	93
Nitrogen	94
Khadi and Village Industries Commission (KVIC)	96
Key Facts about Vatican City	97
Buffer Zones in Tiger Reserves	98
Article 355 of the Indian Constitution	100
Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025	101
Bamiyan Buddhas	102
Tobacco	103
Key Facts about Saudi Arabia	104
Enzymes and Coenzymes	105
Sunrise Sectors	106
Akshvi Digital Wallet	107
Simla Agreement 1972	107

Factly Compilation April 2025

National Zero Measles-Rubella Elimination Campaign 2025-26.....	109
SAARC Visa Exemption Scheme (SVES)	110
Chlorpyrifos Pesticide	111
Musk Deer	112
INS Surat.....	113
Krishna river.....	114
Cabinet Committee on Security (CCS)	115
Zero Shadow Day (ZSD).....	117
United Nations Ocean Conference (UNOC3)-2025.....	118
Key Facts about Crimea.....	119
Mahuadanr Wolf Sanctuary	120
Scramjet Engine.....	121
African Hyena	124
'Revive Our Ocean' Initiative	126
River Cities Alliance(RCA)	130
Ancient Muziris Port	132
Golconda Blue	133
Rajamannar Committee on Centre-State Relations.....	134
Rafale-Marine Fighter Jet	135
RNA-Based Antiviral to Combat Cucumber Mosaic Virus (CMV)	136
Kuldiha Wildlife Sanctuary	138

Key Facts about Tonga

News: Recently, a powerful 7.1 magnitude earthquake struck near Tonga, triggering a tsunami warning for the Pacific island nation.

About Tonga

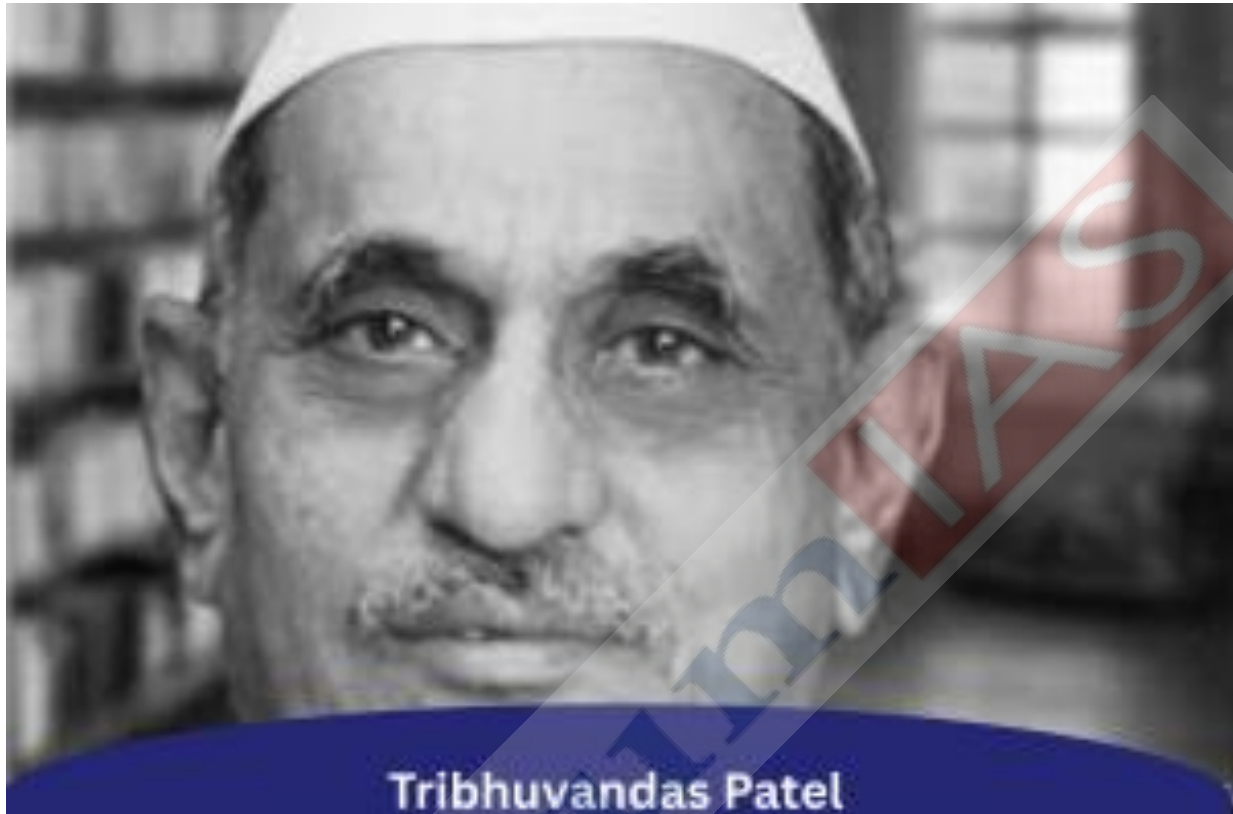


Source- WorldAtlas

- **Location**– It is located in the southwestern Pacific Ocean.
- It is an archipelago composed of 169 islands, of which only 36 islands are inhabited.
- The islands are spread across three main island groups: Tongatapu, Ha'apai, and Vava'u.
- **Capital**– Nuku'alofa, situated on Tongatapu Island, which is the largest and most populated island.
- Tonga is situated within the Pacific Ring of Fire, experiences frequent volcanic activity.
- The Tonga Trench is located east of Tonga. It is one of the deepest parts of the Pacific Ocean.
- **Political System**: It is a constitutional monarchy.
- Tonga is a member of the Commonwealth and of the United Nations.

Tribhuvandas Patel

News– The Lok Sabha has approved a Bill to establish Tribhuvan Sahkari University in Anand, Gujarat.



About Tribhuvandas Patel

- **Tribhuvandas Patel** is considered the “father of the cooperative movement” in India.
- He was pivotal in founding the **Kaira District Cooperative Milk Producers’ Union (KDCMPUL)** in 1946, which later became **Amul**.
- **Verghese Kurien** was brought into the cooperative movement by Patel, leading to the White Revolution.
- He was an active participant in India’s **freedom struggle**, being a disciple of Mahatma Gandhi and involved in movements like the **Salt Satyagraha** and campaigns against untouchability.
- He set up Amul as a **revolt against the exploitation of farmers** by the Polson Dairy in Anand, Gujarat.
- His leadership was crucial in building the **first milk powder and butter plant** in India in 1955.
- He played a significant role in the establishment of key institutions like the **National Dairy Development Board (NDDB)**, **Institute of Rural Management Anand (IRMA)**, and the **Gujarat Cooperative Milk Marketing Federation**.
- He was also a **two-time Rajya Sabha MP** and received the **Padma Bhushan** and **Ramon Magsaysay Award** for his contributions to community leadership.
- He founded the **Tribhuvandas Foundation** to support community health after retiring from Amul.

Fully Accessible Route (FAR)

News– Despite selling heavily in the Indian stock market, foreign investors have invested over Rs 51,730 crore (\$6 billion) in Indian bonds through the Fully Accessible Route (FAR) since January. **Fully Accessible Route (FAR)**



About Fully Accessible Route (FAR)

- **FAR Bonds** refer to Indian government securities designated under the Fully Accessible Route, which allows foreign investors unrestricted access to invest in these bonds without any investment caps.
- **Introduced in:** The RBI introduced this route in March 2020 to increase foreign participation in India's bond market.
- **Objective:** To enable non-residents to invest in specified Government of India dated securities.
- **Eligible investors:** Foreign Portfolio Investors (FPIs), Non-Resident Indians (NRIs), Overseas Citizens of India (OCIs), and other entities permitted by the RBI can invest in government securities under the FAR route.
- **Investment limits:** Eligible investors can invest in specified Government securities without being subject to any investment ceilings.
- **Significance:**
 - They play important role in India's integration with global financial markets.
 - In June 2024, JP Morgan added 29 Indian government securities under the FAR programme to its widely followed Emerging Market Bond Index (EMBI).

Karimpuzha Wildlife Sanctuary

News- A recent faunal survey has reported 63 new species of odonates, butterflies and birds in the Karimpuzha Wildlife Sanctuary of Kerala.



About Karimpuzha Wildlife Sanctuary

- **Location:** Located on the western slopes of Nilgiris, the Sanctuary lies in **Malappuram district of Kerala**.
- It shares boundary with **Mukurthi National Park (Tamil Nadu)** in eastern side and **Silent Valley National Park (Kerala)** on southern side.
- The name 'Karimpuzha' is derived from the Karimpuzha River, a tributary of the River Chaliyar.
- **Conservation:** It forms **part of the Nilgiri Biosphere Reserve (NBR)**, recognized under the Man and Biosphere Programme of UNESCO. Its forest forms **part of the Nilambur Elephant Reserve (Nilambur ER)**, **one of the four ERs** notified in the country.
- **Vegetation type:** The sanctuary is the **state's only forest stretch** where **seven forest types** found in the state are all present, including evergreen rainforest, semi-evergreen forest, moist deciduous forest, sub-tropical hill forest, sub-tropical savannah, montane wet temperate forest and montane wet grasslands.
- **Fauna:** Malabar Mahseer (*Tor malabaricus*), one of the endangered fishes in the world. Slender Loris, Nilgiri Tahr, Tiger, Lion tailed macaque, Gaur, etc.
- **Tribes:** **Cholanaikans** (a Particularly Vulnerable Tribal Group PVTG) – with a total population of 217 individuals in 56 families, depends on the forests for their livelihood by selling the Non-wood Forest Produce (NWFP).

Naini Lake

News: Naini Lake has recorded a water level of 4.7 feet, the lowest in five years.

About Naini Lake



- **Location:** It is a **natural, kidney-shaped lake** located in **Nainital, Uttarakhand**.
- The lake was discovered by **English businessman P. Barron in the mid-19th century**.
- The lake is situated in Kumaon region, surrounded by seven hills including : Tiffin Top (Dorothy's Seat) to the southwest, Snow View Hill to the north, and Naina Hill to the northwest.
- **Environmental Threats:** The lake faces several environmental challenges, including landslides, siltation, and contamination from toxic metals like lead, nickel, and chromium. These pose significant risks to its ecosystem.
- **Significance:** The lake supplies approximately **76% of Nainital's drinking water demand** and also supports boating, tourism, and recreational activities.

Nagarahole National Park

News: The issue of land grants within the core area of Nagarahole National Park and Tiger Reserve has sparked concern among environmentalists and forest officials. **Nagarahole National Park.**

About Nagarahole National Park

Source: ResearchGate

- It is located in **Karnataka**. It derives its name from the **Nagarahole River, which means 'Serpent River'**.
- It **connects to the Western Ghats through Brahmagiri Wildlife Sanctuary**. It extends towards the Eastern Ghats through Bandipur Tiger Reserve.
- It shares its borders with **Wayanad Wildlife Sanctuary in Kerala** to the south and **Bandipur Tiger Reserve to the southeast**.
- The **Kabini Reservoir**, located in the western part of the park, and the **Taraka Reservoir**, situated in the southeastern region, are the two major water bodies within the park.
- The park is known for its **high-density tiger population**, ranking third in the country after Corbett and Kaziranga Tiger Reserves (As per All India Tiger Estimation -2022).
- **Flora:** It consists mainly of moist deciduous forests with predominating trees of teak and rosewood.

- **Fauna:** The park is home to a wide range of wildlife, including **tigers, leopards, Asiatic wild dogs, and sloth bears, Asiatic elephant, gaur, sambar, chital, muntjac, four-horned antelope, wild pig, and mouse deer and the South-western langur.**

NITI NCAER States Economic Forum Portal

News: Finance Minister launched the “NITI NCAER States Economic Forum” portal today in New Delhi. **NITI NCAER States Economic Forum Portal.**



About NITI NCAER States Economic Forum portal

- **Developed by:** NITI Aayog, in collaboration with the **National Council of Applied Economic Research (NCAER).**
- It is a **comprehensive repository** of data on social, economic and fiscal parameters, research reports, papers, and expert commentary **on State Finances for a period of about 30 years** (i.e 1990-91 to 2022-23).
- **Components:** The forum consists of **four primary components:**
 - **State reports**, which offer in-depth analysis of various fiscal and economic indicators at the state level;
 - **Data repository**, a consolidated database of social, economic, and financial parameters providing historical trends and patterns;
 - **State fiscal and economic dashboard**, a visual and analytical representation of state finances to allow easy comparisons and insights;
 - **Research and commentaries**, featuring expert insights, academic research, and policy discussions focused on state-level economic and fiscal issues.
- **Significance:**
 - The portal will **help States to make more meaningful interventions**, raising revenues, managing debts and learning from peer experiences.

- The portal will not only provide **information for public knowledge** but will also create awareness and fiscal learning across States.
- It will **bridge the data gap in public finance**, allowing states to benchmark their fiscal performance against national figures and peer states.
- Being **user-friendly and accessible platform**, it will facilitate evidence-based discussions among policymakers, researchers, and other stakeholders.

Arctic Council

News– The tensions have risen in the Arctic region, following the comments made by the US President about annexing Greenland and Canada (including their dispute on the status of the Northwest Passage) added with impacts of climate change and resource competition in the region. **Arctic Council**.



About Arctic Council

- It is an **intergovernmental forum** promoting **cooperation, coordination and interaction among the Arctic States, Arctic Indigenous Peoples and other Arctic inhabitants** on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic.
- **Established in:** It was formally established in **1996 (Ottawa Declaration)**.
- **Member countries:** **8** (Denmark [], Canada, Norway, the United States, Russia, Sweden, Finland, and Iceland). Their national jurisdictions and international law govern the lands surrounding the Arctic Ocean and its waters.
- **Six Permanent Participants:** It is a **unique feature** of the Arctic Council. Six organizations representing **Arctic Indigenous Peoples** have status as Permanent Participants. This category was created to provide a **means for active participation** of the Arctic Indigenous Peoples within the Council.

- **Observers:** It is **open to non-Arctic states**, along with inter-governmental, inter-parliamentary, global, regional and non-governmental organizations. **India holds observer status** in the Arctic Council since 2013.
- **Secretariat:** in **Tromsø, Norway**
- **Decision making:** All Arctic Council decisions and statements require **consensus of the eight Arctic States**.

About Northwest Passage (NWP)

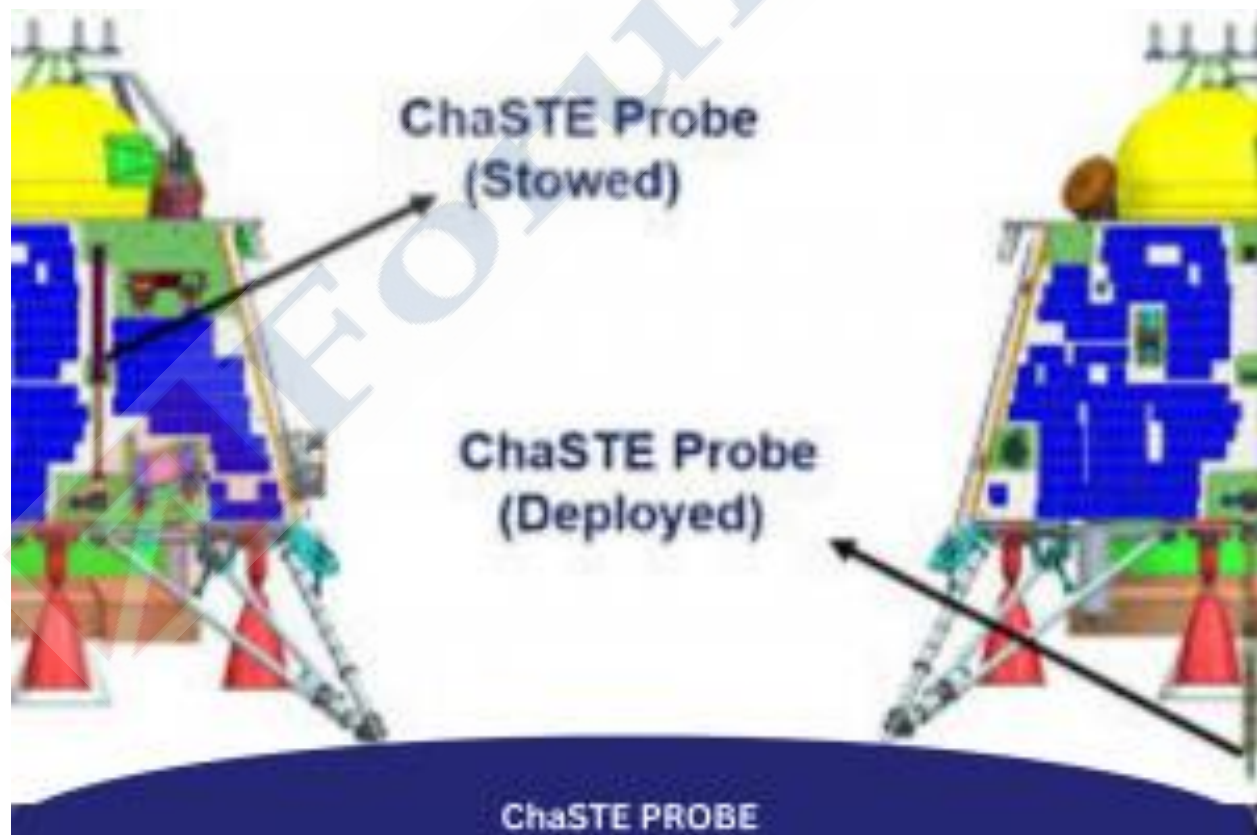
- It is a sea route connecting the **Atlantic and Pacific Oceans** through the **Arctic Archipelago of Canada**.
- **Significance:** When traveling from London to Tokyo, the Northwest Passage is 7,000 kilometres shorter than the current shipping route through the **Panama Canal** (about 23,000 kilometres). The route through the passage is just 16,000 kilometres.

About Northeast Passage (NEP)

- The eastern route **along the Arctic coasts of Norway and Siberia** is accordingly called the Northeast Passage (NEP).
- **Significance:** This route could **reduce** the maritime distance between **East Asia and Europe** by approximately **8,000 km** compared to the traditional route through the **Suez Canal**.

ChaSTE PROBE

News– Chandrayan's **ChaSTE** becomes the **first mission to successfully penetrate the soil** of a celestial body (at **Shiv Shakti landing site of Moon**) to deploy a thermal probe.



About ChaSTE (Chandra's Surface Thermophysical Experiment)

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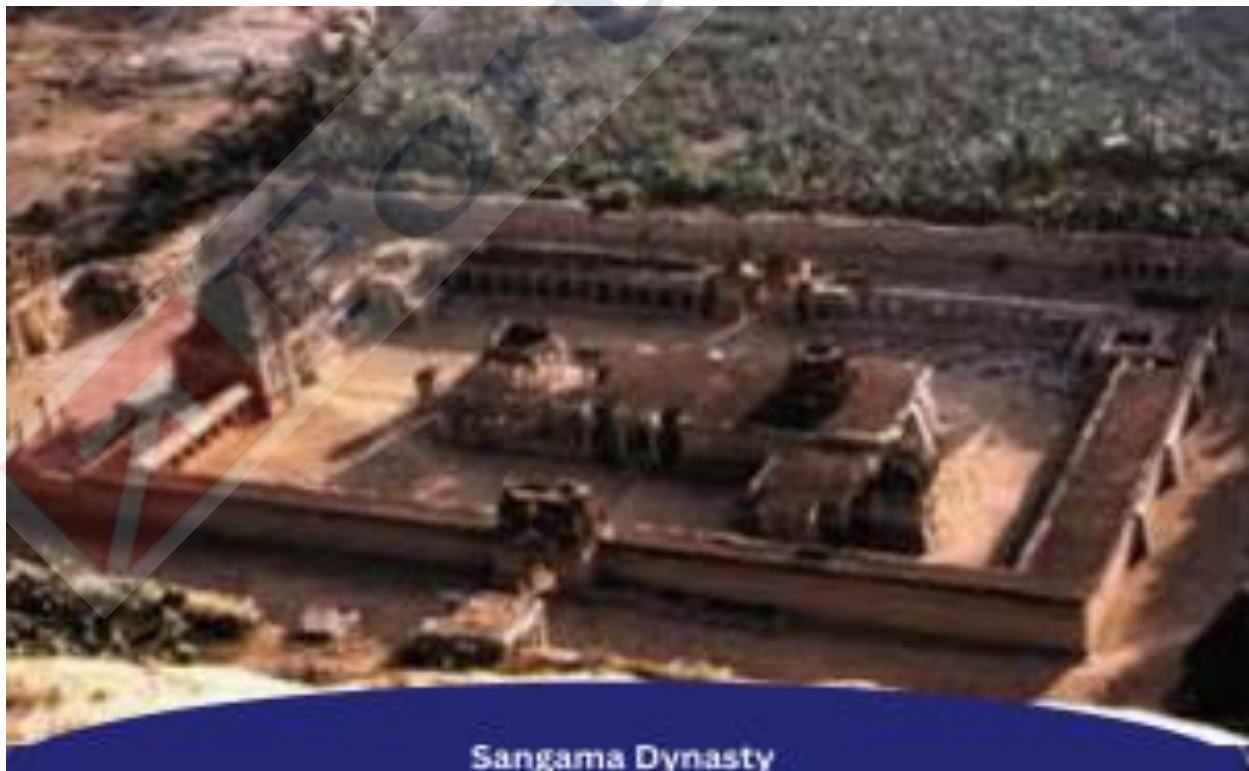
- It is **one of the payloads** aboard the **Lander** (named **Vikram**) of the **Chandrayaan-3 mission**.
- **Developed by:** The instrument was designed by the **Physical Research Lab, Ahmedabad** and the **Space Physics Lab (SPL), VSSC**.
- **Objective:** It has the objectives of **measuring lunar surface temperatures, thermal conductivity, and the temperature gradient** to a **depth of 100 mm**.
- The probe is fitted with **10 individual temperature sensors made of Platinum (Pt-1000)**.
- **Significance:** The findings of the study will provide a comprehensive understanding of the moon's thermo-physics and its near-surface and sub-surface water-ice distribution, laying the groundwork for **future exploration and habitation strategies**.

Same experiments by other space agencies:

- **European Space Agency's Philae lander** of the **Rosetta spacecraft**, landed on comet **67P/Churyumov-Gerasimenko**. It's **Multi-Purpose Sensors for Surface and Subsurface Science (MUPUS) instrument** onboard was designed to measure **temperature by digging into the terrain**. However, scientists **couldn't deploy it due to the awkward landing position**.
- **NASA's InSight robotic spacecraft** landed on **Mars** in **2018**. It carried a temperature-sensing instrument called the **Heat Flow and Physical Properties Package (HP3)**. It consisted of a self-hammering nail, nicknamed "**The Mole**", designed to **penetrate 5 m below Mars's surface**. But could penetrate a depth of just 35 cm, unable to get any temperature data.
- While both the instruments (MUPUS and HP3) used a **hammering device**, the **ChaSTE probe** was **pushed into the soil by a rotating device**.

Sangama Dynasty

News: A set of copper plates dating back to early 15th Century from the reign of Devaraya I of the Sangama Dynasty were unveiled by Falcon Coins Gallery with the Archaeological Survey of India (ASI). **Sangama Dynasty.**



About Sangama Dynasty

- **Founded by:** By two brothers, **Harihara I and Bukka Raya I in 1336**, who were born into a noble family of the **Kakatiya dynasty** and named after **Sangama, their ancestral village**.
- The **Sangama dynasty** was the **founding dynasty of the Vijayanagara Empire**.

Important Rulers of the Sangama Dynasty:

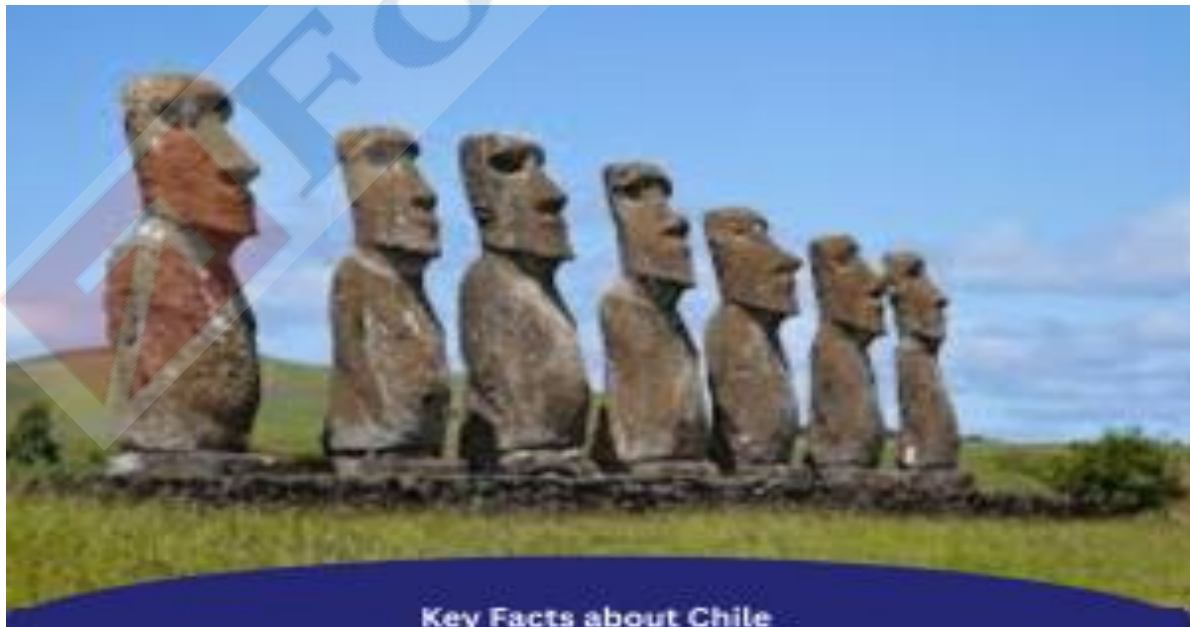
- **Harihara I (Deva Raya) 1336-1356:** His military successes, diplomatic engagements, religious patronage, and administrative reforms established the empire's early foundations and its position as a major power in South India.
- **Bukka I 1343-1377:** His **military exploits** contributed to the consolidation and growth of the empire.
- **Harihara II 1377-1404:** Extended territory into Tamil Nadu and coastal Andhra.
- **Deva Raya I 1404-1422:** Considered **one of the empire's greatest kings**. He expanded the empire's boundaries and brought about significant administrative and economic reforms. Italian traveller **Niccolo Conti** visited.
- **Deva Raya II 1422-1446:** His reign was a period of expansion, cultural renaissance, and administrative reforms for the Vijayanagara Empire. **Abdur Razaak** visited him.

Important Characteristics of the Sangama Dynasty:

- **Administration and governance:** Dividing the empire into **administrative units** called **Nadu**, which were further divided into smaller units known as **Sime** or **Shasana**.
- **Patronage of art and culture:** The rulers **supported the growth of regional languages** like **Kannada and Telugu** and encouraged **scholars, poets, and artists** in their courts.
- **Religious tolerance:** While being predominantly Hindu, they **allowed the practice of other religions** within their territories.
- **Economic prosperity:** It oversaw a period of economic growth and prosperity.
- **Literary and cultural contributions:** Renowned scholars, poets, and philosophers thrived under their patronage.

Key Facts about Chile

News: India and Chile have agreed to initiate negotiations for a Comprehensive Economic Partnership Agreement (CEPA).



Key Facts about Chile

Key Facts about Chile

- Chile is a country located along the western coast of South America.
- Due to its geographical proximity to Antarctica, Chile is often referred to as the **“Gateway to Antarctica.”**
- The **Loa River**, originating from the Andes, is the longest river in Chile.
- It shares borders with **Peru to the north, Bolivia to the northeast, Argentina to the east, and the Pacific Ocean to the west.**
- In addition to its mainland, Chile also has sovereignty over **Easter Island, the Juan Fernández Archipelago, and several other Pacific islands.**
- The country’s landscape is dominated by the **Andes Mountains**, which form the longest mountain range in the world.
- **Northern Chile is home to the Atacama Desert, the driest non-polar desert on Earth.**
- The highest peak in Chile is **Ojos del Salado (6,893 m)**, an active stratovolcano located in the **Atacama region.**
- Due to its position along the **Pacific Ring of Fire**, Chile frequently experiences **earthquakes, tsunamis, and volcanic eruptions.**

Economic Importance

- **Copper Mining:** Chile is the world’s largest producer of copper which is a crucial metal used in **electronics, renewable energy systems, and electric vehicles.**
- **Lithium Reserves:** The country is part of the **“Lithium Triangle”** (along with Argentina and Bolivia), a region essential for **global battery production** due to its vast lithium deposits.

Vibe Coding

News: The concept of **“vibe coding”** has gained attention after OpenAI co-founder and former Tesla employee **Andrej Karpathy** highlighted it in a recent post on X.



About Vibe Coding

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- Vibe Coding is an innovative approach to software development where **artificial intelligence assists in programming**.
- Instead of writing code manually, developers describe their desired functionality in simple terms, and **AI generates the code for them**.
- This approach shifts the programmer's role from directly coding to guiding, testing, and refining AI-generated solutions.

Key Elements of Vibe Coding

- **Interactive Learning:** Vibe Coding emphasizes hands-on practice rather than just theoretical concepts. Learners actively engage with code through creative challenges, making the learning process more engaging and practical.
- **Emotional Engagement:** This approach connects programming with personal interests, moods, and creativity. By making coding a fun and expressive activity, developers can feel more connected to their work, enhancing motivation and productivity.
- **Integration of Music & Aesthetic:** Many Vibe Coding platforms incorporate background music, animations, and ambient sounds to create an immersive coding experience. These elements help programmers maintain focus, stay in a creative flow state, and enhance overall engagement.
- **Gamification:** Vibe Coding often incorporates game-like features. Challenges, achievements, and leveling-up systems provide motivation and a sense of accomplishment, making learning more interactive and rewarding.

Cape Town Convention, 2001

News: The Rajya Sabha passed the **Protection of Interests in Aircraft Objects Bill, 2025**. The Bill seeks to give legal effect to the **Convention on International Interests in Mobile Equipment (also known as Cape Town Convention of 2001)** and **Protocol to this Convention** in their application to India.



About Cape Town Convention, 2001

- It is an **international treaty** that aims to facilitate asset-based **financing and leasing** of high-value mobile equipment like aircraft, helicopters, and aircraft engines by providing a **uniform legal framework** and international registration system.
- It was **adopted** at a conference in **Cape Town** in **November 2001** under the **International Civil Aviation Organisation (ICAO)** and the **International Institute for the Unification of Private Law (UNIDROIT)**.
- **Objectives:**
 - Facilitate asset-based Financing
 - Protect lenders and investors
 - Create an international registry
 - Standardize legal framework across countries
- **India's status:** India is a **signatory to the convention (in 2008)**, but the Indian **Parliament** has **not ratified the same**. Once the legislation is enacted, the Convention will get legal backing in India and ensure **compliance with the international norms** related to leasing of aircraft.

About Protection of Interests in Aircraft Objects Bill, 2025

- **Key Provisions of the Bill:**
 - **Legal compliance:** It empowers the central government to **make rules to implement** the provisions of the Convention and the Protocol.
 - **Creditor remedies:** In case of default, allows creditors or lessors to reclaim possession of aircraft **within two months** or a mutually agreed period.
 - **Domestic registry:** It designates the **Directorate General of Civil Aviation** as the registry authority for the convention.
 - **Mandatory registration:** It requires **all financial interests in aircraft** to be registered in the International Registry under Cape Town Convention.

North Sentinel Island

News: A U.S. national was recently arrested in the Andaman and Nicobar Islands for allegedly trespassing into the restricted tribal reserve area of North Sentinel Island.



Figure 1 ar.inspiredpencil.com

About North Sentinel Island North Sentinel Island is part of the **Andaman and Nicobar Islands in the Bay of Bengal**. It is in the **northern part of the Indian Ocean**.

- It is encircled by **sharp coral reefs** and is situated away from the main cluster of islands in the archipelago. It has **no natural harbors**.
- The island has a **tropical climate** and is entirely forested, primarily **covered in tropical and subtropical moist broadleaf forests**.
- It is inhabited by the **indigenous Sentinelese people**. They are among the most isolated tribes in the world and strongly resist any form of outside contact.
- The Sentinelese practice primitive hunting and gathering. They use bows, arrows, and spears for hunting and defense.
- They have **not developed agriculture or metalworking**.
- In 1956, India declared North Sentinel Island a tribal reserve. The Sentinelese are

classified as a **Particularly Vulnerable Tribal Group (PVTG)**.

Heard Island and McDonald Islands (HIMI)

News: The Heard and McDonald Islands have been in the news due to their unexpected inclusion in the list of trade partners subject to the 10% baseline tariff imposed by former U.S. President Donald Trump's administration. **Heard Island and McDonald Islands (HIMI)**

About Heard Island and McDonald Islands (HIMI)

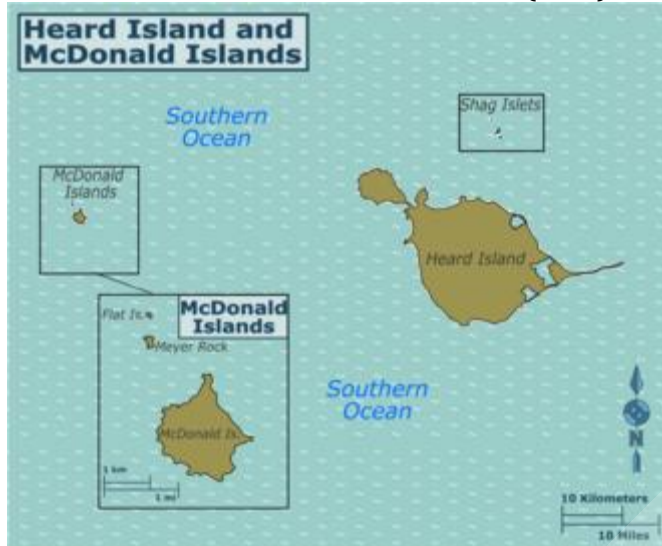


Figure 2. Wikipedia

- They are situated in the southwest Indian Ocean, southwest of Perth (Australia).
- These islands are an Australian territory, transferred from the United Kingdom in 1947.
- The islands lie within the 'Furious 50s,' a region of the Southern Ocean known for its persistently strong and harsh winds.
- **Geographical Features:**
 - The McDonald Islands are small and rocky.
 - Heard Island is much larger, with 80% of its surface covered in ice.
 - Heard Island features *Big Ben*, a massive mountain range, with Mawson Peak as its highest point and an active volcano.
- **Wildlife:** The islands support large breeding populations of elephant seals, fur seals, petrels, albatrosses, and penguins.
- Heard Island is home to endemic species, including the *Heard Island Cormorant* and a subspecies of sheathbill known as the *Heard Island Sheathbill*.

Biological Weapons Convention (BWC)

News: The Biological Weapons Convention (BWC) has completed 50 years recently.

About Biological Weapons Convention



- It was the **first multilateral treaty** categorically banning a class of weapon of mass destruction (WMD).
- **Aim:** It effectively **prohibits the development, production, acquisition, transfer, stockpiling and use of biological and toxin weapons.**
- **Signed:** 10 April 1972
- **Entered into force:** 26 March 1975 (50 years completed in 2025)
- The BWC supplements the 1925 Geneva Protocol, which had **prohibited only the use of biological weapons.**
- It is a **legally binding treaty.**
- **Duration to join the treaty:** The BWC is a multilateral **treaty of indefinite duration** that is open to any country.
- **Verification:** The BWC does **not have an inspection regime** to verify compliance.
- **Members:** **188 countries**, with **Comoros** the **most recent** to become a member.
- **India is a member.**
- **Four states** have **signed but not ratified** the treaty: **Egypt, Haiti, Somalia and Syria.**
- **Five** countries have **neither signed nor acceded** to the treaty: **Chad, Djibouti, Eritrea, Israel and Kiribati.**

Binturong

News: Rare Binturong spotted by the **Wildlife Trust of India's Garo Green Spine project** team in the **Narang Wari Village Reserve Forest (VRF)** in Meghalaya's Garo Hills.



Figure 3. Source: Hubnews

About Binturong

- They are the **largest** member of the **civet family (Viverridae)**. They are also known as the **bearcat**.
- They are **primarily nocturnal** animals.
- **Physical feature:** They are one of two carnivorous species with a **prehensile tail** which helps in climbing. (The other is the kinkajou).
- **Distribution and habitat:** They prefer **tropical rainforests** and **dense forest cover**. They are found in wide range from **northeast India to Southeast Asia**. In India, they have been recorded in **Assam's Manas National Park** and also in **Kaziranga National Park** in 2024.
- **Ecological significance:** They play a vital role in **forest regeneration**, aiding in **seed**

dispersal and supporting the **survival** of many other species.

- **Conservation:**
 - **IUCN status – Vulnerable**
 - **CITES – Appendix III**
 - **Schedule I** of the Wild Life (Protection) Act, 1972
- **World Binturong Day** is held **every second Saturday of May**.

Ottawa Convention, 1997

News: The NATO members Finland, Poland and the Baltic countries plan to quit the 1997 Ottawa convention due to threats posed by neighbouring **Russia. Ottawa Convention, 1997.**

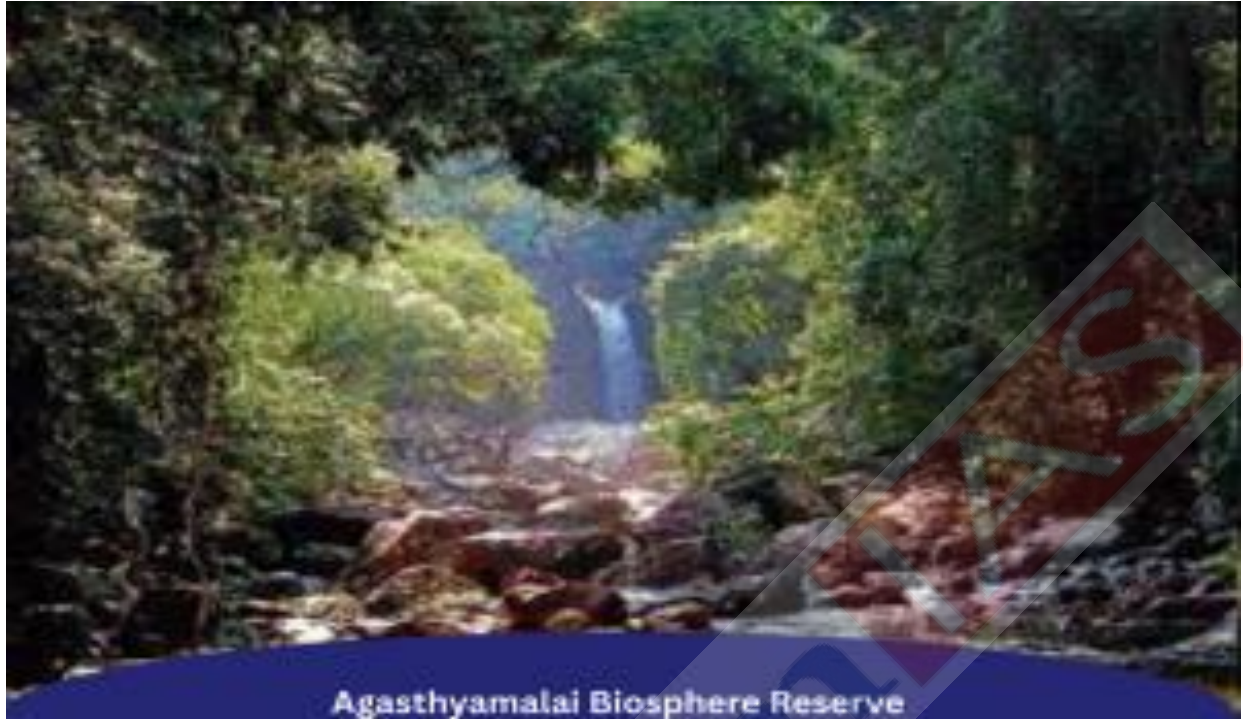


About Ottawa Convention, 1997

- It is also known as the Anti-Personnel Mine Ban Treaty.
- It is a **binding** international agreement that prohibits the **use, stockpiling, production and transfer** of anti-personnel landmines.
- It was **adopted** in December **1997** and became **effective** from March **1999**.
- **Member States:** It has been signed or ratified by 164 countries (as of 2024), with notable **exceptions** such as the United States, Russia, China, **India** and Pakistan.
- The convention includes **provisions to assist victims**, many of whom have lost limbs and suffer from other permanent disabilities.
- **Anti-vehicle mines** are **not banned** by the treaty.

Agasthyamalai Biosphere Reserve

News: Supreme Court has directed the Central Empowered Committee (CEC) to survey Agasthyamalai landscape to spot encroachments into forests. **Agasthyamalai Biosphere Reserve.**



About Agasthyamalai Biosphere Reserve

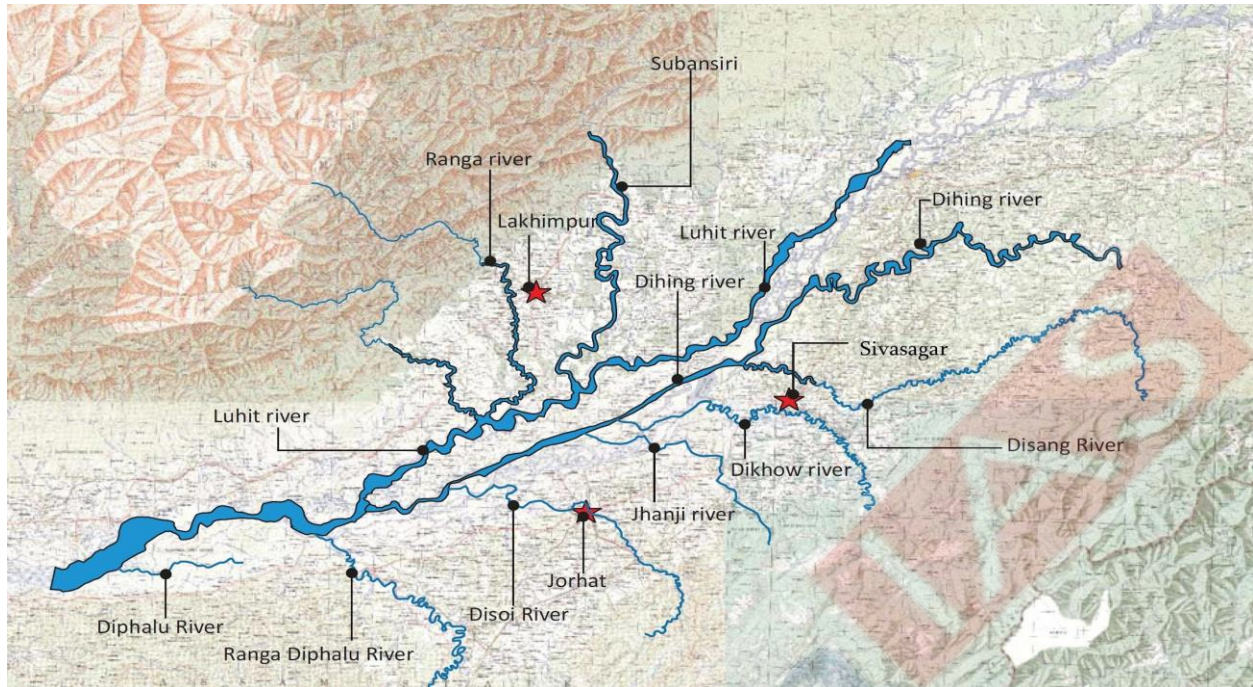
- **Location:** It is located in the **southernmost end** of the Western Ghats spanning the **states of Tamil Nadu and Kerala**.
- It was **established in 2001** as a Biosphere Reserve and became part of the **UNESCO World Network of Biosphere Reserves in 2016**.
- It derives its name from the **great Hindu Sage Agasthya muni**, with its **highest peak** known as **Agasthya Malai (1,868 metres)**.
- **Protected areas:** It encompasses the protected areas of-
 - **Shendurney Wildlife Sanctuary**
 - **Peppara Wildlife Sanctuary**
 - **Neyyar Wildlife Sanctuary**
 - **Kalakkad Mundanthurai Tiger Reserve**.
- **Climate and vegetation:** It has **tropical monsoon climate** with **high rainfall** (especially on the western slopes).
- Its ecosystem diversity includes **tropical wet evergreen forests, moist deciduous forests, montane rain forests and Shola**.
- **Flora:** It is the habitat for over **2,250 plant species**, including 405 endemic species and rare medicinal herbs (ex – **Arogyapacha**).
- **Fauna:** Animals include the Bengal tiger, Asian elephant, **Nilgiri tahr**, **grizzled giant squirrel** and birds like **Great Indian hornbill**.
- **Tribes:** Agasthyamalai is also home to the **Kanikaran tribes**, one of the **oldest surviving ancient tribes** in the world.

Dhansiri river

News: An Assam-based environmentalist has flagged the alleged discharge of hazardous effluents by Numaligarh Refinery Limited (NRL) into the Dhansiri River.

About Dhansiri river

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Source: Brainly.in

- The Dhansiri is a river in India that flows through the Golaghat District of Assam and the Chümoukedima and Dimapur Districts of Nagaland.
- It serves as a significant **tributary of the Brahmaputra River**.
- It originates from the **Laisang Peak in Nagaland** and travels approximately 352 kilometers (219 miles) from south to north before merging with the Brahmaputra River on its southern bank.
- As it forms the boundary between Karbi Anglong and Nagaland, the Dhansiri River passes through **Dhansiri Reserved Forest and Intanki National Park**.
- The riverbanks are home to a variety of valuable timber-yielding trees, particularly within the Intanki Forest region.
- The river is associated with numerous perennially waterlogged swampy areas, locally known as **bils**.

Kannadippaya

News: Kannadippaya recently received Geographical Indication (GI) tag. It is the first tribal handicraft product from Kerala to receive such an honour.

About Kannadippaya



Source: The hindu

- **Kannadippaya** is a traditional tribal handicraft from Kerala.
- The name **Kannadippaya** literally means “**mirror mat**”, which refers to the mat’s unique reflective surface that resembles a mirror.
- It is handcrafted from the **soft inner layers of reed bamboo**, giving it a smooth texture and appealing shine.
- The mat provides **warmth in winter** and a **cooling effect in summer**, making it ideal for use throughout the year. This dual functionality adds to its uniqueness and utility.
- The craft is mainly practiced and preserved by various tribal communities in Kerala, including the **Oorali, Mannan, Muthuva, Malayan, and Kadar** tribes.
- Also, artisans from the **Ulladan, Malayarayan, and Hill Pulaya** communities continue to keep this tradition alive.
- The finest quality Kannadippaya mats are woven using **Teinostachyum wightii**, a species of reed bamboo. Other bamboo species like **Ochlandra sp.** are also used in its making.
- Historically, Kannadippaya held ceremonial value. These mats were often **presented to kings by tribal communities** as a mark of **honour and respect**, highlighting their cultural and social significance.

CAPTCHA

News: CAPTCHA has made the internet a safer place today. But as bots keep getting smarter, **CAPTCHA** needs to figure out how to be more accessible and easier to use for humans in the world of digital security.



About CAPTCHA

- CAPTCHA stands for “**Completely Automated Public Turing test to tell Computers and Humans Apart**”.
- It is a **programme that protects websites against bots** by generating and grading tests that humans can pass but current computer programmes cannot.
- **Developed by:** Computer scientists **Luis von Ahn, Manuel Blum, Nicholas J. Hopper, and John Langford** filed the first patent for CAPTCHA in 2003.
- **Working:**
 - It works based on an idea called the Turing test, proposed by British mathematician Alan Turing back in the 1950s.
 - These tests involve **recognising letters, numbers, or symbols** that were deliberately **messed up** so that machines couldn't parse them but humans could.
- **Evolution of CAPTCHA;**
 - **reCAPTCHA:**
 - As the **bots became more advanced**, a new advanced CAPTCHA resulted into **reCAPTCHA in 2009**.
 - It used **words from scanned books** to verify users.
 - It not only stopped bots from taking over, but it also **helped digitise** printed texts.
 - **Invisible reCAPTCHA:**
 - Introduced in **2014 by Google**.
 - It used **users' mouse movements** to tell if they were human.

New Pamban Bridge

News: Prime Minister Shri Narendra Modi inaugurated the **New Pamban Bridge** on the auspicious occasion of Ram Navami. **New Pamban Bridge.**



About New Pamban Bridge

- It is the country's **first vertical-lift sea bridge**.
- **Location:** It is over 2 km long and spans across the **Palk Strait** in Tamil Nadu.
- **Connecting:** It connects **Rameswaram Island with Mandapam** on the mainland Tamil Nadu.
- **Constructed by:** It is constructed by **Rail Vikas Nigam Limited (RVNL)**, a Navratna PSU under the Ministry of Railways.
- **Features:**
 - The **5-meter navigational span** can be **lifted up to 17 meters**, allowing larger ships to pass underneath.
 - The new bridge is **3 meters higher** than the existing one, improving sea connectivity.
 - The substructure can **support two railway tracks**, though it **currently operates a single**

About Old Pamban Bridge

- A historic railway bridge linking Rameswaram Island to Mandapam (mainland Tamil Nadu).
- It was built in **1914**.
- It was **India's first sea bridge**, built for trade.
- It **remained India's longest sea link** until the **Bandra-Worli sea link opened in 2010**.
- It was **decommissioned in December 2022** due to corrosion.

Technology and Innovation Report, 2025

News: India ranks tenth with \$1.4 billion private investment in Artificial Intelligence: United Nations' **Technology and Innovation Report.**



About Technology and Innovation Report

- **Released by:** It is released by the **UN Conference on Trade and Development (UNCTAD)**.
- **Objective:** It seeks to **address issues in science, technology and innovation** that are topical and important for developing countries with an emphasis on **policy-relevant analysis** and conclusions.

About Technology and Innovation Report, 2025

- **Theme:** "Inclusive artificial intelligence for development"

Key Highlights of the Report:

- Highlights about India:
 - India ranked **36th** in 2024 on the '**Readiness for Frontier Technologies**' index, improving its position from **48th in 2022**.
 - The only developing countries with significant **investments** were **China** in **second** position, with \$7.8 billion and **India** in **10th position**, with \$1.4 billion.
 - Report has appreciated the **India AI Mission**, launched in 2024.
- The report noted that AI is expected to reach **\$4.8 trillion in market value by 2033**.
- The access to AI infrastructure and expertise remains **concentrated** in a few economies. Only **100 firms**, mainly in the **U.S. and China**, account for **40% of global corporate R&D spending**.
- AI could **impact 40% of jobs** worldwide, offering productivity gains but also raising concerns about **automation and job displacement**.
- The **U.S.** has the **most GitHub developers**, followed by **India and China**.

Jaya Sri Maha Bodhi Tree

News: The Prime Minister Modi recently visited the Jaya Sri Maha Bodhi temple at the historic city of Anuradhapura. **Jaya Sri Maha Bodhi Tree.**



About Jaya Sri Maha Bodhi Tree

- **Location:** It is situated in the historic city of Anuradhapura, Sri Lanka.
- It is considered the **oldest living cultivated plant** in the world.
- It is believed to **have grown from a branch of the tree in Bodhgaya** (in present-day Bihar) under which Gautam Buddha attained enlightenment.
- The branch was carried to Sri Lanka by **Sanghamitra** in **3rd century B.C.**, the Mauryan king **Ashoka's daughter** and Buddhist nun.
- **Uduvapa Poya:** Sanghamitra's **arrival in Sri Lanka** with the tree is still celebrated as Uduvapa Poya, an annual festival observed on a **full moon night in December**.

About Anuradhapura

- It is now a **UNESCO World Heritage**.
- It was **political and religious capital** of Sri Lanka that flourished for 1,300 years.
- It was abandoned after an **invasion in 993 CE by the Chola Empire** of south India.

Sanghamitra in Sri Lanka

- She came on the **invitation of the king** and the suggestion of her brother, **Mahendra or Mahinda**.
- Buddhist missionaries were sent to Sri Lanka after successfully hosting of 3rd **Buddhist Council** during the **reign of Ashoka**.
- The mission to Sri Lanka was **led by prince Mahendra**, or Mahinda, Ashoka's son.
- Mahinda met **King Devanampiya Tissa**, whose capital was Anuradhapura, and **converted him to Buddhism**.

About Mahabodhi Tree in Gaya

- While the **original tree** under which Lord Buddha meditated was **destroyed** (in some legends, by one of **Ashoka's wives, Tishyarakshita**), the **existing Pipal tree** at the site is believed to have descended from the **germplasm** (genetic material) of that original tree.

UGC Equivalence Certificate Regulations 2025

News- The University Grants Commission (UGC) has notified the “Recognition and Grant of Equivalence to Qualifications Obtained from Foreign Educational Institutions Regulations, 2025” to streamline the process of recognizing foreign degrees in India. **UGC Equivalence Certificate Regulations 2025.**



About UGC Equivalence Certificate Regulations 2025

Aim: To establish a structured and transparent framework for issuing equivalence certificates, which certify that a foreign qualification (degree/diploma/certificate) is comparable to an Indian qualification.

Applicability: The certificates will be *valid across all academic institutions under the University Grants Commission (UGC)* for purposes of higher education, research, and employment where UGC-recognised qualifications are mandatory.

Exceptions (Not Covered): *Medicine, Pharmacy, Nursing, Law, Architecture and other qualifications governed by their respective Statutory Councils in India.*

Other Key Features:

- *Distance and online learning qualifications are now included* (a shift from the earlier draft).
- *Equivalence is not required for degrees from foreign institutions that collaborate with Indian institutions under twinning, joint, or dual degree programmes, or for foreign institutions set up in India under UGC norms.*

Conditions for Granting Equivalence: A foreign qualification is eligible if:

- *It is awarded by an institution recognised in its home country.*
- *The entry requirements (e.g., credits, thesis/internship) are similar to Indian programmes.*
- *The programme is completed as per the norms of the foreign institution.*
- *Qualifications from offshore campuses are eligible if they comply with the academic requirements of both the host country and the parent country.*

- School-level qualifications from abroad are also covered, provided the student has completed 12 years of schooling and seeks undergraduate admission in India.

Process for Granting Equivalence:

- UGC will maintain an online portal for applications.
- A standing committee will examine applications and make recommendations within 10 working days.
- Final decisions will be communicated within 15 days of receiving the application.
- In case of rejection, a review mechanism is available via a committee constituted by the UGC.

BIMSTEC Summit, 2025

News: The 6th Summit of the member States of BIMSTEC was held 04 April 2025, in Bangkok, Thailand.
BIMSTEC Summit, 2025.



Key Takeaways from the BIMSTEC Summit, 2025

- **Theme:** “BIMSTEC: Prosperous, Resilient and Open”
- **Vision Document:** The Summit adopted the **BIMSTEC Bangkok Vision 2030 document** which lays out the road map for the collective prosperity of the region.

India-led initiatives

- India announced setting up of **BIMSTEC Centres of Excellence** in India on **Disaster Management, Sustainable Maritime Transport, Traditional Medicine, and Research and Training in Agriculture.**
- **BODHI Program:** India introduced BODHI Program (**BIMSTEC for Organized Development of Human Resource Infrastructure**) for **skill development**, providing training, scholarships, and capacity-building for various professionals across BIMSTEC nations.

- India offered to establish **BIMSTEC Chamber of Commerce** and to organize **BIMSTEC Business Summit every year in India**.
- India would be hosting a **BIMSTEC Athletics Meet** this year and the **first BIMSTEC Games in 2027**.

About BIMSTEC

- It stands for **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)**.
- It is a **regional organization** that connects **South Asia and Southeast Asia**, aiming to promote **economic cooperation, connectivity, and development** in the Bay of Bengal region.
 - The Summit is envisaged to be **held once in every two year**.
- **Origin:** It was founded on **06 June 1997** with the signing of the **Bangkok Declaration**.
 - Initially comprising **4 members**, it was known as **BIST-EC** (Bangladesh, India, Sri Lanka, and Thailand Economic Cooperation).
 - In **1997, Myanmar** joined and the grouping was renamed **BIMST-EC**.
 - With the inclusion of **Nepal and Bhutan in 2004**, the name was further changed to **BIMSTEC**.
- **Member countries:** It has 7 member states which are **Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand**.
- **Secretariat:** The permanent secretariat is in **Dhaka, Bangladesh**.

Hadean protocrust

News: A new study by an international team of researchers led by Macquarie University in Australia has called the assumptions around plate tectonics theory into question in light of existence of Hadean protocrust. **Hadean protocrust.**



About Hadean protocrust

- It is the name for the **outermost layer of earth's crust**, when it **first formed** in **first geologic aeon** (around 4 – 4.6 billion years ago).
- The '**Hadean**' prefix refers to the **planet's first geologic aeon**.

- The eon's name "Hadean" comes from **Hades, the Greek god of the 'underworld'**.

Geological procedures during Hadean aeon

- Within 200 million years of its genesis, the earth's **surface was partially molten** and constantly **bombarded by rocks** from space. The surface was very **hot and hellish** due to erupting volcanoes.
- With time, parts of the **magma ocean** started to **cool down** and the **first pieces of the crust** began to take shape.
- **Formation of plates:** The **thicker parts** of the crust slowly formed the **first continents**, which **moved like plates** on the **asthenospheric mantle**, a layer going 400 km down.
- **Plate actions and their signatures:** The plates soon began **drifting into each other** – sliding over or diving under each other, leaving unique **chemical signatures in the crust** over millennia.
- These chemical signatures have been most important in **understanding the history of plate tectonics** by studying them.

The new study

- Now a new study has reported that the chemical signatures that scientists have associated with plate tectonics, actually existed in the Hadean protocrust, before the plates even began to subduct. So, it suggests that the **continental crust began forming earlier than previously thought**.

Bear Market

News: Global stock markets continue to plunge as United States President Donald Trump showing no signs of backing away from the sweeping tariffs that he has announced. **Bear Market.**



About Bear Market

- **Definition:** It is a situation when the **stock market experiences price declines** over a period of time.

- Generally, it is declared when a **stock index sinks at least 20% from its last peak state**.
- **Opposite to Bull Market:** A bear market is the opposite of a bull market, which refers to **when a stock index has increased at least 20% from its recent low**.
- **Bear market Vs Market correction:** A bear market is different from a **market correction** which occurs when there is a **decline of at least 10% or more**.
- **Reasons:** When **investors** are more **motivated to sell than to buy** stocks due to **reasons** like-
 - A **weak or slowing economy**, the anticipation of an **economic slowdown**, or investor **sentiment** that the market is **too hot and prices too high**.
 - Events that are not purely economic — such as **wars, oil supply shocks**, etc.

Biomass mission

News: The European Space Agency (ESA) is going to launch its Biomass mission in end of April, 2025. **Biomass mission.**



About Biomass mission

- **Launching agency:** It will be launched by the **European Space Agency (ESA)**, aboard the **Vega C rocket** from Europe's spaceport in **French Guiana**.
- It is a dedicated **earth observation satellite mission** under ESA's **Earth Explorer Programme**, designed to **map and monitor global forest biomass** with unprecedented accuracy.
- **Orbit:** It will be placed in a **sun-synchronous orbit (SSO)**, at an altitude of around **666 km**.
- **Instruments:** It will be the **first satellite** to carry a **P-band synthetic aperture radar (SAR)** instrument, allowing **interferometric and tomographic imaging** to determine the amount of **biomass and carbon stored** in forests.
- **Distinct feature:** Its **P-band SAR sensor** can **peer through clouds**, allowing the biomass of trees to be estimated.

About Earth Explore Programme

- It is ESA's **research-driven satellite series** designed to explore **earth's dynamic systems**.
- The **first** spacecraft — the **gravity field and steady-state Ocean Circulation Explorer (GOCE)** mission (2009-2013).
- The most recent one was the **Earth Cloud Aerosol and Radiation Explorer (EarthCARE) mission** (May 2024).

Woolly flying squirrel

News: The Wildlife Wing of the Himachal Pradesh Forest Department (HPFD) has successfully captured the first-ever photograph of the elusive Woolly Flying Squirrel in the Miyar Valley of Lahaul and Spiti district. **Woolly flying squirrel.**

About Woolly Flying Squirrel



Source: animalia life club

- It is one of the rarest and least known mammals in Asia.
- It belongs to the genus *Eupetaurus* in the family Sciuridae.
- It is the largest and heaviest of all gliding mammals and is known for its unique appearance and elusive nature.
- **Native:** They are native to parts of Asia, particularly in the mountainous regions of northern Pakistan, including the Diamer and Gilgit districts.
- It is **endemic** to the **northwestern Himalayas**. They are also possibly found in northern India, especially in Sikkim, and other nearby countries.
- **Physical features:**
 - It possesses elastic membranes on each side of its body that connect the forelimbs to the hind limbs.
 - Its body is covered with a dense layer of straight, silky fur.
 - The upper side (dorsal pelage) displays a blue-gray hue, while the underside is a pale gray.
- This species is **nocturnal**, meaning it is active during the night and rests during the day.
- **IUCN Red List:** Endangered

INS Varsha

News: India is set to commission its new strategic naval base INS Varsha in coastal Andhra Pradesh. **INS Varsha.**



About INS Varsha

- INS Varsha is a strategically developed **submarine base** designed to accommodate India's nuclear-powered submarines, including both **ballistic missile submarines (SSBNs)** and **nuclear-powered attack submarines (SSNs)**.
- It is located near the small coastal village of **Rambilli** in **Andhra Pradesh**, approximately 50 kilometers from Eastern Naval Command headquarters in Visakhapatnam, Andhra Pradesh.
- **Purpose:** The base will enable Indian nuclear submarines to **quietly slip into the Bay of Bengal** without being detected by **spy satellites**, allowing them to rapidly move towards the **Malacca Strait and beyond** for **deterrent patrols**.

Features:

- It features **underground pens** and a **complex network of tunnels** specifically designed to house nuclear-powered submarines.
- It will offer **concealed access** to the sea and protect critical assets from surveillance and potential attacks.
- The design of the base enhances **India's second-strike capability**, thus strengthening the **underwater leg of its nuclear triad**.

De-Extinction of Dire Wolf

News: In a groundbreaking achievement, scientists have successfully revived the **dire wolf**, an ancient species that went **extinct** nearly 12,500 years ago, using **cutting-edge genetic engineering techniques** by **Colossal Biosciences**. **De-Extinction of Dire Wolf.**



About De-Extinction

- De-extinction, also known as resurrection biology or species revivalism, is the process of recreating extinct species or organisms using biotechnology, aiming to bring them back to life.

About Dire Wolf (*Aenocyon dirus*)

- Habitat and Distribution: They were large canines that dominated the grasslands and forests of southern Canada and the US.
- They resembled the grey/ gray wolves (*Canis lupus*) of today but were larger, with white coats.
- A dire wolf could be 5 feet tall, more than 6 feet in length, and weigh up to 68 kg.

Science behind De-Extinction Process of Dire Wolf

- The dire wolf genome was extracted from two ancient samples preserved in a American museum of natural history.
- Colossal's dire wolf work took a less invasive approach (than cloning), isolating cells from the blood (not from a tissue sample) of a grey wolf.
- These cells are known as endothelial progenitor cells (EPCs), which form the lining of blood vessels.
- The scientists then rewrote the 14 key genes in the cell's nucleus to match those of the dire wolf using CRISPR.
- No ancient dire wolf DNA was actually spliced into the gray wolf's genome.
- The edited nucleus was then transferred into a de-nucleated ovum which was allowed to develop into embryos in the lab.
- When ready, embryos were transferred to surrogates, also domestic dogs, and 62 days later the genetically engineered pups were born.
- These "dire wolves" will become the second species on the planet to be brought back to life.
 - The first was the bucardo, a mountain goat from the Pyrenees, Europe.

Small Hive Beetle (SHB)

News: A young scientist from the Zoological Survey of India (ZSI) recently identified the presence of the **invasive Small Hive Beetle (SHB), *Aethina tumida***, in an apiary located in Amdanga, North 24 Parganas district of **West Bengal**. **Small Hive Beetle (SHB)**



About Small Hive Beetle (SHB)

- SHBs are **small, oval-shaped beetles** measuring **5–7 mm** in length, typically **reddish-brown** in color.
- It is native to the **sub-Saharan Africa**.
- **Female** beetles **infiltrate hives** through cracks, laying eggs that hatch into larvae which **feed on stored pollen, honey, and bee brood**.
- **Threat posed:** A potentially devastating threat is posed to India's **honey bee population and apiculture industry** of India.
- It is the **first time this beetle's presence** has been recorded in the country.
- The **World Organisation for Animal Health (OIE)** has **classified** SHB infestation as a **notifiable disease** due to its destructive potential.

ZooWIN Portal

News: The government has introduced a digital platform, ZooWIN, designed to track and manage the real-time availability of anti-rabies vaccines (ARV) and anti-snake venom (ASV) across the country.



About ZooWIN Portal

- It is a **digital platform**, designed to **track and manage the real-time availability** of anti-rabies vaccines (ARV) and anti-snake venom (ASV) across the country.
 - It will **centralise data and improve collaboration** among healthcare providers, municipal authorities, and veterinary services.
- **Developed by:** National Centre for Disease Control (NCDC) with technical support from the **United Nations Development Programme (UNDP)**.
- **Aim:** This initiative aims to **streamline healthcare delivery** and **reduce mortality rates** linked to these life-threatening conditions.
 - It also aims to **enhance public access to information** about rabies and snakebite treatments.
- **Working:** This platform is **similar to the Co-WIN and U-WIN platforms**.
 - It integrates with the **Electronic Vaccine Intelligence Network (eVIN)** to provide real-time tracking of vaccine and antivenom **stocks**.
- **Pilot project:** It will be piloted in **five States/UTs:** Delhi, Madhya Pradesh, Assam, Puducherry, and Andhra Pradesh.
- The platform **aligns** with the Health Ministry's broader initiatives like **National Action Plan for Prevention and Control of Snakebite Envenoming (NAPSE), 2024** to combat rabies and snakebites.

Key Facts about Slovakia

News: Slovakia intends to upgrade defence ties with India as Indian President is scheduled to visit the European country. **Slovakia.**



Source- Britannica

About Slovakia

- **Location:** It is a **landlocked country** in central Europe.
- **Bordering countries:** It is bordered by Poland to the north, **Ukraine** to the east, Hungary to the south, Austria to the west, and the Czech Republic to the northwest.
- **Topography:** The **Western Carpathian Mountains (including Tatra Mountains)** dominate the topography of Slovakia.
 - The **highest peak** is Gerlachovský Peak, part of the **High Tatras**.
- **Rivers:** Slovakia is mainly drained by the **Danube River**. The **Morava river** forms its southwestern border.
- It was part of **Czechoslovakia** until the “**velvet divorce**” in January **1993**.
- It is a member of **NATO** and **European Union**.

Professional Tax

News: Swiggy faces a tax demand of ₹7.59 crore from the Maharashtra Government over alleged non-compliance with professional tax deduction norms. **Professional Tax.**



About Professional Tax

- **Professional Tax** is a tax charged on income earned through employment, business, freelancing, or any profession.
- It applies to all earning individuals, including salaried employees, business owners, and freelancers.
- **Self-employed individuals** such as shopkeepers, freelancers, consultants, and professionals like architects or chartered accountants also need to pay professional tax themselves if their income crosses a certain limit.
- It is imposed by the state government under **Article 276** of the Constitution of India. It also has provided for a maximum cap of Rs.2,500, beyond which professional tax cannot be charged to any person.
- Professional tax is deductible under the **Income Tax Act of 1961**.
- Each state sets its own rules and tax slabs. **The tax amount depends on the income of the person.**

Digital Threat Report 2024

News: India launches **first Digital Threat Report 2024** to support cyber security in the Banking, Financial Services and Insurance (BFSI) sector. **Digital Threat Report 2024.**



About Digital Threat Report 2024

- This Report is a **comprehensive analysis** of current and emerging cyber threats and defense strategies.
- **Developed by:** It is developed through collaboration between the **SISA** (Strategic Information Services Agreement), a global cybersecurity company, the Indian Computer Emergency Response Team (**CERT-In, Ministry of Electronics and IT (MeitY)** and the Cyber Security Incident Response Team for the Financial Sector (**CSIRT-Fin**).
- **Aim:** This initiative aims to support India's Banking, Financial Services, and Insurance (BFSI) sector in **strengthening their defences** and building long-term cyber **resilience** with the rapid digitisation of financial services.

Key Highlights of the Report

- The Report Identifies **Sector-wide security gaps and emerging cyber risks**, empowering BFSI institutions to strengthen defenses.
- **Shift towards social engineering and credential theft:** A notable trend has been the rise of social engineering, with Business Email Compromise (BEC) and sophisticated phishing campaigns dominating the threat landscape.
- **Increase in supply chain and third-party attacks:** Supply chain vulnerabilities remained a prominent attack vector for the digital payments industry in 2024.
- **Exploiting weak links:** Organizations with inadequate cloud configurations or insufficient security controls are becoming prime targets for cyberattacks.

Mount Kanlaon

News: Mount Kanlaon, one of the most active volcanoes in the Philippines, recently erupted dramatically, spewing a massive ash plume 4,000 meters (2.5 miles) high into the sky.

About Mount Kanlaon

Created with love ❤ by ForumIAS- the knowledge network for civil services.
Visit academy.forumias.com for our mentor based courses.



Source: mountain forecast

- Mount Kanlaon is a **stratovolcano** located in the north-central part of **Negros Island in the Philippines**.
- It is one of the active volcanoes in the Philippines and part of the **Pacific Ring of Fire**.
- It features several pyroclastic cones and craters.
- The volcano is composed of **tropical volcanic deposits**, including layered lava flows, lahar deposits, airfall tephra, and apron pyroclastic materials.
- Kanlaon is **rich in biodiversity**, providing a habitat for numerous species of flora and fauna.

SC verdict on Governor's assent to Bills

News- In a landmark judgment, the Supreme Court struck down Tamil Nadu Governor R.N. Ravi's decision to withhold assent to 10 State Bills, terming it illegal and erroneous in law. **SC verdict on Governor's assent to Bills.**

About Supreme Court's ruling (Tamil Nadu Governor Assent Case)

- The Court held that the *Governor cannot sit indefinitely on Bills passed by the State Legislature*, reaffirming that the Governor is a constitutional head, not a political authority.
- Citing its 2023 ruling in the *Punjab case*, the Court emphasized that the *Governor must act within a reasonable time frame* and cannot obstruct the legislative process.
- The Court invoked *Article 142* to directly deem the 10 pending Bills as having received assent.
 - Article 142 empowers the Court to go beyond procedural technicalities and deliver complete justice, particularly in situations where no other legal remedy is available.

Time Limits Prescribed by the Court (Under Article 200)

On the clock

SC sets time frame for Governors, saying the phrase 'as soon as possible' permeates Article 200 with a sense of expediency

■ A Governor has a maximum of **one month** to withhold assent on the aid and advice of the State Cabinet

■ A maximum of **three months** is given to return the Bill with a message specifying reasons if the Governor withholds assent contrary to the Cabinet's advice

■ The Governor has **three months** to reserve a Bill for the President's consideration against the advice of the Cabinet

■ The Governor 'must' grant assent to a Bill re-passed by the State Legislature under Article 200 within a **maximum of one month**



Source- The Hindu

Situation	Maximum Time allowed
Withhold or reserve Bill (on Ministerial advice)	1 month
Return Bill for reconsideration (contrary to advice)	3 month
Reserve Bill for President (against ministerial advice)	3 month
Assent to reconsidered Bill	1 month

Constitutional Provisions regarding Governor's assent to Bills

Article 163 defines the general powers of the Governor, stating that they must act based on the advice of the Council of Ministers, except in situations where the Constitution allows the Governor to exercise discretion.

Article 200- It specifically deals with the issue of granting assent to Bills. As per Article 200, when a Bill is passed by the state legislature, the Governor has four options:

- Grant Assent
- Withhold Assent
- Return the Bill (except Money Bills) for reconsideration.
- Reserve the Bill for the President's consideration

Key Provision in Article 200:

- Article 200 states that the Governor must return a non-Money Bill “as soon as possible” with a message for reconsideration. If the legislature passes the Bill again, the Governor is constitutionally bound to grant assent.
- However, since *no specific timeframe is prescribed for the Governor’s action*, this creates a loophole. In practice, the Governor can exercise what is termed a “*pocket veto*”—withholding action on the Bill indefinitely without either assenting to it or returning it.
- Governors have exploited this ambiguity to sit on Bills indefinitely without returning them to the state legislature, in effect paralysing the elected government.

Supreme Court earlier Judgments on Governor’s Powers:

- 1. Shamsher Singh vs. State of Punjab (1974)**– The Supreme Court held that the Governor is bound to act in accordance with the aid and advice of the Council of Ministers headed by the Chief Minister
- 2. Nabam Rebia vs. Deputy Speaker (2016)**- The Supreme Court held that the Governor cannot delay assent to a Bill indefinitely and must return it with a message if there are any concerns or suggested changes.
- 3. State of Punjab vs Principal Secretary to the Governor (2023)**– The Supreme Court held that the Governor, as an unelected head, cannot obstruct the legislative process. It further held that if the Governor withholds assent under Article 200, they must return the Bill for reconsideration instead of delaying it indefinitely.

India Skills Accelerator initiative

News: The **Ministry of Skill Development and Entrepreneurship (MSDE)** partners with **World Economic Forum (WEF)** to launch **India Skills Accelerator initiative**.



About India Skills Accelerator initiative

- It is a **national public-private collaboration platform** designed to enhance workforce development by addressing skill gaps and encouraging public-private partnerships.
- It focuses on **preparing India’s youth for future job markets**, particularly in high-growth sectors such as artificial intelligence, robotics, and energy.

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- **Launched by:** Ministry of Skill Development and Entrepreneurship (MSDE), in collaboration with the World Economic Forum (WEF)
- **Aim:** The initiative aims to **close the skill gaps** through-
 - inclusive upskilling and reskilling
 - mobilizing investment in lifelong learning
 - fostering government-industry collaboration
- The Ministry will work towards **aligning** the newly launched initiative with insights from the **World Economic Forum's Future of Jobs 2025 report**.

Bandipur National Park

News: 'Save Bandipur' protest launched as Karnataka thinks of lifting night traffic ban. **Bandipur National Park.**



About Bandipur National Park

- **Location:** It is located in Chamarajanagar and Mysuru district (Karnataka) at the **tri-junction area** of the States of Karnataka, Tamil Nadu and Kerala.
- **Formation:** It was established as a sanctuary named **Venugopala Wildlife Park in 1931**. Later, it was converted into a **tiger reserve** under Project Tiger in **1973** and declared a **National Park in 1974**.
- **Rivers:** It is flanked by the **Kabini River** in the north and the **Moyar** in the south. The **Nagu River** runs through the park.
- **Climate and Vegetation:** It has **typical tropical climate** with distinct wet and dry seasons. The park has a variety of biomes including **dry deciduous forests, moist deciduous forests and shrub-lands**.
- **Part of Nilgiri Biosphere Reserve:** Park is the part of Nilgiri Biosphere Reserve making it largest protected area in Southern India and largest habitat of Wild Elephants in South Asia.
 - It shares its **boundary with 3 other National Parks** namely **Nagarahole National Park (Karnataka), Wayanad National Park (Kerala) and Mudumalai National Park (Tamil Nadu)**.
- **Flora:** A wide range of timber trees including **teak, rosewood, sandalwood, Indian-laurel, Indian Kino tree, giant clumping bamboo**

- **Fauna: Tigers** (hosts **second highest Tiger population** in India), Leopard, Dhole, Sambar, Sloth bear, Chital and Blue Peafowl.
 - It is one of the **last refuges of the endangered Asiatic wild elephant**.

Modernisation of Command Area Development and Water Management (M-CADWM) scheme

News: The Centre has approved the Modernization of Command Area Development and Water Management (M-CADWM) as a sub-scheme of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) for the 2025-2026 period with an initial total outlay of Rs 1,600 crore. **Modernisation of Command Area Development Water Management M-CADWM.**



About Modernisation of Command Area Development and Water Management (M-CADWM) scheme

- It is a **sub-scheme of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** which is designed to significantly **enhance the irrigation infrastructure** in India.
- **Aim:** The scheme aims for **modernization of the irrigation water supply network** to supply of irrigation water from existing canals or other sources in a designated cluster.
 - It also aims to **build sustainable farming practices** and seeks to make **agriculture more appealing to youth**.
- **Benefit:** This will help farmers with small land-holdings, by **improving water-use efficiency (WUE)**.
- **Key features:**
 - Implementation of **underground pressurised, piped irrigation systems**, extending up to 1 hectare per farm to **enhance micro-irrigation practices**
 - Use of **advanced technologies** such as **SCADA** (Supervisory Control and Data Acquisition) and the **Internet of Things (IoT)** for real-time water accounting and monitoring
 - Irrigation Management Transfer (IMT) to Water User Societies (WUS) to manage irrigation assets independently and sustainably
 - Connect Water User Societies (WUS) with Farmer Producer Organisations (FPOs) or Primary Agricultural Cooperative Societies (PACS)

Panchayat Advancement Index (PAI)

News: The Ministry of Panchayati Raj has launched the first-ever Panchayat Advancement Index (PAI) Baseline Report for the fiscal year 2022–23. **Panchayat Advancement Index (PAI).**

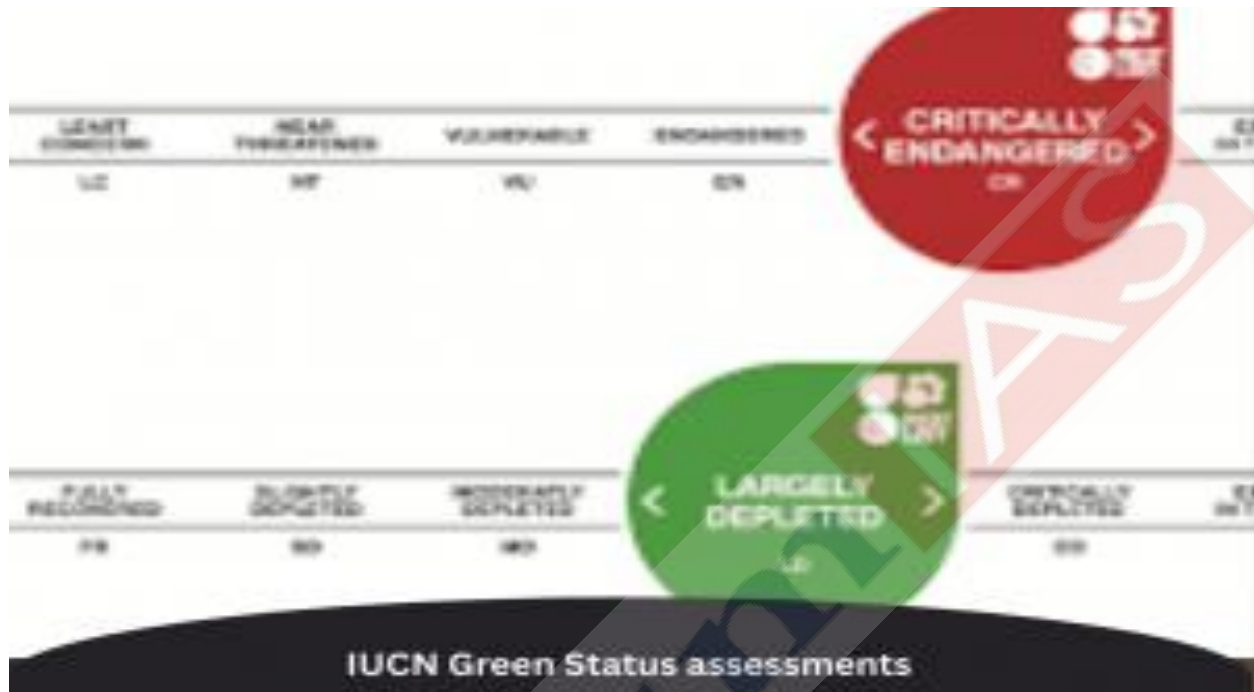


About Panchayat Advancement Index (PAI)

- PAI is a Multi-domain and multi-sectoral index that is intended to be used to assess the overall holistic development, performance & progress of panchayats
- It will measure how well these grassroots institutions are achieving localized Sustainable Development Goals (SDGs).
- **Objective:** To identify developmental gaps in rural local bodies and facilitate evidence-based policymaking.
- **Themes and Indicators:** The PAI is based on 435 unique local indicators spread across nine thematic areas.
 - These themes include: Rate of poverty, Availability of livelihoods, Health indices, Whether the panchayat is child-friendly, Water sufficiency, Clean and green environment, Self-sufficient infrastructure, Social justice and social security and Good governance and women-friendliness.
- **Performance Categories:** Based on the evaluation, gram panchayats are categorized into five performance bands:
 - **Achiever:** Those scoring 90 and above (No gram panchayat has reached this category yet).
 - **Front Runner:** Those scoring between 75 and below 90.
 - **Performer:** Those scoring between 60 and below 75.
 - **Aspirant:** Those scoring between 40 and below 60.
 - **Beginner:** Those scoring below 40.

IUCN Green Status assessments

News: The International Union for Conservation of Nature (IUCN) has recently published its first-ever Green Status assessment for the lion (*Panthera leo*). **IUCN Green Status assessments.**



First Green Status assessment for the lion (*Panthera leo*)

- The first Green Status assessment for the lion (*Panthera leo*) shows that it is Largely Depleted, while the species remains Vulnerable on the IUCN Red List.
- **Impact of Human Activity:** Ongoing human pressures are limiting the lion's ability to play its natural ecological role throughout its current range.
- **Regional Extinction:** Lions have been completely lost from *North Africa and Southwest Asia*.
- **Conservation Achievements:** Targeted efforts in West and Southern Central Africa, South Africa, and India have successfully averted potential local extinctions and supported population stability.

About IUCN Green Status assessments

- **IUCN Green Status of Species** is a standardized global framework developed to measure and monitor species recovery.
- The outcomes of a Green Status assessment such as the Species Recovery Score and Category, along with conservation impact metrics and categories, should be interpreted in conjunction with the species' IUCN Red List classification.
- The Green Status emphasizes that conservation extends beyond preventing extinction.
- The Green Status framework includes eight categories: *Extinct in the Wild*, *Critically Depleted*, *Largely Depleted*, *Moderately Depleted*, *Slightly Depleted*, *Fully Recovered*, *Non-Depleted*, and *Indeterminate*.
- Currently, more than 100 species have been assessed under the IUCN Green Status and are featured on the IUCN Red List.

PM POSHAN (POshan SHAKti Nirman) Scheme

News: Centre to bear additional ₹954 crore cost in food material cost under PM-POSHAN scheme. **PM POSHAN (POshan SHAKti Nirman) Scheme.**



About PM POSHAN (POshan SHAKti Nirman) Scheme

- It is a **Centrally Sponsored Scheme** launched for providing **one hot cooked meal** in Government and Government – aided Schools from **2021-22 to 2025-26**.
- **Nodal Ministry:** Ministry of Education
- **Type:** Centrally Sponsored Scheme
- **Provision:** Under the Scheme, there is provision of **hot cooked meal to children** of **pre-schools** or Bal Vatika (before class I) in primary schools also in addition to the 11.80 crore children of **classes I to VIII studying** in 11.20 lakh schools.
- **Objective:** The **main objectives** are to address **two of the pressing problems** for majority of children in India – **hunger and education**.
- **Coverage:** The Scheme is implemented **across the country** covering all the eligible children without any discrimination of **gender and social class**.

Mandovi River

News: Ministry of Shipping grants first digital NOC for jetty development on **National Waterway-68 along River Mandovi in Goa**.



About Mandovi River

- The Mandovi River (also known as Mahadayi or Mhadei) is one of the main West Flowing Rivers of Goa State. Alongside the Zuari River, it is one of the two principal rivers in the state, playing a crucial role in its ecology and economy.
- **Origin:** It rises at Bhimgad in the Western Ghats of Belgavi district in **Karnataka state**.
- **River course:** It travels 35 km in Karnataka; 82 km in Goa and 1 km in Maharashtra before joining the Arabian Sea at Panji (North-Goa).
- **Tributaries:** The important tributaries of Mandovi River are Kalasa Nala, Banduri Nala, Surla Nala, Haltar Nala, Singar Nala, Doli Nala, Kotni Nala, Irti Nala, Bail Nadi, Pansheer Nala, Madhuhalla Nala.
- **Some Interesting Facts:**
 - **Dudhsagar Falls and Vajrapoha Falls:** These prominent waterfalls are located on this river.
 - **The Atal Setu (Third Mandovi Bridge),** inaugurated in 2019, is the **largest bridge** in Goa.
 - The **Salim Ali Bird Sanctuary** is located on the **island of Chorao** in the Mandovi river.
 - **National Waterway-68** is part of Mandovi River.

Aravalli Range

News: NGT orders the authorities to prevent illegal mining in Aravali land protected under Nicobar swap. **Aravalli Range.**



About Aravalli Range

- It is a mountain range in **northern-western India**, running approximately 670 km in a south-west direction.
- It is one of the **oldest fold mountain** in the world.
- It starts from near **Delhi**, passing through southern **Haryana, Rajasthan** and ending in **Gujarat**.
- It is divided into **two sections**: The **Sambhar-Sirohi ranges**, taller and including Guru Shikhar; and the Sambhar-Khetri ranges, consisting of three ridges that are discontinuous.
- **Formation**: The Aravalli Range is one of the oldest geological features on Earth having its origin in the **Proterozoic era** through tectonic plate collisions that led to the formation of the **Aravalli-Delhi orogenic belt**.
- **Highest peak**: The highest peak is **Guru Shikhar on Mount Abu** at 1,722 m (5,650 feet).
- **Rivers**: It gives rise to several rivers, including the **Banas, Luni, Sakhi, Sahibi and Sabarmati**.

Alfalfa Hay

News: Issue of imports of Genetically Modified Alfalfa hay raised in the on-going Indo-US trade talks. **Alfalfa Hay.**

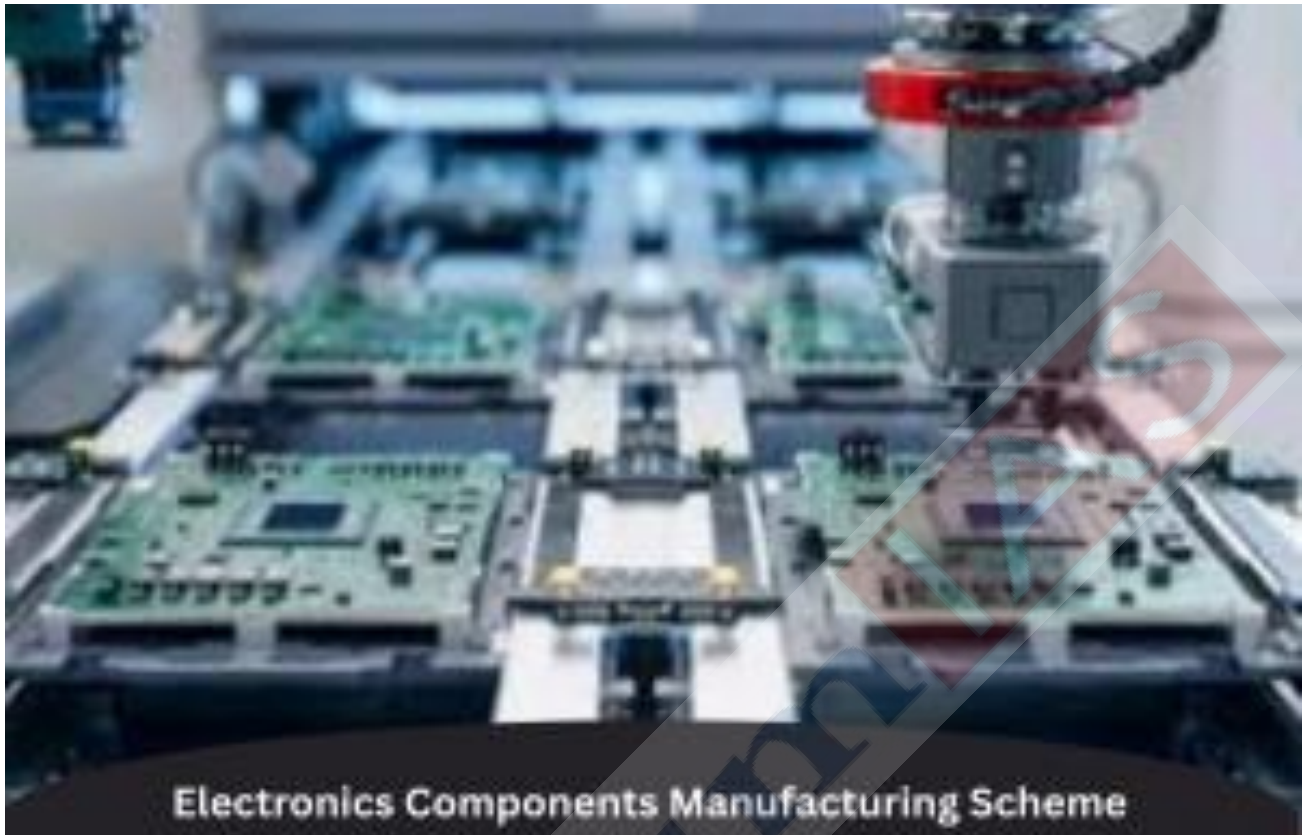


About Alfalfa Hay (*Medicago sativa*)

- It is a **perennial, leguminous plant** of the **pea family (Fabaceae)**.
- It is widely grown primarily for **hay, pasturage and silage**.
- **Climatic conditions required:**
 - **Soil:** It prefers well-drained, fertile soils with a neutral pH (**around 6.8 to 7.5**
 - **Sunlight:** It thrives in regions with **abundant sunlight** which is essential for photosynthesis and biomass production.
- It is known for its **tolerance of drought, heat, and cold** and for the remarkable **productivity and quality** of its herbage.
- The plant is grown as a **cover crop and as a green manure**.
- It houses **symbiotic soil bacteria** (rhizobia) in their root nodules to **“fix” nitrogen** from the air into the soil.
- Green leafy alfalfa hay is **very nutritious** and is also rich in **vitamins A, E, D, and K**.

Electronics Components Manufacturing Scheme

News: The Ministry of Electronics and Information Technology (MeitY) has notified the **Electronics Components Manufacturing Scheme**.



About Electronics Components Manufacturing Scheme

- This is the first scheme that focuses on promoting the manufacturing of **passive electronic components** including resistors, capacitors, connectors, inductors, speakers, relays, switches, oscillators, sensors, films and lenses.
- **Nodal Ministry:** Ministry of Electronics and Information Technology (MeitY)
- **Aim:** It aims to **deepen domestic value addition** by localizing core electronic components by developing capacity and capabilities, and integrating Indian companies with Global Value Chains (GVCs).
- **Tenure:** The tenure of the scheme is six years with a one-year gestation period.
- **Features:**
 - This scheme follows the **Indian Semiconductor Mission (ISM 1.0)** and **white goods PLI**.
 - Both **greenfield and brownfield** applications will be **accepted** with applicants needing to apply separately for each product segment.
- **Incentives criteria:**
 - **Incentives** will be structured in **three ways—turnover linked** (based on revenue), **capex intensive** (for investments in plants & machinery), or **hybrid** (a combination of both).
 - Incentives for incremental investments and turnover range from 1–10% depending on the year and the component.
 - **Employment-linked incentives:** The government has **tied part of the payouts to job creation**.
- **Beneficiaries:**
 - Mobile Phone & Consumer Electronics Players
 - Component & PCB Makers
 - Semiconductor & Passive Component Players
 - Automotive & EV Component Suppliers
 - Display & Camera Module Makers

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One-Horned Rhinos

News: The one-horned rhinos may get some more breathing space outside its biggest habitats in Assam's Kaziranga National Park, Pobitora Wildlife Sanctuary and West Bengal's Jaldapara National Park. **One-Horned Rhinos.**



About One-Horned Rhinos

- They are also known as the **Indian Rhinoceros** and are the **largest** of the three Asian rhino species.
- **Distribution and habitat:**
 - Rhinos thrive in floodplain **grasslands, swamps, and riverine forests**, particularly in the **Terai region** of India and Nepal.
 - Indian rhinos are primarily found in **protected** areas in **Assam, West Bengal, Uttar Pradesh and Nepal**.
- **Distribution within India:** They are mainly found in the **seven Protected Areas** –
 - Assam – Kaziranga NP (70% of world's one-horned rhinos, 2613 rhinos as per 2022 Census), Pobitora WLS, Orang NP, Manas NP,
 - West Bengal – Jaldapara NP and Gorumara NP
 - Uttar Pradesh – Dudhwa NP
 - In addition, a transient population is also observed in Katarniaghat WLS in Uttar Pradesh and **Valmiki** TR in Bihar, which experience visits of rhinos from adjoining Nepal.
- **Fun fact:** Greater one-horned rhinos are good swimmers and can dive and feed underwater.
- **Protection Status:**
 - **IUCN Red List:** Vulnerable.

- **CITES:** Appendix I (Threatened with extinction and CITES prohibits international trade in specimens of these species except when the purpose of the import is not commercial, for instance for scientific research).
- **Wildlife Protection Act, 1972:** Schedule I.

Rhinos around the Globe:

- There are **five species of rhino** – white and black rhinos in Africa, and the greater one-horned, Javan and Sumatran rhino species in Asia.
- **IUCN Red List Status:**
 - Black Rhino: Critically endangered. Smaller of the two African species.
 - White Rhino: Near Threatened.
 - One-Horned Rhino: Vulnerable
 - Javan: Critically Endangered
 - Sumatran Rhino: Critically Endangered. It has gone extinct in Malaysia.

Malabar Grey Hornbill

News- A team of researchers from Kerala has been awarded the Future Conservationist Award by the Conservation Leadership Programme (CLP) for their project on conserving the **Malabar Grey Hornbill**.



Figure 4. Source- birdsoftheworld

About Malabar Grey Hornbill (*Ocyrocus griseus*)

- **Geographical range**– It is *endemic to the Western Ghats* and associated hills of southern India.
- **Habitat**– They are found mainly in dense forest and around *rubber, arecanut or coffee plantations*.
- **Characteristics:**
 - They are the *smallest among the Asian hornbills*.
 - They have a large beak but *lack the casque* that is prominent in some other hornbill species.
 - Males have a reddish bill, females have a yellowish bill with black markings.
 - They move around in pairs or small

groups, feeding on figs and other forest fruits.

- They are *notable for their loud cackling, screeching, and laughing calls*.
- **IUCN Status**– Vulnerable

About Conservation Leadership Programme (CLP)

- It is a partnership of Fauna & Flora International, BirdLife International and the Wildlife Conservation Society.

- CLP Award supports promising young conservationists with less than five years of professional experience, offering funding and tailored mentoring to lead impactful projects.

Framework for Extradition in India

News: 26/11 accused Tahawwur Rana was recently extradited to India from the USA under the bilateral extradition treaty between the two countries. **Framework for Extradition in India.**



About Framework for Extradition in India

- **Extradition:** It is the **formal process of one country surrendering an individual to another country** for prosecution or punishment for crimes committed in the **requesting country's jurisdiction**.
- It is typically governed by a bilateral treaty between the two countries involved, or a larger multilateral treaty.
- The **Ministry of External Affairs** is the **nodal Ministry** dealing with the processes of extradition in India.
- The Government of India finally decides on Extradition and this **decision can be appealed in a higher court**.
- **Countries with which India has an Extradition Treaty:** According to the website of the Ministry of External Affairs, India has extradition **treaties in force with 48 countries**, and non-binding extradition **arrangements with another 12**.
- **Extradition Law in India**– In India, the extradition of a fugitive criminal is governed under the **Indian Extradition Act, 1962**.

Global Frameworks facilitating Extraditions

- United Nations **Convention against Transnational Organized Crime (2000) (Palermo Convention)**

- United Nations **Convention against Corruption** (2003) (**Merida Convention**)
- United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988 Drug Convention).
- UN Model Law on Extradition (2004)
- International Convention for the Suppression of Terrorist Bombings (1997) (**Terrorist Bombing Convention**).
- European Convention on Extradition (1957) (**Council of Europe 1957 Convention**).

Classification of Industries by CPCB and Blue Industries

News: Recently, the Central Pollution Control Board (CPCB) has carved a new category of industries called the 'blue category' industries based on the **Essential Environmental Services (EES)** for managing the pollution due to anthropogenic activities. **Classification of Industries by CPCB and Blue Industries.**



About Classification of Industries by CPCB and Blue Industries

Classification of Industries by CPCB:

- The CPCB **classifies** industries **based on their environmental impact**, focusing on air pollution, water pollution, and hazardous waste generation.
- Industries are classified using the **Pollution Index (PI)**, which is calculated by considering air, water, and waste pollution, with equal weight given to each factor.
- **PI Categories:**
 - White: $PI < 20$ (least polluting industries)
 - Green: $21 \leq PI < 40$
 - Orange: $41 \leq PI < 60$
 - Red: $PI > 60$ (most polluting industries)

Blue Industries:

- The Blue Category was introduced by the CPCB to classify **sectors that are essential for environmental management but are relatively low on pollution.**
- **Key Features of Blue Category Industries:**
 - Recognized as part of Essential Environmental Services (EES).
 - Granted extended validity of 'Consent to Operate' (CTO)—up to 2 years.
 - Intended for projects that produce minimal hazardous waste.
 - Expected to align with circular economy goals.
- **Industries Included:** Sewage Treatment Plants (STPs), Composting units, Biogas plants, Material Recovery Facilities (MRFs), and Waste-to-Energy (WTE) incinerators.
- **Procedural Criteria for Blue Category Inclusion:**
 - No generation of hazardous waste or toxic emissions.
 - Must promote circular economy (reuse, recycle, resource efficiency).
 - Must align with Sustainable Waste Management Rules, 2016.

Vitamin D

News: A report by the Indian Council for Research on International Economic Relations (ICRIER) has sounded the alarm over Vitamin D deficiency in India. **Vitamin D.**



About Vitamin D

- Vitamin D (also referred to as **calciferol**) is a **fat-soluble vitamin**.
- **Source:** It is **naturally present** in a few **foods** (like fatty fish (salmon, tuna), fortified milk, and eggs) and available as a dietary **supplement**.

- It is also **produced endogenously** when **ultraviolet (UV) rays from sunlight strike the skin** and trigger vitamin D synthesis.

Deficiency

- Vitamin D deficiency can **lead to weakened bones (osteoporosis in adults, rickets in children), hypocalcemia** (low calcium levels in your blood) which leads to **secondary hyperparathyroidism** (overactive parathyroid glands attempting to keep blood calcium levels normal).

Significance

- It is **essential** for **calcium absorption, bone health, and immune function**.
- It plays a **crucial role** in **regulating calcium and phosphate levels**, which are necessary for strong bones and teeth.
- Vitamin D also **helps regulate the function of immune cells** and can influence muscle and nerve function.

Carbon Tax

News: India and 62 other countries voted in favour of the world's first-ever global carbon tax imposed on the shipping industry by the United Nations' shipping agency. **Carbon Tax.**



About Carbon Tax

- A carbon tax is a **type of penalty** that businesses must pay for **excessive greenhouse gas emissions**.
- The tax is usually **levied per ton of greenhouse gas emissions**
- **Objective:** The tax is designed to encourage such businesses to **reduce their output** of greenhouse gases and carbon dioxide.
- The carbon tax is a type of **Pigouvian tax**.

Types of carbon tax

- **Emissions-based tax:** It is levied **directly on the quantity of GHG emissions** produced by an entity.
- **Goods-based tax:** It is applied to goods or services that are **carbon-intensive, such as gasoline or coal**. The tax is **based on the estimated emissions** associated with the production and use of these goods.
- **Cap-and-trade system:** It is a **market-based approach** to reducing GHG emissions, where a government **sets a limit (cap) on total emissions** and allows companies to **buy, sell, or trade emission permits** within that cap.
- **Carbon tariff:** Also known as carbon border adjustment mechanism (CBAM), it is an **eco-tariff on embedded carbon**, aiming to **prevent carbon leakage** from nations without a carbon price.

About International Maritime Organization (IMO)

- It is a **specialized agency of the United Nations** that is responsible for measures to improve the **safety and security of international shipping** and **prevent marine pollution** from ships.
- It has an integral role in meeting the targets set out in **UN SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development**.
- **Members:** IMO currently has **176** member states. In addition, there are **three associate members:** Hong Kong, Macao, and the Faroe Islands.
- **Structure:** It consists of the **assembly**, representing the member states, and a **council** (an **executive body, appoints secretary-general**) elected by the members at **two-year intervals**.
- **Headquarter:** London, U.K.

Some of Important Treaties under IMO

- International Convention for the **Safety of Life at Sea (SOLAS)**
- International Convention on **Standards of Training, Certification, and Watchkeeping for Seafarers (STCW)**
- International Convention for the **Prevention of Pollution from Ships (MARPOL)**

Beijing India Report 2024

News: The Beijing India Report, 2024 was submitted on the 30th anniversary of the **Beijing Declaration and Platform for Action (1995)**, highlighting the achievements and future course to be taken by India to achieve gender equality. **Beijing India Report 2024.**



About Beijing India Report 2024

- It is a **bilateral analysis** conducted by Chinese think tanks, assessing India's economic, technological, and geopolitical trajectory, focusing on areas like semiconductor manufacturing and Indo-Pacific strategy.
- It highlights **China's strategic interest** in India's growth and attempts to recalibrate bilateral ties amid border tensions and trade imbalances (\$100 billion in 2023).
- The report marks **three decades since the adoption of the Beijing Declaration**, reflecting on India's **progress in gender equality**. However, it identifies a significant gap in integrating gender considerations into **climate policies, particularly affecting rural women**.
- This oversight presents an opportunity to enhance **gender-responsive climate action in India**.

About Beijing Declaration and Platform for Action

- It is the world's **most comprehensive, visionary plan** ever created to achieve the equal rights of ALL women and girls, outlining an **action plan for gender equality** across **12 dimensions** such as education, health, economics and politics.
- It was agreed to by **189 governments in 1995**, at the **Fourth World Conference on Women**.
- **Importance of India:** It has helped India focus attention on gender perspectives in policies, pass the **Protection of Women from Domestic Violence Act** and the **POSH Act**, and push for the **economic empowerment of women**.

BatEchoMon

News: India's first automated bat monitoring and detection system **BatEchoMon** launched marking a new chapter in bat research.



About Bat Echolocation Monitoring (BatEchoMon)

- It is India's **first automated bat monitoring system**.
- It is an **autonomous system** capable of **detecting and analysing bat calls** in real-time.
- It is **programmed to activate automatically** at sunset, when bats begin flying and continuously listens and analyses audio.

Components and working

- Aside from a **recording device**, it includes **components** that can **record, store, process, and analyse species-wise bat activity** on the fly.
- An **Audiomoth**, a popular **low-cost ultrasonic detector**, has been configured to work as an **ultrasonic microphone**.
- Other **auxiliary components** in the device include a **solar panel plus battery** and a **WiFi communication unit** for power supply and data transmission, respectively.
 - In the **absence of the sun**, the device can last for **up to eight days**.

Mk-II (A) Laser- Directed Energy Weapon (DEW) system (Sahastra Shakti)

News: India has successfully conducted its first trial of a high-powered laser weapon, MK-II(A), using directed energy to neutralise an aerial target. **Mk-II (A) Laser- Directed Energy Weapon (DEW) system (Sahastra Shakti).**



About Mk-II (A) Laser- Directed Energy Weapon (DEW) system (Sahastra Shakti)

- It is an indigenously designed and developed 30-kilowatt laser-based weapon system that can **disable, degrade or destroy** small **remotely** piloted aircraft, **swarm drones, missiles and sensors**.
- **Developed by:** DRDO's Centre for High Energy Systems and Sciences (CHESS), Hyderabad along with other labs, academic institutions and Indian industries.
- **Working:** Once detected by **its radar or by its inbuilt Electro Optic (EO) system**, **laser-DEW can engage targets at the speed of light** and use an **intense laser beam** to cut through the target, leading to structural failure or more impactful results if the warhead is targeted.
- **Advantages:** Unlike traditional kinetic weapons, **laser systems offer instantaneous engagement, precision targeting, low per-shot cost**, reduce **dependence** on costly ammunition, limit **collateral** damage and are particularly suited to **countering low-cost drone swarms** — an increasingly common threat.
- **Significance:** India joins an elite group of nations—including the **United States, Russia, and China**—that possess operational high-power laser weapon technology.

Long-Range Glide Bomb 'Gaurav'

News: DRDO conducts successful Release Trials of Long-Range Glide Bomb 'Gaurav' from Su-30 MKI aircraft.



About Long-Range Glide Bomb 'Gaurav'

- It is a **1,000 kg** class glide bomb.
- **Developed by:** DRDO's Research Centre Imarat, Hyderabad and Armament Research and Development Establishment with the support of development-cum-production partners — Adani Defence Systems and Technologies, Bharat Forge and various MSMEs.
- It uses a **highly accurate hybrid navigation system**, combining data from the **Global Positioning System (GPS)** with onboard guidance to steer precisely towards its target after release.
- The tests demonstrated a range close to **100 km with pin-point accuracy**.
- Gaurav was first tested in August 2023.

Ramgarh Lake

News: The Ramgarh Dam near Jaipur, which once served as a crucial source of water for the Rajasthan capital, is currently undergoing a survey to identify and remove encroachments and obstructions in its catchment area.
Ramgarh Lake.

About Ramgarh Lake



Source: indovacations.net

- It is a man-made water body located near Jamwa Ramgarh, approximately 30 kilometers from Jaipur in Rajasthan, India.
- It hosted the rowing events during the 1982 Asian Games, underlining its prominence in Indian sports history.
- The lake last received water in 1999 and has remained dry since the year 2000.
- Due to the rich biodiversity in the area, the Government of India declared it a Wildlife Sanctuary in 1982.
- **Historical Significance:** Ramgarh was once a royal hunting ground for the Maharajas of Jaipur. The region has since evolved into a heritage site with significant cultural importance.
- Another major attraction near the lake is the shrine of *Jamwa Mata*, situated downhill from the lake. This temple was established by Rao Dulherao of the Kachhwaha clan of Jaipur.

Phawngpui National Park

News: Recently, forest fires had erupted in several parts of Mizoram's Phawngpui National Park.

About Phawngpui National Park



Source: Roundglass

- It is located in **Mizoram**. It is named after **Phawngpui Mountain**, the highest peak in Mizoram, and is also popularly known as **Phawngpui Blue Mountain National Park**.
- The **Kolodyne River** marks the eastern boundary of the park.
- **Vegetation:** The park consists of **Tropical Evergreen Forests and Subtropical Montane Forests**.
- **Flora:** Its slopes and ridges are adorned with various species of rhododendrons. Other important flora includes oak (*Quercus*), *Bauhinia variegata*, *Pinus kesiya*, and numerous orchids. Unique plant species like solitary *Daphnia* flowers, theopathic basil, and rare bamboo groves are also found here.
- **Fauna:** Tiger, Leopard, Clouded Leopard, Malayan Sun Bear, Himalayan Black Bear, Indian Bison, Sambar, Goral, and Serow. Hoolock Gibbon, Common Langur, Stump-tailed Macaque, and Slow Loris, Golden Cat, Jungle Cat, Leopard Cat, Marble Cat, Barking Deer and Binturong are found in the park.
- The park is recognized as an **Important Bird Area (IBA)** for its rich avian diversity and presence of globally threatened bird species such as Blyth's Tragopan and Mrs. Hume's Pheasant, both listed as Vulnerable.

Lichens

News: A recent experiment has shown that lichens can thrive in Martian simulation, showcasing another step towards life on Mars. **Lichens.**



About Lichens

- They are a **complex life form** that is a **symbiotic partnership** of two separate organisms, a **fungus and an alga**.
- The **outer skin and internal structure** of a lichen is **made of strands of fungal hyphae**.
- Interspersed among the strands inside the lichen are **individual cells of algae**.
- Lichens **do not have roots** or structures like other plants, they **depend on the atmosphere for air and water**. So, the **quality of ambience** reflects in the **diversity** of lichens.
- **Spread:** Between six to eight percent of Earth's surface is covered by lichen, with over 15,000 known species.

Note– India's first Lichen Park was established in 2020 in Munsiyari, Uttarakhand.

Morag Axis

News: Israel seizes key Gaza corridor 'Morag Axis' as pressure mounts for ceasefire talks with Hamas. **Morag Axis.**



About Morag Axis

- This area consists mainly of **agricultural land** located between **Khan Younis and Rafah**, stretching from **east to west across the Gaza Strip**.
- The name "Morag" refers to **an illegal Israeli settlement** that was established in the region between 1972 and 2005.
- It includes parts of what the Israeli military had previously designated as a "**humanitarian zone**", where they had told internally displaced Palestinians to seek refuge.

Thangjing Hill

News: A Meitei organisation has slammed Kuki civil society groups for warning the Meitei community against embarking on their annual pilgrimage to the **Thangjing Hill**.



About Thangjing Hill

- **Geography:** It is located somewhere in the **middle of buffer zone** created between Churachandpur and Bishnupur districts in Manipur.
- The north-south-running **mountain range** on which it sits is also called **Thangjing range or Thangjing Hills**. The range forms part of the **western border of the Imphal Valley**.
- **Status:** It falls within the **Churachandpur-Protected Forest** which was notified in 1966 under Section 29 of the Indian Forest Act, 1927.
- **Historical importance:** It has been declared as a **protected site**, under **Section 4 of the Manipur Ancient and Historical Monuments and Archaeological Sites and Remains Act, 1976**.
- **Cultural & religious significance:** It is associated with the **Ibudhou Thangjing temple**, believed to be the original abode of **deity Thangjing** by Meitei. The **Kuki** residents refer to the hill range as 'Thangting'.
 - So, it is considered **sacred to both**.
- **Dispute:** Contests over the **right to pray and worship** on the hill range have only escalated since the ethnic conflict of 2023.

Sir Sankaran Nair

News: The Prime Minister's tribute acknowledged Sankaran Nair's fearless voice against British tyranny on the 106th anniversary of the Jallianwala Bagh massacre. **Sir Sankaran Nair**.



About Sir Sankaran Nair

- He was a prominent Indian **jurist, social reformer, and nationalist** known for his contributions to the Indian freedom struggle and for advocating civil rights under British rule.

Early life

- He was born on 11 July 1857 on the **Malabar Coast**.
- He secured the **Law degree** from the **Madras Law College** in 1879 and started as a lawyer in 1880 in the **High Court of Madras**.

Government services and recognition

- In 1884, the Madras Government appointed him as a **member of the Committee for an enquiry into the state of Malabar**.
- **Till 1908**, he was the **Advocate – General** to the Government and an **Acting Judge** from time to time.
- In **1908** he became a **permanent Judge in the High Court of Madras** and held the post till 1915.
- In **1902**, the **Viceroy Lord Curzon** appointed him **Secretary to the Raleigh University Commission**.
- In recognition of his services he was awarded the title '**Commander of the Indian Empire**' by the King – Emperor in **1904** and was knighted in **1912**.

Achievements during freedom struggle

- He became a **member of the Viceroy's Council in 1915** with charge of the **Education portfolio**.
 - As member, he wrote in **1919 two famous Minutes of Dissent** in the Despatches on Indian Constitutional Reforms, pointing out the various defects of British rule in India and suggesting reforms.
- In **1897**, when the **First Provincial Conference** met in **Madras**, he was invited to preside over it.
- In **1897**, he was elected **President of the Indian National Congress**, becoming the **first Malayali** and one of the **youngest** to hold the post. His leadership reflected constitutionalism rather than populism, privileging civil rights and self-determination.
- In **1900** he was a Member of the Madras Legislative Council.

- In **1928** he was the **President of the Indian Central Committee** to co-operate with the **Simon Commission**.
 - **He advocated for the Dominion Status** for India.
 - When the Viceregal announcement came granting Dominion Status as the ultimate goal for India, Nair **retired** from active politics.

Death and Recognition

- He passed away in **1934 at the age of 77**, but he remains a **symbol of fearless resistance and principled leadership in colonial India**.
- His legacy continues to inspire through books like **The Case That Shook the Empire** by his descendants and upcoming films like **Kesari Chapter 2**.

Q-Shield Platform

News: Startup QNu Labs launches **world's 1st unique platform Q-Shield** empowering enterprises to protect critical infrastructure. **Q-Shield Platform.**



About Q-Shield Platform

- It is a **comprehensive cryptography management platform** designed to secure critical infrastructure against future quantum threats.
- **Developed by:** **QNu Labs**, incubated at **IIT Madras Research Park (2016)** and one of the startups selected by the **Department of Science and Technology (DST)** under the **National Quantum Mission (NQM)**

Purpose and features of Q-Shield Platform

- **Purpose:** Q-Shield is designed to **secure critical enterprise infrastructure** using advanced quantum technologies.
- These tools **aim** to defend digital assets against rising cyber threats, especially in critical sectors like defense, finance, healthcare, and infrastructure.

- The platform offers seamless cryptography management across multiple environments — cloud, on-premises, and hybrid systems.
- Q-Shield covers a wide range of security services including:
 - Connect Service
 - Collaboration Service
 - File Storage and Sharing
 - Key Management
 - Quantum Entropy Generation

Khelo India Youth Games (KIYG) 2025

News: The seventh edition of the Khelo India Youth Games (KIYG) 2025 will be hosted by the state of Bihar from 4th to 15 May 2025.



About Khelo India Youth Games (KIYG) 2025

Aspect	Details
About	<ol style="list-style-type: none">1. These are annual national-level multidisciplinary sports events held in India.2. KIYG is a part of the Khelo India Programme.

Factly Compilation April 2025

Objective To **revive India's grassroots sports culture** by building a strong framework for all sports and establish the country as a great sporting nation.

First Edition The first edition was held in 2018 in Delhi.

Features

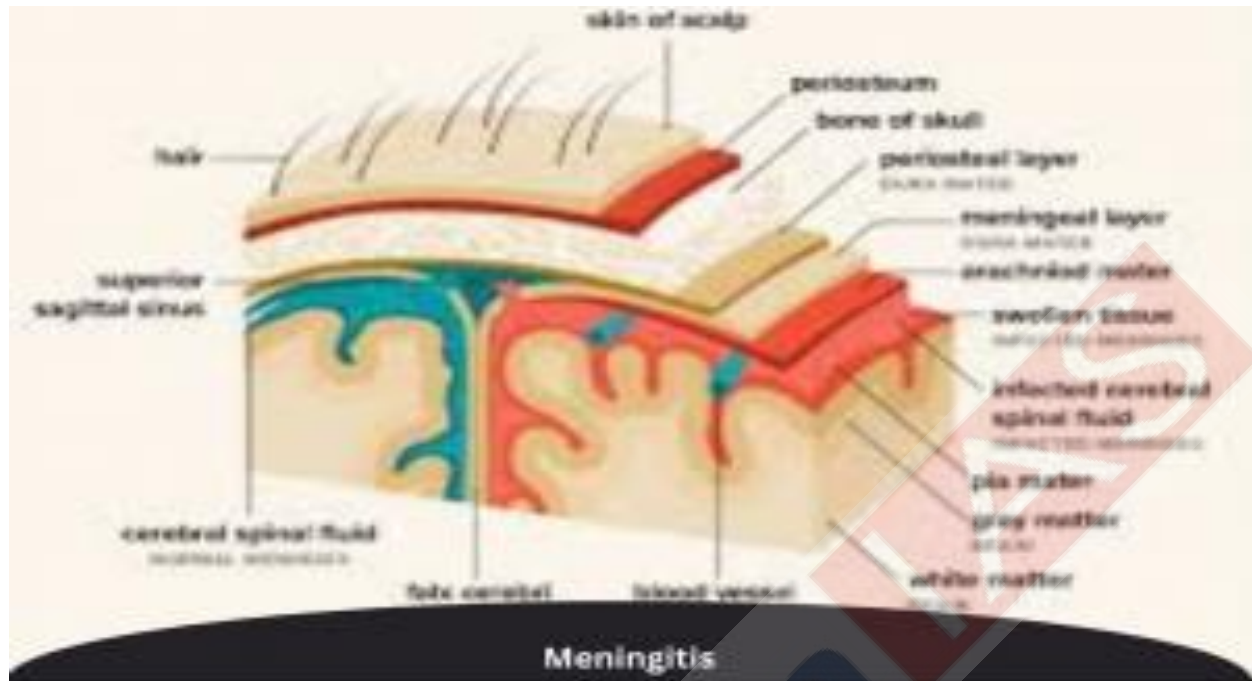
1. The event includes **two categories**: under-17 school students and under-21 college students.
2. Talented players in priority sports identified by the High-Powered Committee will receive **INR 5 lakh annually for 8 years**.

KIYG 2025

1. This is the **7th edition** of Khelo India Youth Games.
2. The games will be organized across multiple cities, including Patna, Gaya, Rajgir, Begusarai, and Bhagalpur
3. **Mascot**– "**Gajsimha**," a symbol that combines the power of an elephant with the heart of a lion.
4. This mascot draws inspiration from the rich archival heritage of the Pala Dynasty, whose artistic engravings can be seen on ancient temples and pillars in Nalanda and Bodhgaya
5. The KIYG 2025 will feature regular sports like **volleyball, football, basketball, boxing, and kabaddi**, along with 18 athletics events and Sepak Takraw.
6. In total, around **27 sports disciplines** will be included, with indigenous games like **Malkhamb** also being part of the event.

Meningitis

News: Recently, the World Health Organization (WHO) launched its first-ever global guidelines for the diagnosis, treatment, and care of **meningitis**.

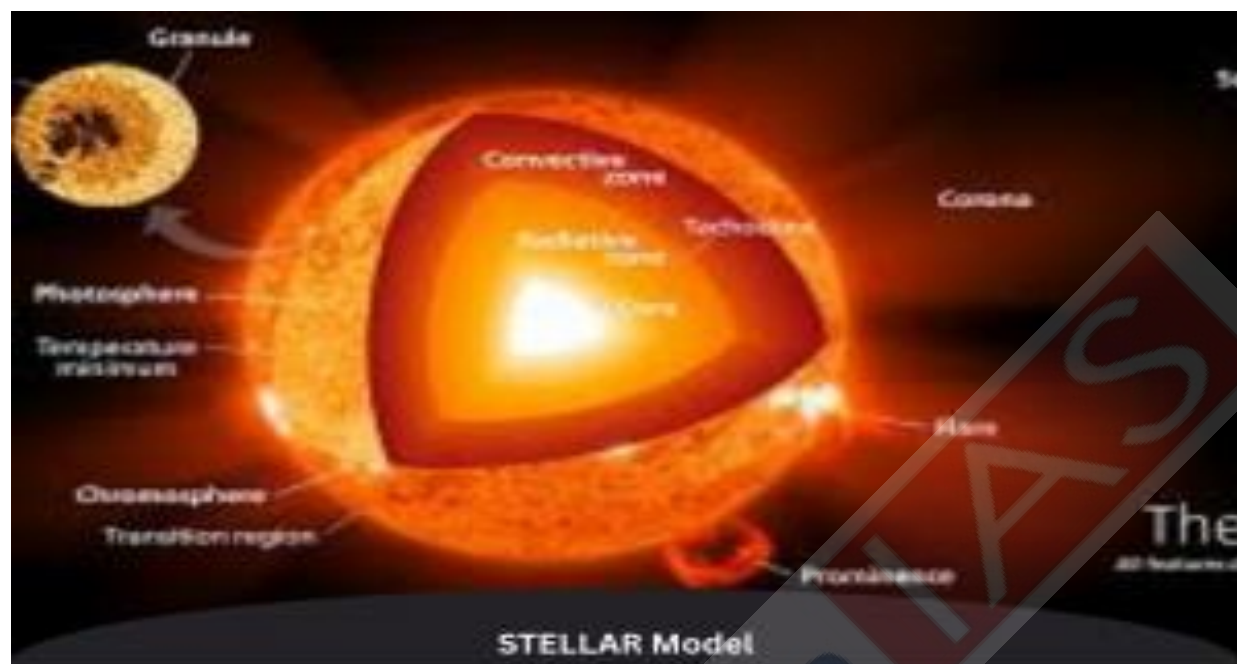


About Meningitis

- Meningitis is a serious medical condition involving an infection and inflammation of the meninges, which are the protective membranes surrounding the brain and spinal cord. These membranes are called meninges.
- **Caused by:** It can be caused by viruses, bacteria, fungi, parasites, or non-infectious agents like medications or autoimmune diseases.
- **Symptoms:** It includes Sudden high fever, Stiff neck, severe headache, nausea, Confusion or difficulty concentrating, Seizures, Skin rash (may occur, especially in meningococcal meningitis), Drowsiness or difficulty waking up, etc.
- **Transmission:** The disease can spread through respiratory droplets when an infected person coughs or sneezes. Close contact can also lead to transmission.
- **Prevention:** Vaccines against common types of bacterial meningitis, Antibiotics etc.

STELLAR Model

News: The State-of-the-art, Totally indigenously developed Resource Adequacy model (STELLAR) has recently been launched by the Central Electricity Authority (CEA) on 11 April 2025.



About STELLAR Model

- It is a next-gen software tool for **integrated planning of power generation, transmission, storage, and demand response**.
- It is developed in line with Resource Adequacy Guidelines issued by the Ministry of Power in June 2023.
- **Launched by:** Central Electricity Authority
- **Collaborating Partners:** The Lantau Group (TLG) and Asian Development Bank (ADB) under its Technical Assistance Programme
- This software will be provided **free of cost** to all **State Distribution Companies (Discoms)** and **Load Despatch Centres (LDCs)**.

Key Features of STELLAR

- **Chronological Power System Modelling**– Simulates real-time grid operations, considering load flow, ramp rates, and unit-level constraints.
- **Integrated Resource Planning**– Simultaneously models generation, transmission, storage, and demand-side expansion up to FY 2034–35.
- **Endogenous Demand Response**– Includes consumer flexibility in electricity usage to optimize load and system cost.
- **Ancillary Services Optimization**– Plans for essential grid services like frequency control and reserves to maintain stability.

Benefits:

- **Ensures optimal resource adequacy** – Avoiding both power shortages and overcapacity.
- **Supports zero load shedding** and removes the need for stressed capacity.
- **Promotes least-cost planning** for efficient and affordable operations.
- **Identifies optimal storage size and location**, crucial for renewable energy integration.

Ironwood TPU

News- Recently, Google launched its seventh generation TPU (Tensor Processing Unit) named Ironwood.



About Ironwood

- **Seventh-Generation TPU:** Ironwood is Google's latest Tensor Processing Unit, specifically engineered for high-performance AI model training and inference.
- **Optimized for Deep Learning:** Designed to handle complex neural network operations and deep learning tasks with enhanced speed and efficiency.
- **Cloud-Accessible:** Once exclusive to internal Google operations, Ironwood is now available through Google Cloud Platform, eliminating the need for dedicated hardware.
- **Enhanced Performance:** Builds on previous TPU generations to deliver faster computation and greater energy efficiency for large-scale AI workloads.

key differences between TPU, GPU, and CPU

Aspect	CPU (Central Processing Unit)	GPU (Graphics Processing Unit)	TPU (Tensor Processing Unit)
Purpose	General-purpose processor for everyday computing tasks	Designed for parallel processing, especially graphics & ML	Specialized for AI and deep learning, especially tensor operations

Factly Compilation April 2025

Architecture	Few powerful cores (2-16), optimized for sequential tasks	Thousands of smaller cores for parallel processing	Fewer, highly specialized cores optimized for matrix operations
Performance	Slower in AI workloads due to sequential nature	Faster than CPUs for ML and parallel tasks	Fastest for training and inference of deep learning models
Flexibility	Highly versatile across a wide range of tasks	Moderately flexible, good for ML and graphics	Narrowly focused on specific AI operations
Efficiency	Less energy-efficient for AI tasks	More efficient for parallel computations	Highly energy-efficient for machine learning workloads
Best Use Case	Running operating systems, software, everyday applications	Graphics rendering, video editing, and ML model training	AI-specific tasks like neural network training and inference
Example Usage	Browsing, spreadsheets, OS management	Gaming, deep learning training	Powering AI in Google Search, YouTube, and DeepMind models

Operation Chakra V

News: CBI Launches Operation Chakra-V against Transnational Organized Cybercrime/ Digital Arrests. **Operation Chakra V.**

About Operation Chakra V

- It was **launched to fight against transnational organised cyber-enabled financial crimes** in India.
- **Launched by:** Central Bureau of Investigation (CBI)
- It involves a **multi-pronged strategy**, focusing on identifying and dismantling the broader infrastructure enabling cybercrimes like **Digital Arrests** in India.
- Operation Chakra-V marks another milestone in CBI's evolving cybercrime strategy, reinforcing its focus on safeguarding citizens from sophisticated digital threats.

World Pandemic Treaty

News: Members of the World Health Organization (WHO) have **finalised a proposal** for the **World Pandemic Treaty**, according to a statement by the global health body. **World Pandemic Treaty.**

About World Pandemic Treaty

- **Background:** The proposal to draft and negotiate this convention was finalised by the **Intergovernmental Negotiating Body (INB)**, established in **December 2021** under the **WHO Constitution**.
- **Aim:** The treaty aims to **strengthen pandemic prevention, preparedness and response**.

Key Provisions of Treaty:

- **Legally binding accord:** It is a **legally enforceable accord** aimed at **strengthening global cooperation** to prevent, prepare for, and respond to future pandemics.
- **Pathogen access and Benefit Sharing System (PABS):** It establishes a framework for sharing pathogens and ensuring **equitable access to vaccines, diagnostics, and treatments** derived from them.
- **One Health Approach:** The treaty promotes integrated surveillance and prevention strategies that consider human, animal, and environmental health to anticipate and mitigate pandemic risks.
- **Technology transfer and capacity building:** It encourages the transfer of technology, knowledge, and skills to build geographically diverse research and development capacities.
- **Respect for national sovereignty:** The treaty explicitly affirms countries' sovereignty over their public health policies, stating **WHO will not have authority to mandate** specific national actions such as lockdowns, travel bans, or vaccination mandates.
- **Ratification:** The treaty will be formally considered at the upcoming World Health Assembly in **May 2025**.
- **USA's status:** The United States, having withdrawn from WHO negotiations, is **not a party to the treaty and will not be bound** by its provisions after its exit in 2026.

Exercise DUSTLIK-VI

News: The 6th edition of India- Uzbekistan Joint Military Exercise DUSTLIK-VI commenced, at Foreign Training Node, Aundh (Pune). The Exercise is scheduled to be conducted from 16 to 28 Apr 2025. **Exercise DUSTLIK-VI.**

About Exercise DUSTLIK -VI

- It is an **annual training** event conducted **alternatively** in **India and Uzbekistan**.
- This Edition is being held at **Foreign Training Node, Aundh (Pune)**.
- The **last edition** was conducted in **Termez District, Uzbekistan** in April 2024.
- **Contingents involved:** Indian contingent comprising of 60 personnel is being represented by a Battalion of **JAT Regiment and IAF**. The Uzbekistan contingent is being represented by personnel from **Uzbekistan Army**.
- **Theme:** The theme of the exercise will be based on the theme of Joint Multi Domain Sub Conventional operations in **Semi-Urban Scenario**.
- **Significance:** The Exercise will enable both sides to **share best practices**, facilitate **developing interoperability, bonhomie and camaraderie** between the two armies and will also **enhance defence cooperation**, further **augmenting bilateral relations**.

rt-LAMP Assay for Tuberculosis Diagnosis

News- Researchers have evaluated the real-time Loop-Mediated Isothermal Amplification (rt-LAMP) method for the early and accurate detection of tuberculosis (TB). **rt-LAMP Assay for Tuberculosis Diagnosis.**

About rt-LAMP Assay

- rt-LAMP (Real-time Loop-mediated Isothermal Amplification) is a molecular diagnostic test that *enables the rapid detection of TB DNA*.
- It uses a one-step DNA amplification process, capable of detecting TB DNA with as few as *10 copies per microliter in a sample*.
- The *test functions at a single temperature*, unlike traditional RT-PCR which requires three different temperature cycles.
- The rt-LAMP assay has been *approved by the Central Drugs Standard Control Organisation (CDSCO)* and is currently awaiting validation from the Indian Council of Medical Research (ICMR).

Key Features:

- **Open Platform:** The rt-LAMP assay is designed as an *open platform system*, which allows existing RT-PCR machines to be repurposed for TB diagnosis by reprogramming them.
- **Primer Design:** It *uses six primers*, significantly more than the two primers used in RT-PCR, enhancing its efficiency and specificity.
- **Rapid Results:** Thanks to its high amplification rate, *positive results can be obtained in just 10–20 minutes*.
- **Low Cost:** The test uses inexpensive dyes like Syto 16 (a fluorescent dye) and affordable primers, making it cost-effective.
- **High throughput capability:** The rt-LAMP system can process up to 96 or even 384 patient samples in a single run, making it *suitable for mass screening*.

Ranthambore National Park

News– A tiger recently killed a seven year boy at Ranthambore National Park.

About Ranthambore National Park

Aspect	Details
Location	<ol style="list-style-type: none">1. It is located in Sawai Madhopur district of Rajasthan.2. It is located at the junction of the Aravali and Vindhya hill ranges.
History	<ol style="list-style-type: none">1. Ranthambore National Park started as Sawai Madhopur Game Sanctuary in 1955 by the Indian Government.2. It became a Project Tiger reserve in 1973.3. Ranthambore was designated as a national park in 1980.
River	The park is bounded to the north by the Banas River and to the south by the Chambal River .

Connected sanctuary	wildlife Kailadevi Wildlife Sanctuary and Sawai Mansingh Wildlife Sanctuary are connected to the core of Ranthambore NP by narrow corridors, forming part of the Tiger Reserve.
Vegetation	Mixed Deciduous type
Flora	<ol style="list-style-type: none">1. The most prevalent plant species in Ranthambore National Park is the “Dhok,” scientifically known as <i>Anogeissus pendula</i>.2. Other plant species include Banyan (<i>Ficus bengalensis</i>), Pipal (<i>Ficus religiosa</i>) and Neem (<i>Azadirachta indica</i>), Babul (<i>Acacia nilotica</i>), Gum (<i>Sterculia urens</i>) etc.
Fauna	<ol style="list-style-type: none">1. Tigers, leopards, striped hyenas, common or hanuman langurs, rhesus macaques, jackals, jungle cats, caracals, blackbuck, etc.2. It is also home to more than 270 bird species, such as the crested serpent eagle, painted francolin, and Indian paradise flycatcher.

Silkyara tunnel

News- Uttarakhand’s longest tunnel, Silkyara has achieved a major breakthrough recently.

Source- The Indian Express

About the Silkyara Tunnel

- **Location:** It is situated on the *Yamunotri National Highway* in *Uttarkashi district, Uttarakhand*.
- **Length:** The tunnel spans a total length of *4.5 km* and is designed to connect Silkyara with Dandalgaon in the same district.
- **Project:** It is a key component of the *Char Dham all-weather road project*.
- **Significance:** This *double-lane tunnel* is among the *longest under the Char Dham project*.
- **Impact:** Once completed, it is expected to *reduce the travel distance between Gangotri and Yamunotri by approximately 26 km*, significantly improving connectivity and travel time.

Char-Dham Project

- It is a highway expansion project to widen 889 km of hill roads to provide all-weather connectivity in the Char Dham circuit.
- The project, envisaged in 2016, covers Uttarakhand’s four major shrines- *Badrinath, Kedarnath, Gangotri and Yamunotri*– in the upper Himalayas.

Tuti Island

News- After two years of brutal civil war, Sudan's Tuti Island has been retaken by the national army, but it remains ravaged and largely abandoned. **Tuti Island**

About Tuti Island

- **Location**– It is located at the confluence of the *Blue and White Niles* in Khartoum, *Sudan*.
- **Bordering urban centres**– It is surrounded by the “Three Towns”: *Khartoum (Sudan's capital)*, *Omdurman (the country's largest city)*, and *Khartoum North* (also called Bahri, a major industrial area).
- **Significance:**
 - The island covers 8 square kilometres and was traditionally *known for farming and fishing*, earning it the nickname “*Khartoum's garden*.”
 - It is culturally important to the *Mahas community*, who settled there in the 15th century, making it a symbol of local identity and sustainable living.
- **Flood management system**– Due to its location, Tuti has always been susceptible to floods. In response to increasing flood events, the community developed its own flood management system- *The Taya system*.
 - The *HEART project* (Heritage Empowered Action for Risk in Tuti) was launched to preserve the Taya system's knowledge.

About Sudan

Source- BBC

Location	Sudan is located in Northeast Africa.
Borders of Sudan	It borders the Central African Republic to the southwest, Chad to the west, Egypt to the north, Eritrea to the northeast, Ethiopia to the southeast, Libya to the northwest, South Sudan to the south, and the Red Sea.
Geographical Area	It was the largest country by area in Africa and the Arab League until the secession of South Sudan in 2011.

WAVES 2025: Anti-Piracy Challenge

News: The Ministry of Information and Broadcasting has announced the top seven finalists for the **Anti-Piracy Challenge** under the “**Create in India**” initiative of the World Audio Visual & Entertainment Summit (WAVES) 2025. **WAVES 2025: Anti-Piracy Challenge.**



About WAVES 2025: Anti-Piracy Challenge

- It is a pioneering initiative under the **Create in India Challenge Season 1 of WAVES** (World Audio Visual & Entertainment Summit) 2025.
- **Launch:** It was launched on September 12, 2024.
- **Organised by:** The **Confederation of Indian Industry (CII)** in collaboration with the **Ministry of Information and Broadcasting**

Objectives

- Provide a platform for domestic companies to showcase their solutions and gain industry recognition.
- Encourage the development of novel techniques that enhance the security and traceability of digital media.
- Promote practical applications that can be seamlessly integrated into existing media workflows.
- Support the growth of new technologies addressing current and emerging challenges in content protection.

About WAVES 2025

- It is the **inaugural World Audio Visual & Entertainment Summit**, a premier global event hosted by the Government of India in Mumbai, Maharashtra, from May 1 to 4, 2025.
- **Aim:** It aims to spotlight India's thriving **Media and Entertainment (M&E) sector**, bringing together international leaders, creators, innovators, and investors to shape the future of the industry worldwide.
- The summit is structured around **four key pillars**–
 - Broadcasting and Infotainment (WAVES **Anti-Piracy Challenge** falls under it)
 - AVGC XR covering animation, visual effects, gaming, comics, and extended reality
 - Digital Media and Innovation
 - Films
- **Objectives:**
 - Fostering global collaboration

- Driving investment into India's creative economy
- Showcasing technological advancements
- Developing the M&E ecosystem

India's First Seed Germination Database

News: India is developing its **first-ever seed germination database** to help farmers, scientists, and foresters select the right species for climate-resilient agriculture, forestry, and ecological restoration. **India's First Seed Germination Database.**



About India's First Seed Germination Database

- It is a **free-access database**, offering more than **1,000 germination techniques** for **465 native plant species**.
- **Launched by:** It is an initiative launched by the **Ecological Restoration Alliance-India (ERA-I)**.
 - **Partners:** **Auroville Botanical Gardens**, the **Ashoka Trust** for Research in Ecology and the Environment, the **Nature Conservation Foundation (NCF)**, and the **Wildlife Trust of India**.
- **Aim:** It intends to make it **easier for restoration practitioners, nursery managers, and native plant enthusiasts** to be more successful with growing native plants in nurseries.
- **Significance:** It will help India to fulfill its **Pledge under the Bonn Challenge** to restore 26 million hectares of degraded land.
 - The **Bonn Challenge** is a global initiative launched in 2011 to restore degraded and deforested lands, intending to bring **350 million hectares under restoration by 2030**.
- **Native plants included:** *Aegle marmelos* (wood apple), *Bauhinia racemosa* (beedi leaf tree), *Canthium coromandelicum* (Coromandel boxwood), *Daphniphyllum neilgherrense* (Nilgiri Daphne-leaf), *Elaeodendron glaucum* (Ceylon tea), *Ficus benghalensis* (banyan), *Gmelina arborea* (white Kashmir teak), *Hopea indica* (Malabar ironwood), *Ixora pavetta* (torch wood tree), *Justicia adhatoda* (Malabar nut), *Knema attenuata* (wild nutmeg), *Lawsonia inermis* (henna), *Madhuca longifolia* (mahua), *Vachellia nilotica* (**babool**), *Withania somnifera* (ashwagandha), *Ximenia americana* (hog plum), and *Ziziphus mauritiana* (Indian jujube).

Clinidium lalitae

News: New beetle species discovered in Northeast by ZSI scientists.

About Clinidium lalitae

- It is a new **species of beetle** belonging to the subfamily **Rhysodinae**.
- It has been discovered in the **Talle Valley Wildlife Sanctuary** in **Arunachal Pradesh**.
- The species has been named to honor **Lalita Ray Chaudhury**, who dedicated her career to the study of beetles.
- It is characterised by its **unique morphology** and belongs to a **rare group** of ground beetles that **inhabit forest floors**.
- These beetles play a significant ecological role in **nutrient cycling and soil health**.

About Talle Valley Wildlife Sanctuary

- It is located at **Lower Subansiri** district of **Arunachal Pradesh**.
- It is a **plateau** region located at an altitude of 2400 m.
- **Rivers:** Pange, Sipu, Karing and **Subansiri**.
- **Flora:** The sanctuaty comprises of **sub-tropical and alpine forests** and harbours **broadleaved and conifer forests** with vegetation of **silver fir, pine trees, ferns, orchids, bamboo, and rhododendron**.
 - **Pleioblastus simone** is a **bamboo** variety only found in Talley Valley.
- **Fauna:** **Clouded leopard**, elephants, Barking Deer, Malayan giant squirrel, Indian muntjac and Asian palm civet.

Surat Emission Trading Scheme (ETS)

News- A recent study published in The Quarterly Journal of Economics validated that Surat's Emissions Trading Scheme (ETS) led to a 20-30% reduction in pollution and brought down compliance costs by 11%. **Surat Emission Trading Scheme (ETS).**



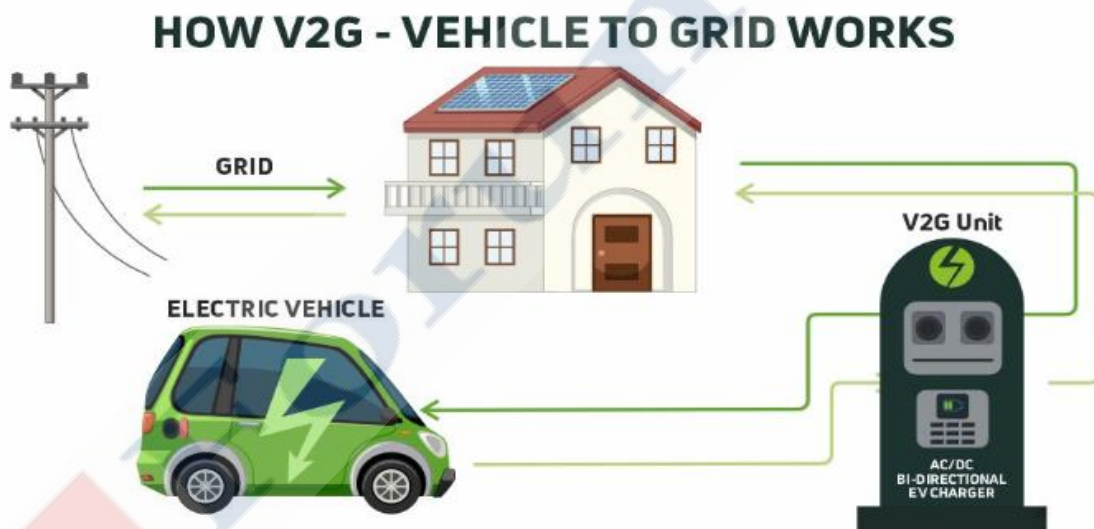
About Surat Emission Trading Scheme (ETS)

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- **Launched in 2019** in Gujarat, the Surat Emission Trading Scheme (ETS) is the *world's first market-based system for trading particulate matter (PM) emissions*, and India's first pollution trading scheme of any kind.
- It was developed by the Gujarat Pollution Control Board (GPCB), in collaboration with the Energy Policy Institute at the University of Chicago.
- **Purpose:** To *tackle air pollution* in Surat.
- **How It Works – Cap-and-Trade:**
 - The system follows the cap-and-trade principle, where a total emissions limit is set across all participating industries.
 - Each industrial unit receives a fixed limit (cap) on the amount of particulate matter it is allowed to emit.
 - Units that emit less than their assigned cap can trade their unused emission allowances with others that exceed their limits.
- **Trading Platform:** Industries trade permits on a platform by NeML (National Commodities and Derivatives Exchange e-Markets).

Vehicle-to-Grid (V2G) technology

News- The Kerala State Electricity Board (KSEB) and the Indian Institute of Technology Bombay (IIT Bombay) have initiated a pilot project to explore the implementation of **Vehicle-to-Grid (V2G)** technology across the State.



Source- Servotech

About Vehicle-to-Grid (V2G) technology

- Vehicle-to-Grid (V2G) refers to a system where electric vehicles (EVs) are capable of *sending electricity back to the power grid when not in use*.
- When connected to a *bi-directional charger*, an idle EV acts as a decentralised battery energy storage device, supporting the distribution grid during peak demand or renewable energy (RE) variability.
- **Types of Power Flow:**
 - **Grid to Vehicle (G2V):** The EV draws power from the grid and functions as a load.
 - **Vehicle to Grid (V2G):** The EV discharges stored power to the grid and functions as a source.
- **Benefits of V2G Technology:**
 - Enhances grid stability and supports RE integration.
 - Enables demand response and reduces pressure on the grid.

- Uses tools like *Time of Use (ToU) tariffs* and smart charging to align EV charging with grid efficiency.

Global Scenario

- *U.K., Netherlands, U.S. are actively piloting V2G systems.*
- California uses V2G in ancillary service markets to enhance grid reliability.

V2G in India

- *Still in the nascent stage.*
- Focus is currently on EV charging infrastructure.
- The Central Electricity Authority (CEA) is preparing guidelines for reverse charging.
- Some DISCOMs have initiated pilot projects on V2G and smart charging.

International Big Cat Alliance (IBCA)

News- The International Big Cat Alliance (IBCA) signed an agreement with the central government recently, officially making India the headquarters and secretariat of the alliance. **International Big Cat Alliance (IBCA).**

About International Big Cat Alliance (IBCA)

- It is a coalition of *96 big cat range countries and non-range countries* dedicated to conserving seven big cats and their habitats.
- **Genesis**– Its idea was first floated by India's Prime Minister in 2019. It was launched on April 9, 2023, during the *50th anniversary of India's Project Tiger*.
- **Objective:**
 - Stop the illegal trade of the seven big cats.
 - Work towards protecting the natural habitats of the seven big cats.
 - Gather financial and technical resources to support conservation and protection efforts.
- **Focus:** The IBCA focuses on seven big cats: *Tiger, Lion, Leopard, Snow Leopard, Puma, Jaguar, and Cheetah*. Five of these species are found in India (Tiger, Lion, Leopard, Snow Leopard, and Cheetah).
- **Depository of the Framework Agreement:** Ministry of External Affairs (MEA), Government of India.
- **Membership:** *India, Nicaragua, Eswatini, and Somalia* are the initial member countries, with nine international organizations partnering with the Alliance.
- **Governance:**
 - The IBCA has an Assembly of Members, a Standing Committee, and a *Secretariat in India*.
 - Its governance model is inspired by the *International Solar Alliance (ISA)*, with a Director-General (DG) appointed by the Ministry of Environment, Forest and Climate Change (MoEFCC).

Comparison of Big Cats species found in India

Character-istics	Tiger	Lion	Leopard	Snow Leopard	Cheetah
Habitat	Forests, grasslands, mangroves	Grasslands, savannas, open woodlands	Forests, savannas, mountains	High-altitude mountains	Grasslands, open plains
Distribution	Asia (India, Siberia, SE Asia)	Africa, Gir Forest in India	Africa, Asia	Central and South Asia	Africa, Iran (rarely)
Size	Largest of all big cats	Second largest	Compact and muscular	Medium-sized	Slender and light-weight
Roar	Can roar	Loudest roar	Can roar	Cannot roar (but vocalizes)	Cannot roar (chirps, growls)
Breeding Season	No specific season; year-round, depending on habitat.	Year-round, but peaks during rainy seasons.	Year-round, with regional peaks in some areas.	No specific season; often linked to prey availability.	Year-round, with peaks during wet seasons.
Primary Marking Methods	All use scent marking (urine spraying) to establish and maintain territories, communicate with other individuals, and avoid direct conflicts.				

Gita and Natyashastra in UNESCO's Memory of the World Register

News: The Prime Minister Shri Narendra Modi hailed the inclusion of the **Gita and Natyashastra** in UNESCO's **Memory of the World Register** as a global recognition of our timeless wisdom and rich culture. **Gita and Natyashastra in UNESCO's Memory of the World Register.**



About the Memory of the World (MOW) Program

- It is a global initiative **aimed at preserving, protecting, and enhancing access to documentary heritage**, particularly those collections that are rare and at risk.
- **Launch:** It was launched by **UNESCO in 1992**.
- **Memory of the World (MOW) Register:** The Register was launched as a **core project** under the MOW Program **aimed at creating a compendium of documents** — manuscripts, oral traditions, audio-visual materials, and library and archive holdings — which are of world significance and outstanding universal value.

India and MOW Register

- With the inclusion of Gita and Natyashastra, India now has **14 entries** in the MOW Register.
- These include the **Rig Veda (added in 2005)** and the collective works of the **Shaivite philosopher Abhinavagupta (added in 2023)**, the archives of the first summit meeting of the **Non Aligned Movement in Belgrade in 1961 (added in 2023)** and the archives of the **Dutch East India Company (added in 2003)**.

About Natyashastra

- Traditionally attributed to **the sage Bharata**, it is an ancient **Sanskrit treatise on performing arts**.
- The Natyashastra embodies a comprehensive set of rules that define natya (drama), abhinaya (performance), rasa (aesthetic experience), bhava (emotion), sangita (music) in **36,000 verses**.

About Bhagavad Gita

Traditionally attributed to the **sage Vyasa**, Bhagavad Gita is a **Sanskrit scripture** comprising 700 verses that are organised in **18 chapters**, embedded in the **sixth book (Bhishma Parva)** of the epic poem **Mahabharata**.

Exercise Desert Flag

News: A contingent of the Indian Air Force reached **Al Dhafra Air Base** in the **United Arab Emirates** to participate in **Exercise Desert Flag-10**.



About Exercise Desert Flag-10

- Exercise Desert Flag is an **annual multinational exercise** being **hosted by the UAE Air Force**.
- **Participating contingents:** The Air Forces from of Australia, Bahrain, France, Germany, Qatar Saudi Arabia, Republic of Korea, Turkey, UAE, United Kingdom, and the **United States** in **addition to the Indian Air Force**.
- The IAF is fielding **MiG-29 and Jaguar aircraft** in the exercise.
- **Aim:** The aim of the exercise is to **undertake complex and diverse fighter engagements**, with exchange of **operational knowledge and best practices** with some of the most capable Air Forces in the world.
 - It will enhance **mutual understanding interoperability, and strengthens military cooperation** among the participating nations.

Perovskite Solar Cells (PSCs)

News: Recently, scientists found a **green way to recycle toxic perovskite solar cells (PSCs)**. **Perovskite Solar Cells (PSCs)**.



About Perovskite Solar Cells (PSCs)

- A perovskite solar cell is one that includes a **perovskite-structured compound**, most commonly a hybrid organic-inorganic **lead or tin halide-based** material, as the light-harvesting active layer.
 - A **perovskite** is a material (first found in the **Ural Mountains**) that has the same crystal structure as the **mineral calcium titanium oxide** and is named after **Lev Perovski**, the founder of the Russian Geographical Society.
- They display **interesting properties** like superconductivity, giant magneto-resistance, and ferro-electricity- making them applicable to be used in clean energy.
- They are **inexpensive and highly efficient**.
- **Drawbacks:**
 - **Toxic waste:** They contain **toxic elements like lead**, which demands toxic organic solvents like **dimethylformamide** for recycling.
 - **Stability:** PSCs have shorter operational lifespans compared to traditional silicon-based solar cell.

A Green Way to Recycle PSCs

- To recycle perovskite solar cells (PSCs), *sodium acetate* is added to the solution. It binds with lead ions to form lead acetate, which dissolves easily in water.
- Next, *sodium iodide and hypophosphorous acid* are introduced.
 - Sodium iodide helps repair the degraded perovskite crystals, while hypophosphorous acid acts as a stabilizer, allowing the solution to be reused over time.
- Ethanol and ethyl acetate are also used to dissolve other layers of the solar cell, making it possible to separate, recover, and reuse each component.
- This eco-friendly process can recover up to 99% of the materials in PSCs, even after multiple recycling cycles.

Comprehensive Remote Sensing Observation on Crop Progress (CROP)

News: The Indian Space Research Organisation (ISRO) in a study using its satellites has **estimated the total wheat production** from eight major wheat growing States of India. **Comprehensive Remote Sensing Observation on Crop Progress (CROP).**



About Comprehensive Remote Sensing Observation on Crop Progress (CROP)

- It is a semi-automated and scalable framework which enables the **near real-time monitoring of crop sowing and harvesting** during the **Rabi** season across India.
- **Developed by:** National Remote Sensing Centre (NRSC) of ISRO
- **Satellites used:** This progress was assessed using **Optical and Synthetic Aperture Radar (SAR)** remote sensing datasets from **EOS-04 (RISAT-1A), EOS-06 (Oceansat-3) and Resourcesat-2A**.
- The crop assessment is done by **assimilating satellite-derived parameters** such as crop area, sowing date information and in-season crop condition in a process-based crop growth simulation model at **5km × 5km spatial resolution**.
 - A remote sensing-based **Vegetation Health Index (VHI)** has been employed to monitor **crop conditions and drought stress**.
- **States assessed:** The eight major wheat-growing states are **Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab, Haryana, Bihar, Gujarat and Maharashtra**.

Kokborok Language

News– The Kokborok Sahitya Parishad has appealed for the inclusion of Kokborok in the Eighth Schedule of the Indian Constitution. **Kokborok Language.**



About Kokborok Language

- It is the *native language of the Borok people*, commonly known as Tripuris.
- It is spoken as a mother tongue by several indigenous communities such as:
 - Debbarma (Tripuri)
 - Reang, Jamatia, Noatia, Kalai, Rupini, Murasing, and Uchoi.
- **Official Status:** Recognised as one of the state languages of Tripura, along with Bengali. It was notified on January 19, 1979.
- **Language Family:** Belongs to the *Sino-Tibetan language family*.
- **UNESCO Status:** Listed as "*Vulnerable*" in the UNESCO Atlas of the World's Languages in Danger.

Operation ATALANTA

News- The European Union Naval Force (EUNAVFOR) Operation ATALANTA has proposed conducting a joint exercise with the Indian Navy. **Operation ATALANTA.**



About Operation ATALANTA

- It is a maritime security mission launched by the European Union in 2008.
- It operates under the EU's Common Security and Defence Policy (CSDP).
- **Objective-** To support efforts aimed at maintaining peace, stability, and maritime security. The mission focuses on combating:
 - Piracy
 - Narcotics trafficking
 - Illegal fishing, and other maritime threats.
- **Area of Operation-** The mission operates primarily in the *Western Indian Ocean and the Red Sea region*.

Scarborough Shoal

News- China has accused the Philippines of an intrusion into the disputed waters of Scarborough Shoal in the South China Sea (SCS).

About Scarborough Shoal



Source- India Today

- It is the *largest atoll in the South China Sea*, situated about 220 km west of the Philippines.
- While it lies within the *Exclusive Economic Zone (EEZ)* of the Philippines, it has been claimed by China as part of its ancestral territory, citing the *nine-dash line* since the 13th century.
- **Marine Significance:** The area is known for its rich marine life, including commercially valuable species like shellfish and sea cucumbers, making it a productive fishing ground.

Other Disputed Islands in the South China Sea: *Paracel Islands and Spratly Islands* are other key areas of dispute in the region.

South China Sea- It is a marginal sea of the western Pacific Ocean, bordered by several countries, including Brunei Darussalam, Malaysia, Indonesia, the Philippines, Singapore, Thailand, Vietnam, and China

Nitrogen

News: Nitrous oxide is the third most abundant of the greenhouse gases; it accentuates the greenhouse effect in the same way as carbon dioxide does by capturing re-radiated infrared radiation from the Earth's surface and warming the troposphere. **Nitrogen.**



About Nitrogen

- It is the **fifth-most abundant** gas in the **universe** and the most pervasive on earth as makes almost **78% of earth's atmosphere**.
- Nitrogen in the air is **placid, stable** and forms a kind of **blanket around the earth** that keeps the much more flammable **oxygen in check**.
- **Link with bio life:** Nitrogen constitutes **3% of human body weight**
 - **Nitric Oxide (NO):** It mediates the efficient transmission of messages among the nerves inside our body. It **dilates arteries** easing the flow of blood and improves immunity.
 - **Adenosine triphosphate (ATP)**, the fundamental currency of energy for cells, is part-constituted of nitrogen.
 - **DNA** (deoxyribonuclease), the blueprint of life, are made up of **four nitrogenous bases**.

Nitrogen Cycle:

- Animals, humans and plants are **inept** at extracting nitrogen from the air they breathe.
- Some plants can form an alliance with certain ancient bacteria and archaea called '**diazotrophs**'.
 - 20,000 species of plants of the **family Leguminosae** – which include beans, chickpeas, lentils, soybeans, and peanuts – have **symbiotic relationship** between diazotrophs and them.
- **Nitrification** is the process by which **bacteria turn the ammonia and ammonium into nitrites and nitrate**.
 - **Lightning strikes** are the other way that **atmospheric nitrogen can be broken down to nitric acid** – another natural source of nitrogen.
- **Denitrification** – A large ecosystem of microbes **convert the unused nitrates back to nitrogen**, called denitrification and the **cycle continues**.
- **Artificial addition of nitrogen** – Through **fertilizers** and '**saltpetre**' – animal and bird **excrement**, crushed animal **bones**, being rich sources of nitrate.

- **Haber-Bosch process** – a way to **manufacture ammonia** on an industrial scale with help of an iron catalyst.
- **Additionally**, composting, manuring, and crop rotation employed to keep nitrification and denitrification going on.
- **Imbalanced Nitrogen Cycle**: So, there is now **too much ammonia and ammonium nitrate** fed into the soil since industrialisation era has started.

Ecological Challenges Due to Abundant Nitrogen

- **Eutrophication**: The **ammonium nitrates** (water soluble) are washed away during rains and enter into canals and streams, and stimulate algal blooms. Example – Dead Zones in Gulf of Mexico.
- **NO and NO₂ (Nox)** – They results from **burning fuel in engines**, also constitute **acid rain** if mixed with water vapour, turning into **nitric acid**.
- **Nitrogen dioxide (NO₂)** will break apart in sunlight and the free oxygen atoms latch onto oxygen molecules forming **dangerous ground-level ozone**.
- **Nitrous oxide (N₂O)**: Though useful as a **rocket propellant** and as 'laughing gas', used in **dental clinics as an anaesthetic** – is now the **third largest greenhouse gas**.
 - It is **chemically inert in the troposphere** and stays in the troposphere for about 120 years before moving into the stratosphere where it ultimately leads to the destruction of stratospheric ozone.

Khadi and Village Industries Commission (KVIC)

News: The Khadi and Village Industries Commission (KVIC) has achieved a historic milestone in the financial year 2024-25, recording a turnover of Rs 1.70 lakh crore during the period. **Khadi and Village Industries Commission (KVIC).**



About Khadi and Village Industries Commission (KVIC)

- It is a **statutory body** established under **Khadi and Village Industries Commission Act, 1956**.
- In **April 1957**, it took over the work of former **All India Khadi and Village Industries Board**.
- **Nodal Ministry:** Ministry of Micro, Small and Medium Enterprises
- It is charged with the **planning, promotion, organisation and implementation** of programs for the development of Khadi and other village industries in the rural areas.

Objectives

- **Social Objective** – Providing employment in rural areas
- **Economic Objective** – Providing saleable articles
- **Wider Objective** – Creating self-reliance amongst people and building up a strong rural community spirit.

The commission seeks to achieve these objectives by **implementing and monitoring various schemes and programs**.

Schemes/Programmes implemented by KVIC

- Prime Ministers Employment Generation Program (PMEGP)
- Modified Market Development Assistance (MMDA)
- Workshed Scheme for Khadi Artisans
- Gramodyog Vikas Yojana (GVY)
- Scheme of Fund for Regeneration of Traditional Industries (SFURTI)
- Khadi Reform and Development Programme (KRDP)
- Beekeeping – The Honey Mission

Key Facts about Vatican City

News: Pope Francis, the first Latin American pontiff and sovereign of the Vatican City State, will be buried in the Basilica of Santa Maria Maggiore. **Vatican City**.

Key Facts about Vatican City

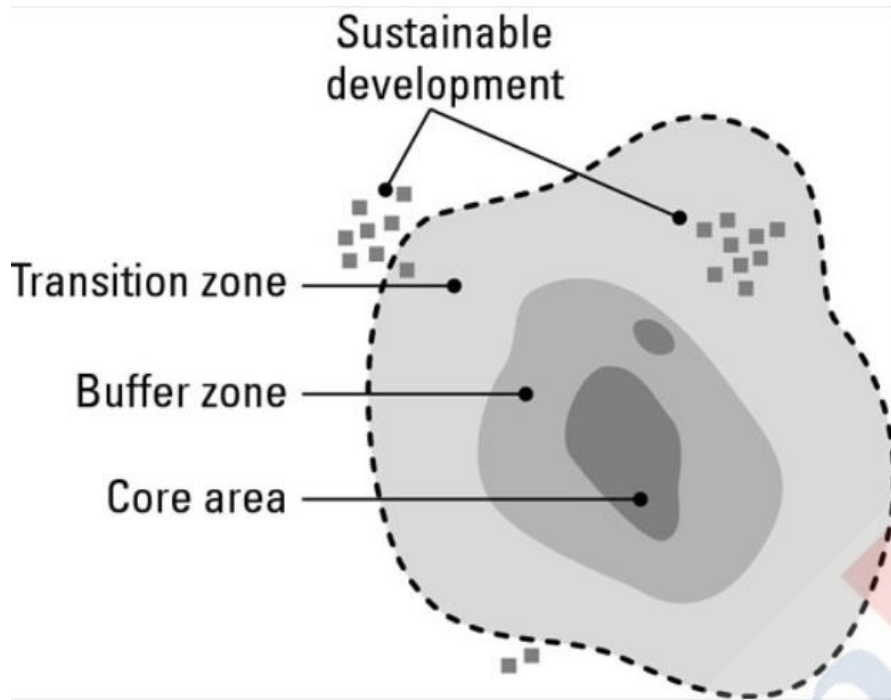


Source- WorldAtlas

- It is the **smallest sovereign country in the world**, covering about 44 hectares (110 acres).
- It is **landlocked within Rome, Italy**, and became independent from Italy with the signing of the **Lateran Treaty in 1929**.
- It is situated on the west bank of the **Tiber River**.
- **Religious centre**: It is the **seat of the Pope**, the spiritual leader of over a billion Catholics worldwide.
- **The Holy See**: It is the **central governing body** of the Church and Vatican City, presided over by the **Pope**.
 - It operates **independently**, with its own postal system, financial structure, and **no income tax**.
- The city is home to **Peter's Basilica, Vatican Museums, Sistine Chapel** with frescoes by **Michelangelo**.
- It was designated a **UNESCO World Heritage site in 1984**.

Buffer Zones in Tiger Reserves

News– The Madhya Pradesh Cabinet recently approved a scheme for developing buffer zones in the state's nine tiger reserves. **Buffer Zones in Tiger Reserves.**



Source- Nationalparksofparaguay

About Buffer Zone

- A buffer zone is an area that *surrounds or adjoins the core area of a Tiger Reserve* or any Protected Area (PA).
- It *acts as a protective shield and transitional space* that helps in both wildlife conservation and community participation.

Zonation of a Biosphere Reserve / Tiger Reserve

1. Core Zone:

- Highly protected.
- No human activity allowed.
- Main area for wildlife conservation.

2. Buffer Zone:

- Surrounds the core.
- *Limited and regulated human activity.*
- Used for research, tourism, education, and eco-friendly development.

3. Transition Zone:

- Outermost area with active human presence.
- Sustainable practices, traditional lifestyles, and development activities allowed.
- Encourages harmonious coexistence of people and nature.

Supreme Court Judgment on Buffer Zones

Original Judgment – June 3, 2022

- The Supreme Court directed that a mandatory buffer zone (Eco-Sensitive Zone – ESZ) of *at least 1 km* must be created around all: Protected Forests, National Parks, Wildlife Sanctuaries.
- **Objective:** To create a transition area between strictly protected zones and human-influenced areas.
- **Public Reaction:** The order faced strong opposition from: Farmers, developers, and residents living near protected areas, especially in urban areas like Mumbai. Many feared restrictions on construction, farming, and daily activities.

Modified Judgment – 2023

- The Supreme Court modified its earlier order.
- The Court stated: *“The purpose of declaring ESZs is not to hamper the day-to-day activities of citizens... strict enforcement of the 1 km rule would cause more harm than good.”*
- **Key Modifications-** ESZs should not be uniform: They must be area-specific, depending on local geography and human activity.

Article 355 of the Indian Constitution

News: A recent petition in the Supreme Court has sought the invocation of Article 355 in West Bengal by deploying central armed forces, citing violence in Murshidabad. **Article 355 of the Indian Constitution.**



About Article 355

- **The text of Article 355 states:** “It shall be the duty of the Union to protect every State against external aggression and internal disturbance and to ensure that the Government of every State is carried on in accordance with the provisions of this Constitution.”

Key points

- **Part of Emergency Provisions:** Article 355 is included in **Part XVIII** of the Constitution, which deals with **emergency provisions (Articles 352 to 360)**.
- The **Union government** is constitutionally obligated to:
 - **Protect every state from external aggression** (such as war or invasion) and **internal disturbance** (such as large-scale violence or breakdown of law and order).
 - Ensure that the **government of every state functions in accordance with the Constitution**.

Scope and Application

- Article 355 **does not itself grant the Union the power** to intervene directly in state affairs but **serves as the basis for actions** under Articles 356 (President's Rule) and 352 (National Emergency).
- It is **primarily a justification** for the Centre's intervention in extreme situations where a state is unable to maintain constitutional governance or public order.
- The **Supreme Court** has clarified that Article 355 is **not an independent source of power** for the Centre to interfere arbitrarily in state matters; it must be used judiciously and usually as a last resort.

Commissions' view

- Commissions like the **Sarkaria and Punchhi Commissions** have emphasized that Article 355 imposes a duty on the Union and, by implication, grants it the power to take necessary steps—but measures like President's Rule should be used only in cases of utmost gravity and urgency.

Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025

News: Union Environment Ministry notifies **draft Greenhouse Gases Emission Intensity (GEI) Target Rules, 2025**, taking a bold step towards sustainability. **Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025.**



About Greenhouse Gas Emission Intensity (GEI) Targets Rules, 2025

- The Rules will establish **India's first compliance-based domestic carbon market** which aims to drive industrial adoption of **low-carbon technologies** and drive India's **commitments** to its Nationally Determined Contributions (NDCs).
- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC)
- This market will be structured under the **Carbon Credit Trading Scheme (CCTS), 2023**.
 - It is a **regulatory framework** for **carbon credit trading** and to facilitate emission reductions in line with India's commitments under international climate agreements.
- **Sectors covered:** The Targets will apply to **4 high-emission sector – aluminium, cement, chlor-alkali, and pulp and paper**.
 - The obligated entities need to account for **Carbon Dioxide (CO₂)** and **Perfluorocarbons (PFCs)** such as CF₄, C₂F₆, C₄F₁₀, and C₆F₁₄.
- **Compliance mechanism and obligations:**
 - The targets comprise **two compliance periods, 2025-26 and 2026-27**, aimed at enabling year-wise sectoral decarbonisation.
 - A **uniform formula** has been proposed to **calculate and verify emissions**.
 - The targets can be achieved by **either reducing emissions** or by **purchasing carbon credits certificates** from the Indian carbon market.
 - **Compliance benefit:** Obligated entities keeping **emissions below the targets** will be issued **carbon credits**. These can be either banked until the next compliance cycle, or sold to underperforming firms.
 - **Non-compliance obligation:** Obligated entities that **underperform and fail to submit** carbon credits equivalent to the shortfall for compliance, will be **charged twice the average traded carbon price** for the related compliance cycle.
 - The **price** will be calculated by the **Bureau of Energy Efficiency (Ministry of Power)** and the **compensation** will be collected by the **Central Pollution Control Board (CPCB)**.

Bamiyan Buddhas

News: Taliban change tune towards heritage sites, including pre-Islamic relics, in Afghanistan.

About Bamiyan Buddhas



Source – Harvard University

- The Buddhas of Bamiyan were **two monumental size statues**, standing at **115 and 174 feet tall**, carved into the **sandstone cliffs** of the **Bamiyan valley** in **Hazarajat region** of central Afghanistan.
 - The larger of the two statues, represented the **Buddha Vairochana**.
 - The smaller of the two statues, depicted the **Buddha Shakyamuni**.
- They were called **Salsal and Shamama** by locals.
 - Salsal means “the light shines through the universe”;
 - Shamama is “Queen Mother”.
- **Period:** They are said to date back to the **5th-6th century AD** and were **once the tallest** standing Buddhas in the world.
- The site marks the original settlement of **Bamiyan as stopping place** on the branch of the **Silk Route**, which linked China and India via ancient Bactria.
- **Cultural confluence:** They were great examples of a confluence of the **Gupta, Sassanian and Hellenistic** artistic styles.
 - These statues best exemplified the **Gandharan Buddhist art school**.
- **Destruction:** In **2001**, the Bamiyan statues were systematically destroyed by **Taliban** using explosives.
- In 2003, the **Bamiyan Valley** was declared a **World Heritage Site** by **UNESCO**.

Tobacco

News-The Government has amended the Tobacco Board Rules, 1976, extending the registration validity for Virginia tobacco growers from 1 year to 3 years.



About Tobacco

- **Origin:** Thought to have originated in South America.
- **Agro-Climatic Requirements**
 - **Temperature:** Ideally between 20°C to 27°C
 - **Rainfall:** Requires a minimum of 500 mm; not suitable above 1200 mm
 - **Soil:** Prefers sandy or sandy loam soils
 - **Frost-free period:** Between 90 and 120 days

Tobacco Production in India

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- **India's Status:**
 - 2nd largest producer of tobacco globally (after China)
 - 4th largest exporter of unmanufactured tobacco
- **Key Producing States:**
 - Gujarat (accounts for nearly 30% of national output)
 - Also grown in Andhra Pradesh, Karnataka, Uttar Pradesh, and Bihar

Key Facts about Saudi Arabia

News- Recently, the Indian Prime Minister visited Saudi Arabia and co-chaired the second meeting of the India-Saudi Arabia Strategic Partnership Council (SPC). **Key Facts about Saudi Arabia.**

About Saudi Arabia



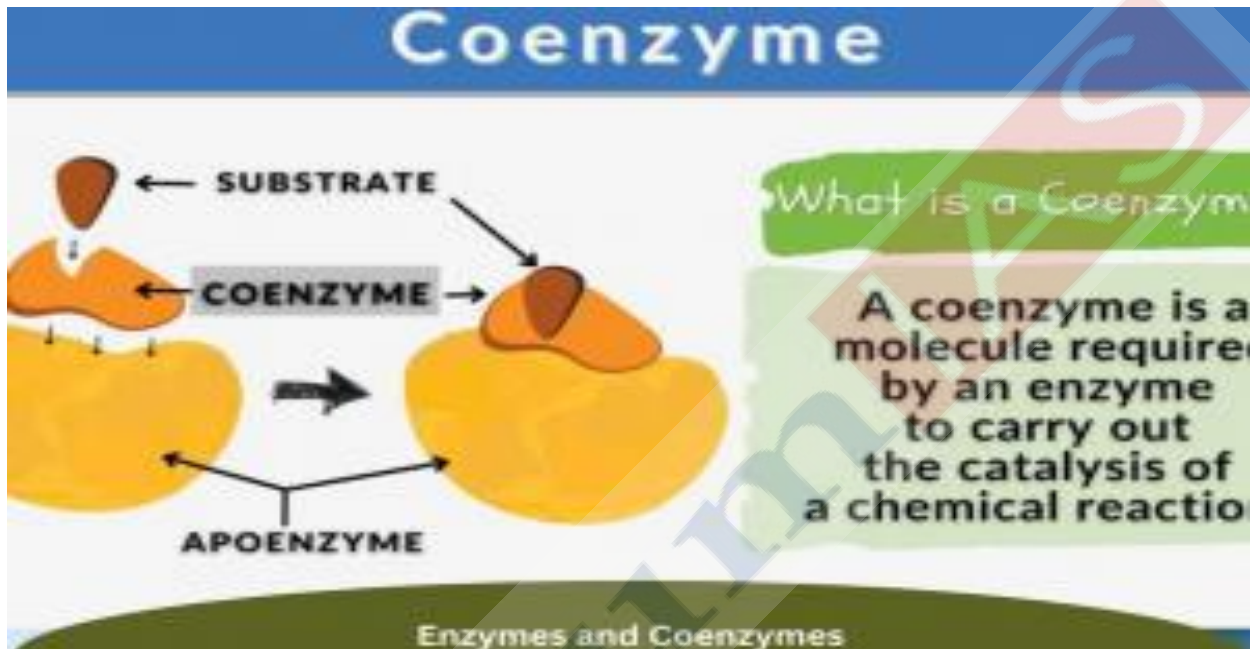
Source- WorldAtlas

- It is a country in West Asia, located at the centre of the Middle East.
- It is the *largest country on the Arabian Peninsula*, covering nearly four-fifths of its area. It is also the fifth-largest country in Asia, the largest in the Middle East, and the 12th-largest in the world.
- It is also the *largest country in the world without a river*.
- **Land and Maritime borders**– It shares land borders with *Iraq, Jordan, Kuwait, Oman, Qatar, the UAE, Bahrain and Yemen*, and has maritime boundaries with the *Persian Gulf, Red Sea, and Gulf of Aqaba*.
- **Climate**– The climate is arid and desertic, with extreme temperature variations.
- **Political system**– It is an *absolute monarchy*.
- **Natural Resources**– The country is rich in natural resources like oil, natural gas, and iron ore.

- **Religious significance**– It is home to Islam’s two holiest cities—*Mecca and Medina*.

Enzymes and Coenzymes

News: Plants with genetically modified enzymes/coenzymes are being contemplated to be launched as source of antioxidants in future food markets.



About Enzymes and Coenzymes

- **Enzymes:** They are **specialized proteins** that act as **biological catalysts**, accelerating the rate of chemical reactions in cells without being consumed or permanently altering themselves.
- **Coenzymes:** Many enzymes require some **molecules as cofactors** for efficient functioning. These helper molecules are called **coenzymes**.
 - They are **naturally occurring organic, non-protein molecules** that bind to and support the activity of enzymes.
- **Types of coenzymes:** Based on their **chemical nature**, coenzymes can be categorized as-
 - **Vitamin derived coenzymes** like Biotin, NAD^+ , NADP^+ , Thiamine pyrophosphate (TPP)
 - **Non-vitamin coenzymes** like Coenzyme Q

About Coenzyme Q

- It is also known as **ubiquinone** and is present in every cell membrane.
- **Feature:** It contains several **isoprene units** which are **antioxidants** and offer **stability against stress**.
- **Types:** It comes in **10 different types (CoQ1...Q10)**.
- **Functions:** Each one of them act as a **water-insoluble, but lipid-soluble antioxidant**.
 - All these coenzymes play a vital role in the **function of the mitochondrion**, the major **energy producer** in the cell.
- **Coenzyme Q09:** It has **nine isoprene units**. It is **abundantly found** in **cereal crops** like wheat, rice, oats, barley, corn, rye, millet and in plants like cinnamon, avocado and pepper.
- **Coenzyme Q10:** It occurs **naturally** in human body. It is a component of the **mitochondrial electron transport chain** in humans. Since **heart** have high energy demands and contain **high concentrations** of CoQ10.

- **Advantage of CoQ10:** Developing **CoQ10-enriched crops** offers a cost-effective and sustainable way to **enhance nutritional value** and improve **health benefits**.
- In a research, the **gene-edited rice** demonstrated over **75% CoQ10 accumulation in both grains and leaves**.

Sunrise Sectors

News: India aims to double the share of manufacturing in GDP to 23% helped by sunrise sectors.



About Sunrise Sectors

- It refers to **industries** that are relatively **new**, rapidly **growing**, and have significant **potential** to drive future economic **growth, innovation, and employment**.
- **Features:**
 - High rates of expansion
 - Technological advancement
 - Ability to attract substantial investments and talent
- **Importance of sunrise sector:** It helps in **scaling up manufacturing potential** of a country to absorb a **youthful workforce**, **reduce import dependencies** and build **competitive global supply chains**.

Sunrise sectors in India

- India aims to significantly boost its **manufacturing sector's contribution to GDP from 12% to 23% in the next two decades**, prioritizing job creation and economic expansion.
- **Recognition:** The Indian government has **identified 14 sunrise sectors** such as **semiconductors, renewable energy components, medical devices, pharmaceuticals, hydrogen mission, electrical vehicles and batteries, Agro and Food Processing (A&FP)** and so on in order to strengthen manufacturing.
- India has introduced the **production-linked incentive (PLI) scheme** to promote them.

- PLI is also offered to sectors that also have **greater employment potential** like electronic goods and similarly **labour intensive sectors** like textile and leather.

Akshvi Digital Wallet

News: India has launched a one-of-its-kind e-digital wallet for disasters —Akshvi which allows communities to self-report their losses in any disaster.

About Akshvi Digital Wallet



Source-UNFCCC

- Akshvi is an acronym for **Aapda Kshati Vivaran (Disaster Damages Description)**.
- It is a **community-driven platform**, created by **SEEDS** (Sustainable Environment and Ecological Development Society) India.
 - SEEDS aims to strengthen the resilience of **300 million climate risk-prone people in the country by 2030**.
- Using this platform, the affected communities **log their losses and assets** every time they are faced with an incident (flood, drought, heatwave, landslide, lightning, hailstorm etc.) – regularly over a period of time.
- **Pilot project:** It is presently piloted in **five districts of three states** (Uttar Pradesh, Assam, and West Bengal).
- **Working mechanism:**
 - Similar to digilocker, each household is given an **E-Disaster Wallet** for **self-report their economic and non-economic losses**.
 - There are **three ways** to report this – i) an **IVRS** (Interactive Voice Response System) helpline number, ii) a chatbot on **WhatsApp**, iii) assisted **filling of data** by a person.
- **Benefits:**
 - The family will have a **credible record** of all their losses.
 - Agencies will know **exactly** the losses and the needs of the people.
 - Government agencies will have **hyperlocal data** on loss and damages

Simla Agreement 1972

News– After the recent escalation with India following the Pahalgam incident, Pakistan put the Simla Agreement on hold.



About Simla Agreement 1972

- It is a *bilateral peace treaty* signed on July 2, 1972, between India and Pakistan, in the aftermath of the 1971 India-Pakistan War.
- The agreement was signed in Shimla, Himachal Pradesh, by *Prime Minister Indira Gandhi* and *Pakistan's President Zulfikar Ali Bhutto*.
- It came into force on August 4, 1972, after being ratified by both countries.

Background: The 1971 War

- The 1971 war resulted in India's decisive victory and the creation of Bangladesh.
- On December 16, 1971, over 93,000 Pakistani soldiers surrendered in Dhaka, making it the largest military surrender since World War II.
- A ceasefire was declared on both eastern and western fronts, and the war ended the following day.

Objectives of the agreement- The agreement aimed:

- To end hostilities and confrontation.
- To work towards friendly and harmonious relations.
- To establish durable peace in the subcontinent.

Key Provisions of the Simla Agreement

- **Peaceful bilateral resolution:** Both nations committed to resolving disputes through bilateral negotiations, *without involving third-party mediation* — a clause India has consistently emphasized, especially in opposing international interference in the Kashmir issue.
- **Line of Control (LoC):** The agreement converted the 1971 ceasefire line into the Line of Control (LoC), effectively *establishing a de facto border in Jammu and Kashmir*. It emphasized that neither side would seek to unilaterally alter this line, thereby reinforcing the status quo.
- **Return of territory:** India returned over 13,000 km² of territory captured during the war, demonstrating goodwill and commitment to peace. However, it *retained strategic zones such as Turtuk and Chalka in the Chhorbat Valley*.
- **Recognition of Bangladesh:** Though not immediate, the agreement laid the groundwork for Pakistan's eventual diplomatic recognition of Bangladesh.

National Zero Measles-Rubella Elimination Campaign 2025-26

News– Union Health Minister recently launched the National Zero Measles-Rubella Elimination Campaign 2025–26. The launch, held on the first day of World Immunization Week (April 24–30), marks a major step toward India's goal of *eliminating measles and rubella by 2026*.



About National Zero Measles-Rubella Elimination Campaign 2025-26

Aim: The campaign aims to achieve 100% immunisation coverage of children against Measles and Rubella, both of which are highly contagious viral infections that can lead to severe complications or even death in children.

Dosage schedule: *Two doses of the Measles-Rubella (MR) vaccine are administered under the Universal Immunisation Programme (UIP)—the first at 9–12 months and the second at 16–24 months of age.*

Target areas: The campaign prioritises inclusive and equitable coverage, with a special focus on remote and hard-to-reach areas, urban slums, migratory populations, and regions prone to frequent outbreaks.

Progress and Recognition:

- Between January and March 2025, 332 districts reported zero measles cases, while 487 districts recorded zero rubella cases.
- In 2024, India witnessed a 73% reduction in measles cases and a 17% decrease in rubella cases compared to the previous year.
- For its sustained efforts, India received the *Measles and Rubella Champion Award (2024)* from the Measles and Rubella Partnership.

Universal Immunisation Programme (UIP):

- *Launched in 1985*, the UIP is *entirely funded by the Government of India* and is the world's largest vaccination programme.
- It *provides protection against 12 vaccine-preventable diseases* such as Polio, Measles, Rubella, Diphtheria, Tetanus, Rotavirus, and Hepatitis B. The programme reaches millions of pregnant women and newborns annually, reducing under-five mortality rates.
- **Digital Support through U-WIN:** The U-WIN platform, launched by the Hon'ble Prime Minister, supports the vaccination drive by digitally recording immunisation events, generating certificates, and enabling appointment bookings.

SAARC Visa Exemption Scheme (SVES)

News- India has suspended the SAARC Visa Exemption Scheme (SVES) for Pakistani nationals in the aftermath of the Pahalgam terror attack, which resulted in the death of 26 individuals.



About SAARC Visa Exemption Scheme (SVES)

- **Genesis:**
 - The SAARC Visa Exemption Scheme (SVES) was *officially launched in 1992*, following its proposal at the Fourth SAARC Summit held in Islamabad in 1988.
 - It was envisioned as a step toward strengthening regional integration and cooperation among the eight SAARC member countries: India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Maldives, and Afghanistan.
- **Objective:** The primary aim of the SVES is to *facilitate regional mobility by promoting people-to-people contact* and enhancing diplomatic, cultural, and business exchanges through visa-free travel for certain categories of individuals.
- **Targeted Beneficiaries:** The scheme permits visa-free travel for *24 designated categories* such as: *Dignitaries, Judges, Members of Parliament, Senior government officials, Journalists, Businesspersons, Sports persons* etc.
- **Validity-** Special visa stickers are issued (by each SAARC member), typically *valid for one year*, allowing visa-free travel within SAARC countries.

Country-Specific Provisions – India:

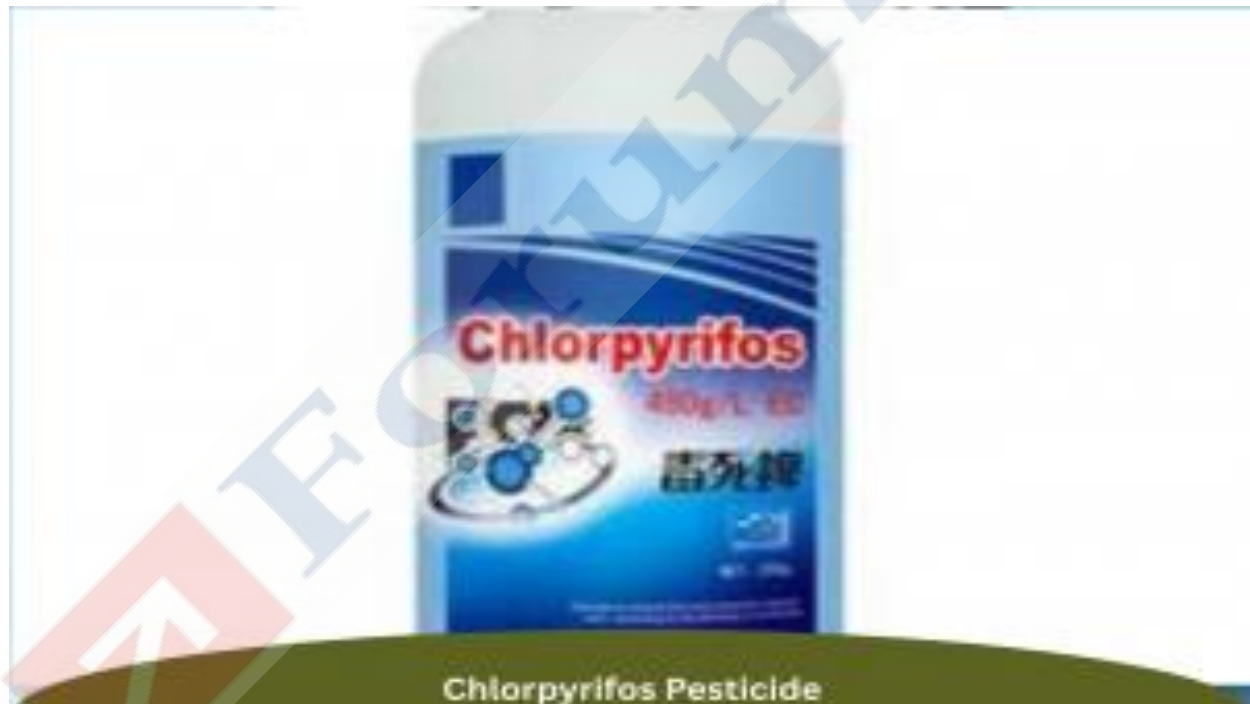
- **Nepal & Bhutan:** Citizens of both countries *do not require a visa* to enter India.
- **Pakistan:** Initially, Pakistani nationals were allowed one-year, multiple-entry business visas under restricted categories. In 2015, this was *revised to allow verified special-category businesspersons up to three-year* visa exemptions. Their movement remained restricted to designated cities (approximately 10–15).
- **Sri Lanka:** Sri Lankan nationals are also *eligible for India's e-Tourist visa*.
- **Indian Citizens:** Do not require visas to travel to Nepal and Bhutan.

Suspension Clause:

- **Discretionary nature:** Despite being a regional facilitation mechanism, the SVES is not a binding treaty. It is *based on mutual trust and bilateral goodwill*.
- **Right to deny entry:** Member states retain the sovereign authority to deny entry under SVES on national security or public order grounds.

Chlorpyrifos Pesticide

News: Indian civil societies have called for an immediate ban on chlorpyrifos in the upcoming **2025 Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions (BRS COP)**.



About Chlorpyrifos Pesticide

- It is an **organophosphate pesticide** widely used in India to **control a variety of insect pests** in agriculture.
- It is classified as '**moderately hazardous**' by the **World Health Organization** and continues to be used in India on a variety of crops.
- It is approved for use on 18 crops (**under Insecticides Act, 1968**) in India despite banned or restricted in over 40 countries.
- **Advocacy to ban:** India's **Pesticide Action Network (PAN)** is advocating for an immediate ban on chlorpyrifos under **Basel, Rotterdam and Stockholm Conventions**.

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About Basel Convention (1989)

- It is an **international treaty** that was designed to **reduce the movements of hazardous waste between nations** and specifically to **prevent transfer of hazardous waste from developed to less developed countries (LDCs)**.
- It does **not** address the movement of **radioactive waste**.

Rotterdam Convention (2004)

- Rotterdam Convention on **Prior Informed Consent Procedures (PIC)** entered into force in **2004**.
- It is an **international treaty** designed to facilitate **informed decision-making by countries with regard to trade in hazardous chemicals**.

Stockholm Convention (2004)

- It is a global treaty aimed at **protecting human health and the environment from persistent organic pollutants (POPs)**.
- The Convention entered into **force on May 17, 2004**, and has been ratified by **over 152 countries**.

Note– India ratified the Stockholm Convention and Rotterdam Convention in 2006. Both the conventions are legally binding.

Musk Deer

News: Recently, a report “Plant Breeding Programmes in Indian Zoos: Assessment and Strategic Actions (2024)”, released by the Central Zoo Authority (CZA) has revealed that no breeding programme has been started in Indian zoos for the conservation of musk deer, classified as ‘endangered’ by IUCN.



About Musk Deer

- It is a solitary shy animal which lives in mountainous regions from Siberia to the Himalayas.
- There are **mainly** two species of musk deer found in India-
 - i) Himalayan Musk Deer ii) Apline Musk Deer

Himalayan Musk Deer (*Moschus leucogaster*)

- It is a musk deer species occurring in the **Himalayas of Nepal, Bhutan, India, Pakistan and China**.
- In India, it inhabits parts of **Kashmir, Ladakh, Himachal Pradesh, the northern part of Uttar Pradesh, Sikkim and Arunachal Pradesh**.

- It is also known as **White-bellied Musk Deer**. It's commonly known as "**Kasturi mriga**" in Nepali and "**Lah**" in Tibetan language.
- It was previously **considered a subspecies of the Alpine musk deer**, but was **separated** on the basis of different skull proportions.
- It is **under threat** due to its **hunting** primarily for its **musk** which is used in manufacture of **perfume, medicine and cosmetics**.

Characteristics

- **Musk glands and teeth:** Males have **long, curved canine teeth** and a **musk gland**, which is located **in a sac** between the genitals and the umbilicus.
- **Behaviour:** During the day, it **hides** in dense cover and is shy and secretive. At **night, it emerges** to feed in more open habitats.
- It is **herbivores** and eats grasses, forbs, mosses, lichen, twigs, shoots, and plant leaves.
- Himalayan musk deer can live for **up to 10 to 14 years**.

Protected Areas and Projects

- **Kedarnath Wildlife Sanctuary:** Established in 1972, in the western Himalayas, is the site of a **captive breeding program**.
- **Askot Musk Deer Sanctuary:** Located in Uttarakhand, dedicated specifically to musk deer conservation.
- **Himalayan Musk Project** started in 1982- It was the the flagship conservation program, but its **success has been limited** by lack of **founder stock** to initiate a sustainable breeding programme.
 - 'Founder stock' means the **pair** from which breeding can be carried forward.

Conservation

- **IUCN Status:** Endangered
- **Wildlife Protection Act:** Schedule I

NOTE – Musk Deer is the state animal of Uttarakhand.

INS Surat

News: Indian Navy's guided missile destroyer INS Surat successfully test-fired a medium-range surface-to-air missile in the Arabian Sea.



About INS Surat

- It is the **fourth and final stealth destroyer ship** of the **Project 15B- Guided Missile Destroyer Project** and is popularly known as the **Visakhapatnam-class**.
 - It represents an **advanced iteration of the Kolkata-class destroyers** built under **Project 15A**.
- It has been **designed and constructed** indigenously by the **Warship Design Bureau** of Indian Navy and **Mazagon Dockyard** respectively.
- It was commissioned by the Prime Minister in **January 2025**.

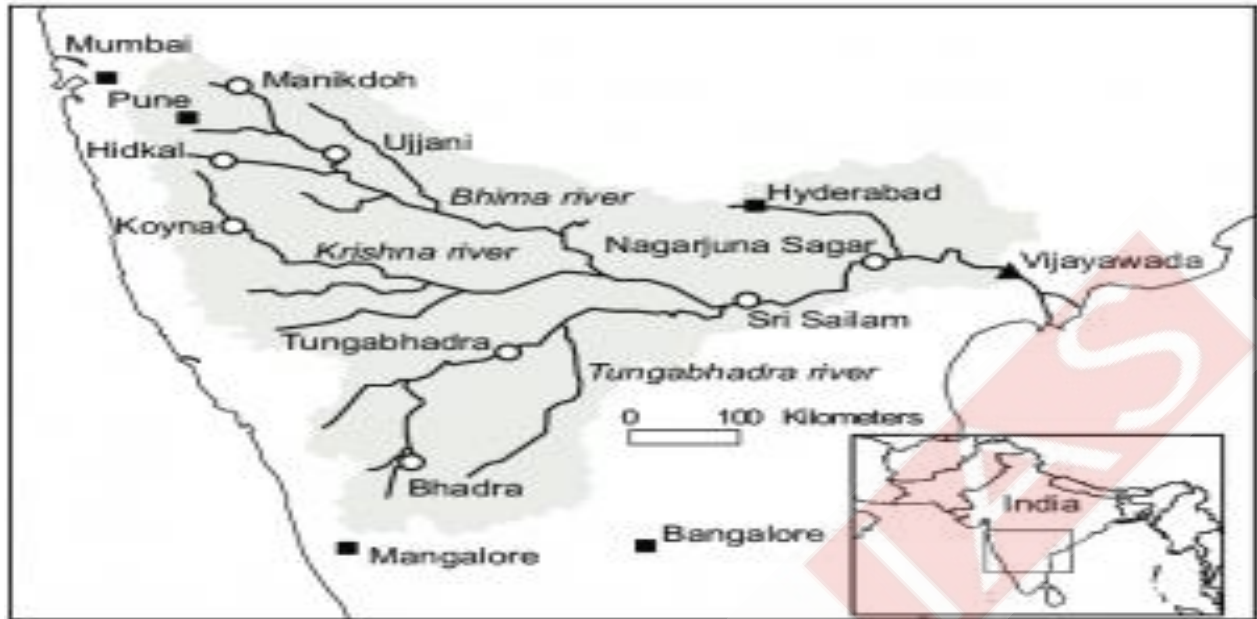
Features

- It ranks among the **largest and most sophisticated destroyers** in the world.
- **Weapons:** It is armed with supersonic **Surface-to-Surface 'Brahmos' missiles** and **'Barak-8' Medium Range Surface to Air Missiles**.
 - It is fitted with **indigenously developed anti-submarine weapons and sensors**, prominently the **Hull mounted Sonar Humsa NG**, Heavy weight **Torpedo Tube Launchers** and **ASW Rocket Launchers**.
- **AI-enabled:** It is Indian Navy's **first AI enabled warship** utilising indigenously developed AI solutions.
- It has a water displacement of **7,400 tons**.

Krishna river

News- Due to extreme heat, the Krishna River has dried up earlier than expected, significantly disrupting irrigation in Karnataka's Bagalkot, Vijayapura, and Yadgir districts.

About Krishna river



Source- ResearchGate

- **Origin:** The Krishna River originates near *Mahabaleshwar in the Western Ghats*, located in Satara district, Maharashtra.
- It is *India's third-longest river*, following the Ganges and Godavari.
- *In terms of water inflows and basin area*, it ranks as the *fourth-largest river in India*, after the Ganges, Indus, and Godavari.
- The Krishna River basin spans across the states of *Maharashtra, Karnataka, Telangana, and Andhra Pradesh*.
- **Left Bank tributaries** – Bhima, Dindi, Peddavagu, Musi, Palleru, Munneru.
- **Right Bank tributaries** – Kudali (Niranjna) Venna, Koyna, Panchganga, Dudhaganga, Ghataprabha, Malaprabha and *Tungabhadra (largest tributary)*.
- **Key projects**– The key projects on the Krishna River include Tungabhadra, Srisaillam, Nagarjuna Sagar, and Prakasam Barrage, all of which are crucial for irrigation and hydroelectric power generation.

Cabinet Committee on Security (CCS)

News- Following the Pahalgam terror attack that claimed 26 lives, the Cabinet Committee on Security (CCS) unveiled a set of unprecedented retaliatory actions targeting Pakistan.



About Cabinet Committee on Security (CCS)

- It is the apex decision-making body in the Government of India on matters related to the country's defence, national security, and law and order.
- It plays a critical role in formulating India's security and strategic framework.
- The committee is *chaired by the Prime Minister* and comprises key ministers holding strategic portfolios:
 - Minister of Defence
 - Minister of Home Affairs
 - Minister of Finance
 - Minister of External Affairs
- **Functions of the CCS**
 - It discusses different initiatives to take to enhance the national security of India.
 - It deals with all issues related to the law and order and national security of India.
 - *Discusses political developments with national security implications.*
 - Evaluates foreign policy decisions with a bearing on security.
 - Evaluating international agreements related to defence and security.

About Cabinet Committees

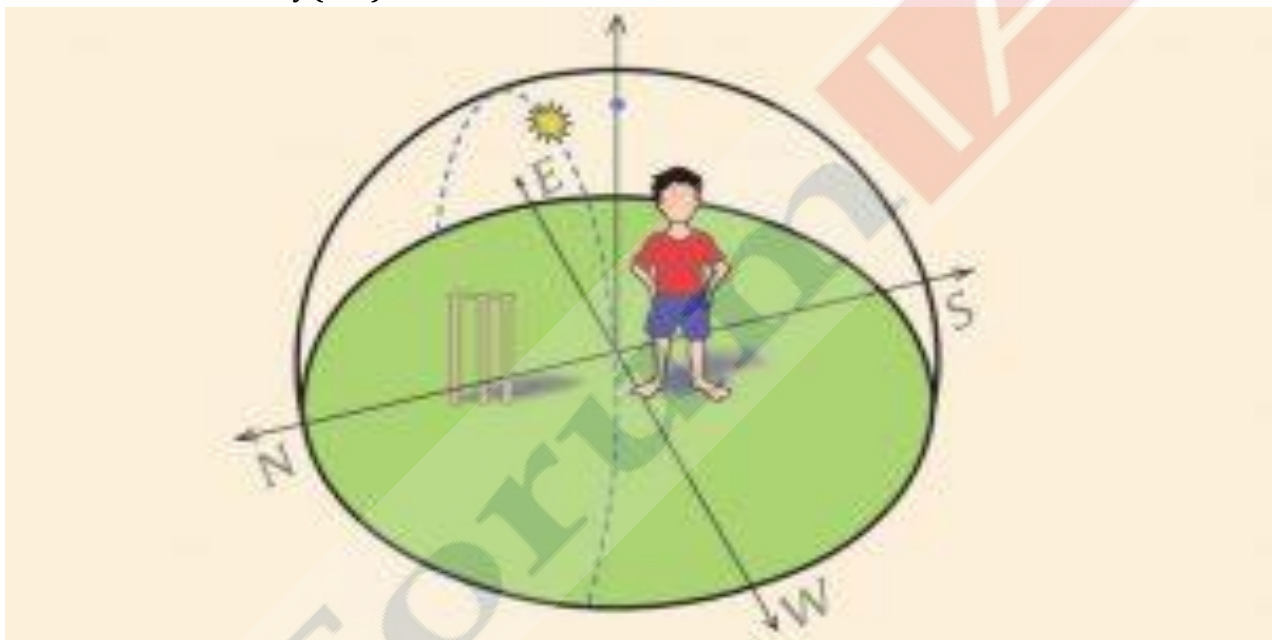
- Cabinet Committees are *extra-constitutional bodies*; i.e., they are not provided for in the Constitution of India.
- Their primary purpose is to *streamline governance* by reducing the workload of the Union Cabinet, allowing smaller groups of ministers to take decisions in specific domains.
- These committees are constituted or reconstituted by the by the *Prime Minister* based on emerging needs:
- List of Cabinet Committees (as of current structure)
 - Cabinet Committee on Security (CCS)
 - Cabinet Committee on Economic Affairs

- Cabinet Committee on Political Affairs
- Cabinet Committee on Investment and Growth
- Cabinet Committee on Parliamentary Affairs
- Cabinet Committee on Accommodation
- Cabinet Committee on Employment and Skill Development
- Appointments Committee of the Cabinet

Zero Shadow Day (ZSD)

News: The Cosmology Education and Research Training Center (COSMOS), Mysuru, of the Indian Institute of Astrophysics observed 'Zero Shadow Day' recently. **Zero Shadow Day (ZSD).**

About Zero Shadow Day (ZSD)



Source – Indian Express

- ZSD is a fascinating astronomical phenomenon that **occurs twice a year** in locations situated **between the Tropic of Cancer and the Tropic of Capricorn**.
- All places whose **latitude equals the angle between the Sun's location and the equator** on that day experience ZSD.
- This event is a **direct result of the Earth's axial tilt (23.5 degrees)** and **revolution around the Sun**.
- **Frequency of phenomenon:**
 - **First time** when the Sun is **directly overhead the Tropic of Cancer** on 21 June (summer solstice in the northern hemisphere) and then journeys southwards as seen from the Earth, called **Dakshinayana**.
 - **Second time** when the Sun is **overhead the Tropic of Capricorn** on 22 December. It is then seen to journey northwards, called **Uttarayana**.
 - Hence, the **Sun is directly overhead locations between the two tropics twice a year**, and this day varies with latitude.
 - When the **Sun is directly overhead**, the shadow of a vertical object falls under it, and hence **no shadow** will be seen at local noon.

- Although the exact moment of Zero Shadow occurs instantaneously, the effect can be observed for a **short duration**, typically lasting for about a minute to a minute-and-a-half.

United Nations Ocean Conference (UNOC3)-2025

News: The 2025 UN Ocean Conference, co-hosted by the Governments of France and Costa Rica, will take place from 9 to 13 June 2025 in Nice, France. **United Nations Ocean Conference (UNOC3)-2025.**



About United Nations Ocean Conference (UNOC3)-2025

- **Host:** It will be co-hosted by **France and Costa Rica** and held in **Nice, France**.
- **Theme:** “**Accelerating action and mobilizing all actors to conserve and sustainably use the ocean**”
- **Aim:** The Conference **aims to support further and urgent action to conserve and sustainably use the oceans, seas and marine resources** for sustainable development and identify further ways and means to support the **implementation of SDG 14 (Life Below Water)**.
- The Conference has **three priorities** in order to produce an ambitious draft agreement:
 - **Governance:** Working towards **completion of multilateral processes** linked to the oceans, to boost ambition for their protection, e.g. implementation of ‘**Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ Agreement)**’;
 - **Financing:** Mobilizing **sources of finance** to conserve and sustainably use the oceans, seas and marine resources for sustainable development (SDG 14) and support the development of a sustainable **blue economy**;
 - **Knowledge sharing:** Strengthening and better **disseminating knowledge linked to marine science** to enhance policy-making.
- **Expected outcome:** The “**Nice Ocean Agreements**” can form an **international pact** for the conservation and sustainable use of the ocean.

- The Conference will build on the **previous UN Ocean Conferences**, hosted by **Sweden and Fiji in 2017 in New York** and by **Portugal and Kenya in 2022 in Lisbon**.

About Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ Agreement)

- It is also known as the '**High Seas Treaty**'.
- It is an **international treaty** under the **United Nations Convention on the Law of the Sea (UNCLOS)**.
- **Aim:** It aims to address the growing concerns over the **long-term protection of marine biodiversity in the high seas**.
- It sets precise **mechanisms for the sustainable use of marine biological diversity** through international **cooperation and coordination**.
 - The **Parties cannot claim or exercise sovereign rights** over marine resources derived from the high seas and ensure fair and equitable sharing of benefits.
- **India has recently signed the Agreement** to be implemented through the **Ministry of Earth Sciences**.

Key Facts about Crimea

News- Recently, U.S. President Donald Trump suggested formally recognizing Crimea as part of Russia, potentially overturning America's long-standing stance against the annexation. **Crimea**.

About Crimea



Source- The Indian Express

- **Location**– Crimea is an autonomous republic located in southern Ukraine.

- **Maritime Borders**– It is bordered by the *Black Sea to the west and south* and the *Sea of Azov to the northeast*.
- **Other connections:**
 - It is connected to mainland Ukraine by the narrow *Perekop Isthmus* (8 km wide) and separated from the Sea of Azov by the *Arabat Spit*.
 - The *Kerch Strait* links Crimea to Russia, now connected via the strategically significant Crimean Bridge.

Historical Significance: Historically known as the Tauric Peninsula, Crimea has been a contested territory, witnessing the influence and rule of various empires, including the Greeks, Romans, Byzantines, Ottomans, and Russians. Its location has historically made it a prized geopolitical asset in the Black Sea region.

Topography and Natural Resources:

- The southern coastline is dominated by the Crimean Mountains, with *Ai-Petri* as a prominent peak.
- Rivers like the *Salhir and Alma* traverse the interior regions.
- The Kerch Peninsula in eastern Crimea is rich in *iron ore, mud volcanoes, and mineral springs, promoting mining and spa industries*.

Administrative and Strategic Centres:

- **Simferopol** is the administrative capital of Crimea.
- **Sevastopol**, a deep-water port, holds strategic military significance as the headquarters of Russia's Black Sea Fleet.

Mahuadanr Wolf Sanctuary

News- The Mahuadanr Wolf Sanctuary holds the distinction of being India's first and only wolf sanctuary dedicated to conserving the Indian grey wolf. Mahuadanr Wolf Sanctuary.

About Mahuadanr Wolf Sanctuary

- **Location**– It is located in the *Latehar district of Jharkhand*.
- It was declared a sanctuary in 1976.
- **Significance**– It is *India's first and only wolf sanctuary, dedicated to the conservation of the Indian grey wolf (Canis lupus pallipes)*.
- **Association**– The Sanctuary is an integral part of *Palamau Tiger Reserve*.
- **Wildlife**– The sanctuary is home to many species of wild animals including spotted *deer, wild boar, hyena, bear and wolf*.

About Indian grey wolf (*Canis lupus pallipes*)

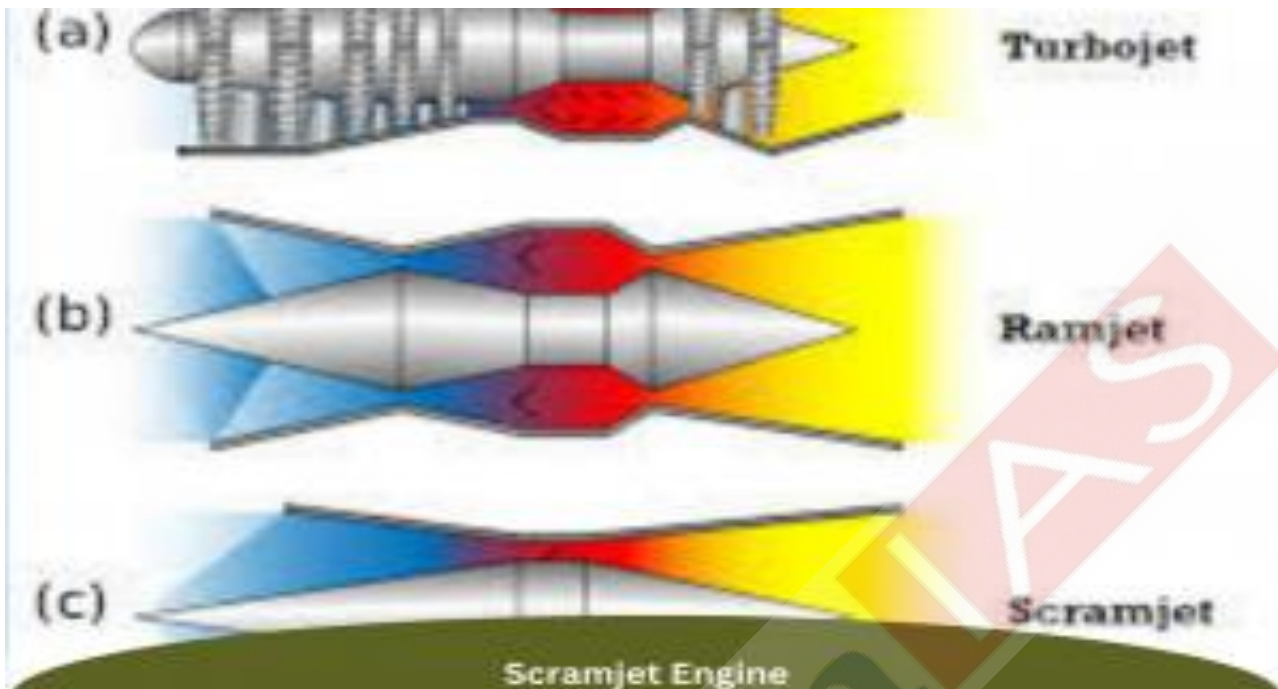


Source- Outlook traveller

- It is a *subspecies of the grey wolf*, found across Southwest Asia and the Indian subcontinent.
- **Distinct features:**
 - It lives in smaller packs and is *less vocal compared to other wolf subspecies*.
 - It is *primarily nocturnal*, hunting from dusk to dawn.
- **Habitat**– It is well-adapted to warmer climates and typically inhabits scrublands, grasslands, and semi arid agroecosystems.
- **Conservation Status:**
 - **IUCN Red List:** Classified as *Endangered*, with the Indian population estimated between 2,000 and 3,000 individuals.
 - **CITES:** Appendix I
 - **Wildlife (Protection) Act, 1972:** Schedule I

Scramjet Engine

News– The Defence Research and Development Laboratory (DRDL), a unit of DRDO, recently achieved a successful ground test of a Scramjet Engine, operating for more than 1,000 seconds in Hyderabad. **Scramjet Engine.**



About Scramjet Engine

- A Scramjet engine (Supersonic Combustion Ramjet) is an **improved version of the Ramjet**, designed to operate at extremely high speeds.
 - A **ramjet is an air-breathing jet engine** that relies on the **vehicle's forward motion** to compress incoming air for combustion, eliminating the need for a rotating compressor. It operates efficiently at supersonic speeds, typically between Mach 3 and Mach 6.
- Scramjet works by using supersonic airflow to generate thrust and functions at hypersonic speeds (**Mach 5+**).
- **Key features:**
 - **Air-Breathing Engine:** Unlike traditional rocket engines, Scramjets use atmospheric oxygen for combustion, eliminating the need to carry heavy oxygen tanks.
 - **No Moving Parts:** Scramjets rely on supersonic airflow, making them highly efficient for sustained high-speed travel.
- **Significance:**
 - Next-generation hypersonic missiles with unmatched speed and accuracy.
 - Faster air travel, potentially reducing flight times drastically.
 - Low-cost satellite launches, making space access more affordable.

Hypersonic Missiles

- . These missiles can fly at speeds of at least Mach 5 (five times the speed of sound).
- . A key feature of hypersonic missiles is their *Mid-Flight maneuverability*, unlike ballistic missiles that follow a fixed path.
- . **There are two types of hypersonic weapons:**

- . **Hypersonic Glide Vehicles (HGVs):** Launched by a rocket and then glide to the target.
- . **Hypersonic Cruise Missiles (HCMs):** Powered by air-breathing engines or “scramjets” after locking onto the target.

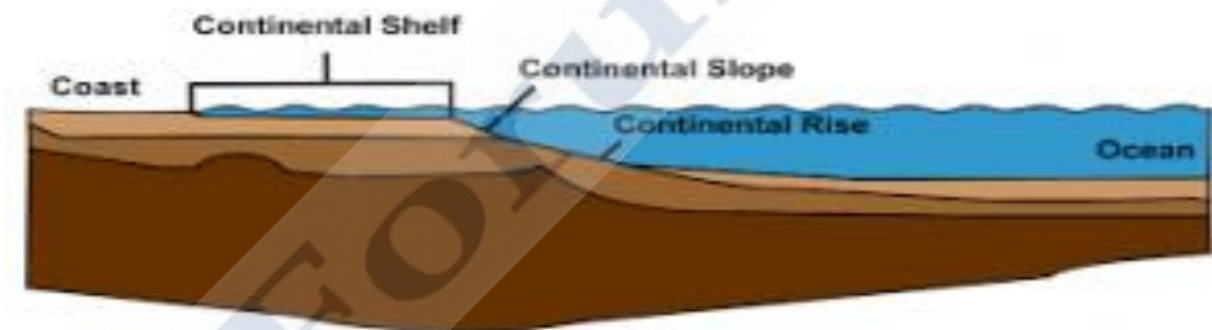
Continental Shelf

News: India raises continental-shelf claim in Arabian Sea region by nearly 10,000 square km.

About Continental Shelf

The ocean floors can be divided into **four major divisions**: (i) **Continental Shelf**; (ii) **Continental Slope**; (iii) **Deep Sea Plain**; (iv) **Oceanic Deeps**. Besides, these divisions there are also major and minor relief features in the ocean floors like **ridges, hills, sea mounts, guyots, trenches, canyons**, etc.

Continental Shelf



Source – Wikipedia

- It is the **extended margin of each continent** occupied by relatively **shallow seas and gulfs**.
- It is the **shallowest** part of the ocean showing an average **gradient of 1° or even less**.
- **Shelf break:** The shelf typically ends at a very steep slope, called the **shelf break**.
- **Continental slope:** From the break, the shelf descends toward the deep ocean floor in what is called the continental slope.
- **Width:** The **width** of the continental shelves **varies from one ocean to another**. The average width of continental shelves is about 80 km.
 - **Narrow shelves:** The shelves are **almost absent or very narrow** along some of the margins like the coasts of Chile, the west coast of Sumatra, etc.
 - **Wide shelves:** On the contrary, the Siberian shelf in the Arctic Ocean, the largest in the world stretches to 1,500 km in width.

- **Depth:** The depth of the shelves also varies. It may be as shallow as 30 m in some areas while in some areas it is as deep as 600 m.
- **Sediment deposition:** They are covered with variable **thicknesses of sediments brought down by rivers, glaciers, wind**, from the land and distributed by waves and currents, becoming the **source of fossil fuels**.

Legal aspects

- **UNCLOS definition:** Under the **United Nations Convention on the Law of the Sea (UNCLOS)**, the continental shelf is the **seabed and subsoil extending up to 200 nautical miles from a coastal state's baseline** or further if the natural margin extends beyond this limit.
- **Sovereign rights:** Coastal nations have **exclusive rights to explore and exploit resources** on the continental shelf.
- **Extended Continental Shelf (ECS):** Countries can **claim beyond 200 nautical miles** if they can prove the natural prolongation of their landmass, as India has done in the Arabian Sea and Bay of Bengal.

African Hyena

News: The four extant species of hyena or hyaenids found on the African continent are facing increasing threats, leading to population declines, according to conservation organisation, Wild Africa.

About African Hyena

- They belong to the **Hyaenidae family of Hyaena genus**.
- They are **hunters** and catch their prey **using their teeth instead of claws**.



Source – Wikipedia

here are **four** distinct species of hyena found in **African continent** –

- i. Spotted hyena (*Crocutta crocutta*)
- ii. Striped hyena (*Hyaena hyaena*), also found in **the Middle East and Asia**
- iii. Brown hyena (*Parahyaena brunnea*)
- iv. Aardwolf (*Proteles cristatus*)

About Spotted hyena

- It is the most widespread of the four species, found throughout **sub-Saharan Africa**.
- It is also known as the '**laughing hyena**'.
- It is among the continent's most skilled predators.
- It can hunt up to 90 per cent of their food using **strategy, teamwork and endurance**.
- **IUCN Status: 'Least Concern'** but population is declining, with fewer than 50,000 estimated left across the African continent.

About Striped hyenas

- It is found in **North and East Africa**.
- It is primarily **nocturnal** and **solitary**.
- It is **omnivores** and feed on small animals, fruits and vegetables.
- They are also the **biggest carcass-scavengers** of the family.
- It uses "**natural lavatories**" to communicate via scent—sharing information about their territory, reproductive status, and group presence.

- **IUCN Status: 'Nearly Threatened'** with less than 10,000 mature individuals left in the wild.

About Brown hyena

- It is found mainly in **southern Africa's arid deserts and savannas**.
- It is predominantly a **scavenger**, but also **supplements its diet** with fruits and vegetables, insects, bird eggs, and occasionally small animal prey.
- It lives in **small clans**, typically consisting of related females and their cubs, while **males** may remain in their **natal clan**, become nomadic, or join new groups.
- One fascinating adaptation is its **incredibly powerful sense of smell**, used to locate carcasses over long distances.
- **IUCN Status: 'Near Threatened'**, population with just over 10,000 left in Africa.

About Aardwolf

- It is the **smallest and most specialized**
- It is **not wolves** or related to them. It simply shares the name due to **similar size and shape**.
- It feeds almost **exclusively on termites**.
- They are socially **monogamous**, and typically live **alone or in pairs**.
- **Threat:** As they feed mostly on insects, one of the biggest threats to aardwolves is **pesticide use**, aimed at controlling locusts and termites.
- **IUCN Status: 'Least Concern'**, indicating they are not threatened, but their exact numbers are unknown due to their shy nature.

'Revive Our Ocean' Initiative

News: A new global initiative called 'Revive Our Ocean' was launched on April 24, 2025, with a goal to scale up effective, community-led marine protected areas (MPAs) through local action. **'Revive Our Ocean' Initiative.**



About 'Revive Our Ocean' Initiative

- It aims to help communities **profit from efforts to protect at least 30% of the world's oceans** by the end of 2030. It will **assist local communities** in their efforts to establish "marine protected areas" in coastal waters.
- One of the biggest goals of the initiative is to **end destructive fishing practices**, especially bottom trawling.
- **Launched by:** NGO Dynamic Planet together with the National Geographic Society's Pristine Sea programme.
- **Financing:** The initiative also plans to **launch a microfinance program** to help communities get **loans and grants** for starting or expanding their own protected areas.
- **Focus countries:** It will focus initially on tackling overfishing and ocean climate impacts in **Britain, Portugal, Greece, Turkey, Mexico, the Philippines and Indonesia**.
- **Part of 30By30 Target:** The 30By30 target of the **Kunming-Montreal Global Biodiversity Framework (KMGBF)** aims to **protect 30 per cent of the oceans by 2030**.
 - As per Protected Planet Report, 2024, though more than 16,000 MPAs have been established globally, amounting 8 per cent of the world's oceans, **only three per cent are currently under full protection**.

About Kunming-Montreal Global Biodiversity Framework (KMGBF)

- It is a landmark international agreement adopted in December 2022 at the **COP15** to the **UN Convention on Biological Diversity (CBD)**.
- It is widely regarded as the "**Paris Agreement for Nature**," setting an ambitious **global roadmap to halt and reverse biodiversity loss and ensure humanity lives in harmony with nature by 2050**.
- **One of the notable Targets of Framework includes – 30×30 Target:** Conserve and effectively manage at least 30% of the world's land, inland waters, and oceans by 2030.

Padma Awards 2025

News- Recently, the Padma Awards 2025 were conferred at a ceremonial function at Rashtrapati Bhavan. The awards are given in three categories: Padma Vibhushan, Padma Bhushan, and Padma Shri. **Padma Awards 2025**



About Padma awards

Aspects

Detail

History

-) The Government of India instituted two civilian awards-Bharat Ratna & Padma Vibhushan in 1954.
-) Padma Vibhushan had three classes namely Pahela Varg, Dusra Varg and Tisra Varg.
-) These were subsequently renamed as Padma Vibhushan, Padma Bhushan and Padma Shri vide Presidential Notification issued on January 8, 1955.

Factly Compilation April 2025

About	<ul style="list-style-type: none">) The Padma Awards are one of the highest civilian honours of India.) They are announced annually on the eve of Republic Day.) These Awards are conferred by the President of India at ceremonial functions which are held at Rashtrapati Bhawan usually around March / April every year.
Ministry	The awards come under the aegis of the Ministry of Home Affairs .
Objective	To acknowledge achievements in all fields of activities or discipline where element of public service is involved.
Categories	<p>The Awards are given in three categories:</p> <ul style="list-style-type: none">) Padma Vibhushan (for exceptional and distinguished service),) Padma Bhushan (distinguished service of higher-order) and) Padma Shri (distinguished service). <p>Padma Vibhushan is highest in the hierarchy of Padma Awards followed by Padma Bhushan and Padma Shri.</p>
Discipline	The Awards are given in various disciplines/ fields of activities, viz.- art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, music etc.
Eligibility	All persons without distinction of race, occupation, position or sex are eligible for these Awards.

election process

-) All nominations received for the Padma Awards are placed before the **Padma Awards Committee** constituted by the **Prime Minister** every year.
-) The Padma Awards Committee is headed by the **Cabinet Secretary** and includes the Home Secretary, the Secretary to the President, and four to six eminent persons as members.
-) The recommendations of the committee are submitted to the **Prime Minister and the President of India for approval.**

some important facts

-) The total number of awards to be given in a year (excluding posthumous awards and awards to NRI/foreigners/OCIs) should not be more than 120.
-) The award does not amount to title and cannot be used as a suffix or prefix to the awardees' name.
-) These were discontinued in 1978 and 1979 and from 1993 to 1997.

River Cities Alliance(RCA)

News- The National Mission for Clean Ganga (NMCG) has approved an annual master plan for the River Cities Alliance (RCA) to advance and expand sustainable urban river rejuvenation efforts. **River Cities Alliance(RCA)**



About River Cities Alliance(RCA)

- **Launched in:** 2021
- **Objective:** It is a platform designed to enhance institutional capacity, encourage inter-city collaboration and facilitate the formulation of Urban River Management Plans (URMPs).
 - The URMP Framework, launched in 2020 by National Institute of Urban Affairs (NIUA) and NMCG, guides cities in managing rivers through an integrated approach that includes environmental, social, and economic aspects.
- **Implementation:** It is being implemented by a partnership of the Ministry of Jal Shakti and the Ministry of Housing and Urban Affairs
- **Members cities–** As of 2025, a total of 145 cities have joined the alliance. Any river city can join the Alliance at any time.
- **Core activities of the RCA include:**
 - Promoting river-sensitive planning in urban areas,
 - Enabling peer-to-peer learning among cities,
 - Conducting capacity-building and training programs for Urban Local Bodies (ULBs).

About National Mission for Clean Ganga (NMCG)

- It was *registered as a society* on 12th August 2011 under the *Societies Registration Act 1860*.
- It acted as the implementation arm of the *National Ganga River Basin Authority(NGRBA)* which was constituted under the provisions of the *Environment (Protection) Act (EPA),1986*.
 - NGRBA replaced by National Ganga Council (chaired by Prime Minister) in 2016
- The aim of the mission is *cleaning and conserving the Ganga River*.

- It is the key agency responsible for implementing the *Namami Gange Programme*, which was launched in 2014 to coordinate efforts for restoring the health of the Ganga.

Ancient Muziris Port

News- Historian MGS Narayanan, a pivotal figure behind the Muziris Heritage Project (MHP), was remembered in the Kerala State Assembly. **Ancient Muziris Port.**



About Ancient Muziris Port

Location: It was located on the *Malabar Coast* in present-day Kerala.

Historical Period: It was active from around the 1st century BCE to the early medieval period.

Historical references: It was also mentioned in the writings of *Pliny the Elder* and in the *Periplus of the Erythraea*.

Trade significance: It served as a major international trading port in the Indian Ocean network. It connected South India with Persia, the Middle East, North Africa, and the Mediterranean [notably Greek and Roman civilizations].

Major exports: It was renowned for its spice trade, especially black pepper, often called black gold. Other items of export included semi-precious stones, ivory, pearls, etc.

Golconda Blue

News: The **Golconda Blue diamond** – “among the rarest and most important...ever discovered throughout history”, has been expected to fetch \$35 million to \$50 million at **an auction** in Geneva on May 14.

About Golconda Blue



Source – India Today

- It is a **legendary 23.24-carat fancy vivid blue diamond**, renowned for its exceptional clarity, rich blue hue, and royal provenance.
- **Origin:** The diamond traces its origin to the **famed Golconda mines** in present-day **Telangana**, India, which historically produced some of the world's most celebrated diamonds, including the **Koh-i-Noor**, the pale pink **Darya-i-Nur** and **Hope Diamond**.
- It is considered **one of the rarest and most valuable diamonds** in the world, with an estimated value between \$35 million and \$50 million.

Historical Background

- It belonged to **Yeshwant Rao Holkar (1908-62)**, the **Maharaja of Indore**, who, along with his wife **Sanyogitabai Devi**, often collected paintings, jewellery, and other fine goods in Europe.
- Later, it was commissioned into exquisite jewelry by leading Parisian jewelers, including Chaumet and Mauboussin, and **worn by Maharani Sanyogita Devi of Indore** in a famous portrait.

Historical Accounts of Golconda Diamonds

- The French merchant **Jean-Baptiste Tavernier (1605-89)** wrote that **diamond mining in the Golconda district** grew at an explosive rate in the **mid-17th century**. At the Kollur mine, 60,000 digger and washers were employed.
- The **French traveller Jean de Thévenot (1633-77)** noted there was **no uniformity in diamond price** and the **king** established a **monopoly in mining**.
- The **French Catholic physician Gabriel Dellon**, who traveled to India in the late **1660s**, noted that **th Surat** is a place of great commerce; **diamonds are brought** there out of the Kingdom of Golconda.

Rajamannar Committee on Centre-State Relations

ews: Tamil Nadu Government has formed a three-member high-level committee to review Centre-State relations, echoing Rajamannar committee of past. **Rajamannar Committee on Centre-State Relations.**



About Rajamannar Committee on Centre-State Relations

- It was formed by **Tamil Nadu government in 1969** and it gave its Report in **1971**.
- It was the **first state-level initiative** to review **Centre-State relations**.
- **Members:** It was **headed** by **V. Rajamannar** (former Chief Justice of the Madras High Court) and **Lakshmanaswami Mudaliar** and **P. Chandra Reddy** were the members.

Recommendations

- It **criticised the growing centralisation of power** that undermined state autonomy.
- **Augmenting financial resources of States:**
 - The committee recommended that the **base of devolution of revenue to the States be widened**.

- It suggested that a **number of subjects** —stock exchanges, futures markets, and regulation and development of oil fields — be transferred **from the Union/Concurrent List to the State List**
- The committee criticised the **Planning Commission**, created by an executive order of the Centre and sole decider of grants to be given to States.
- **Repeal Article 356:** The committee recommended that Article 356—the provision that allows the Centre to impose President's Rule in a state—be repealed entirely.
- **Dispute resolution mechanism:** It recommended that a strong **Inter-State Council** be set up under **Article 263** to resolve differences in a spirit of dialogue.
- **Re-distribution of items in Lists:** The committee suggested the formation of a committee for **redistribution** of entries in the Union and Concurrent Lists of the Constitution.
 - Among the subjects identified by the committee for the transfer were trade unions, industries and labour disputes, shipping and navigation on inland waterways, factories, electricity, newspapers, and books and printing processes.
- **Abolition of All-India Services:** The committee recommended the abolition of All-India Services (IAS, IPS, and IFS) to reduce the Central Government's control over State administration.

Rafale-Marine Fighter Jet

News: India and France has inked an Inter-Governmental Agreement (IGA) for the procurement of **26 Rafale** aircraft – 22 single-seater and four twin-seater – for the Indian Navy.

About Rafale-Marine Fighter Jet

- It is a **single-seat, carrier-borne, 4+ generation** aircraft capable of performing a wide range of missions including deep strikes, air defence, and reconnaissance.
- **Manufactured by:** France's Dassault Aviation
- It is also described as an "**omnirole aircraft**", meaning that it can conduct **both air-to-air and air-to-ground missions**
- It is designed to **operate from aircraft carriers** and will be deployed on aircraft carriers **INS Vikram and INS Vikramaditya**, replacing the ageing MiG-29K fleet.
 - This is possible because of various **modifications**, including a reinforced **undercarriage**, strengthened **landing gears**, **folding wings** and a longer and strengthened nose.
- **Weaponry:** It will be loaded with the **Meteor and MICA** air-to-air missiles, **SCALP** cruise missiles, **Exocet** anti-ship missiles and **ASTRA Mk1** air-to-air **Beyond Visual Range Missile**.
- A great advantage that accrues with the induction of the 26 Rafale Ms for the Indian Navy is the **commonality with the IAF Rafales** which provides the desirable scope for **interoperability and joint training**.

Rafale M vs Rafale: How are they different

Feature	Rafale M	Rafale
Airframe	Strengthened for carrier landings	Standard airframe
Wing	Foldable	Non-foldable
Tailhook	Yes	No
Radar	Maritime-optimized	Standard radar
Weapons	Wider range of weapons, including anti-ship missiles	Standard range of weapons
Mission	Carrier operations	Air superiority, ground attack, air-to-air refueling

TOI

Source – Times of India

About the deal

- Indian Navy will become the **first international user of Rafale-M**.
- **Composition:** The deal for **26 Rafale-M fighter jets** includes **four trainer aircraft (twin-seater)**.
- The agreement includes **Transfer of Technology for integration of indigenous weapons** in India.
- It also includes **setting up of a production facility** for Rafale **fuselage** as well as **Maintenance, Repair and Overhaul facilities** for aircraft engine, sensors and weapons in India.
- **Delivery time:** It would begin between the **next three to four years** and is likely to be **completed by 2030**.

RNA-Based Antiviral to Combat Cucumber Mosaic Virus (CMV)

News– A team of scientists from Germany has developed an innovative RNA-based antiviral agent using RNA interference that offers protection against the Cucumber Mosaic Virus (CMV)- one of the most damaging plant viruses globally.



Source- The Hindu

About Cucumber Mosaic Virus (CMV)

- **Type:** Plant virus affecting over 1,200 plant species.
- **Affected Crops:** Cucumbers, melons, cereals, bananas, pumpkins, etc.
- **Transmission:** Spread by aphids, making outbreaks difficult to control.
- **Symptoms:** Mosaic discoloration, stunted growth, and poor fruit development.
- **Impact in India:**
 - It causes 25–30% yield loss in crops like banana.
 - It leads to direct economic losses and increased pest management costs.

About RNA silencing

Definition: A gene regulation mechanism where small RNA molecules (like siRNA or miRNA) bind to messenger RNA (mRNA) to:

- Destroy mRNA, or
- Block it from being translated into protein.

Working of Plant's RNA-Based Defense Mechanism

- When a virus infects a plant, it introduces *double-stranded RNA (dsRNA)*, which is recognized by the plant as a danger signal.
- In response, the plant activates specific enzymes called *Dicer-like enzymes (DCLs)*. These enzymes cut the viral dsRNA into smaller fragments known as *small interfering RNAs (siRNAs)*.
- The siRNAs act as guides, directing the plant's immune system to identify and destroy the viral RNA, thereby preventing the virus from replicating.

- However, not all siRNAs are equally effective, and viruses often mutate rapidly, allowing them to evade the plant's natural defenses.

NA-based crop protection techniques against Cucumber Mosaic Virus (CMV)

- **Host-induced gene silencing (HIGS)**- It works by *genetically modifying plants to produce virus-targeting double-stranded RNA (dsRNA) within their own cells*. This offers continuous protection throughout the plant's lifecycle.
 - **Cons**- Its widespread use is limited due to regulatory challenges, high production costs, and the risk of viruses developing resistance.
- **Spray-induced gene silencing (SIGS)**- In this method, *plants are treated with RNA sprays instead of being genetically modified*. The leaves absorb the dsRNA, which then triggers the plant's natural immune response without altering its DNA.
 - **Cons**- Although SIGS is cost-effective, environmentally friendly, and does not require genetic modification, its effectiveness is short-term and may be influenced by environmental factors such as sunlight, rain, and soil microbes.

Kuldiha Wildlife Sanctuary

News- A poacher was arrested recently after an exchange of fire with forest guards at Kuldiha Wildlife Sanctuary in Balasore district. **Kuldiha Wildlife Sanctuary.**



About Kuldiha Wildlife Sanctuary

- **Location:** It is located in the *Balasore district of Odisha*, within the Eastern Ghats.
- **Area:** It spans an area of 272 sq.km. and falls under the *Chota Nagpur Plateau region*.
- **Conservation significance:** It forms a part of the *Simlipal-Kuldiha-Hadgarh Elephant Reserve*, serving as an important corridor for elephant movement and conservation.
- **Ecological connectivity:** The sanctuary is ecologically linked to the *Simlipal Tiger Reserve* through the *Nato and Sukhupada hill ranges*.
- **Water systems:** The sanctuary is drained by the *Kuldiha stream and its tributaries*, which play a crucial role in maintaining the region's hydrological and ecological balance.
- **Vegetation:** The forest type is a mix of *Peninsular Sal forests and moist mixed deciduous forests*. It is bordered by the Nilgiri forest to the north and the Mayurbhanj forest to the west, forming a contiguous forest ecosystem.
- **Flora:** Prominent tree species include *Sal (Shorea robusta)*, *Jamun (Syzygium cumini)*, *Piyas (Pterocarpus marsupium)*, *Bahera (Terminalia bellirica)*, *Mango (Mangifera indica)*, and *Simul (Bombax ceiba)*.
- **Fauna:** The sanctuary is home to a variety of wildlife, including elephants, wild cats, leopards, *gaurs*, *long tailed monkeys*, and *giant squirrels*. Notable bird species found here include *peafowl*, *hill mynas*, and *hornbills*.