



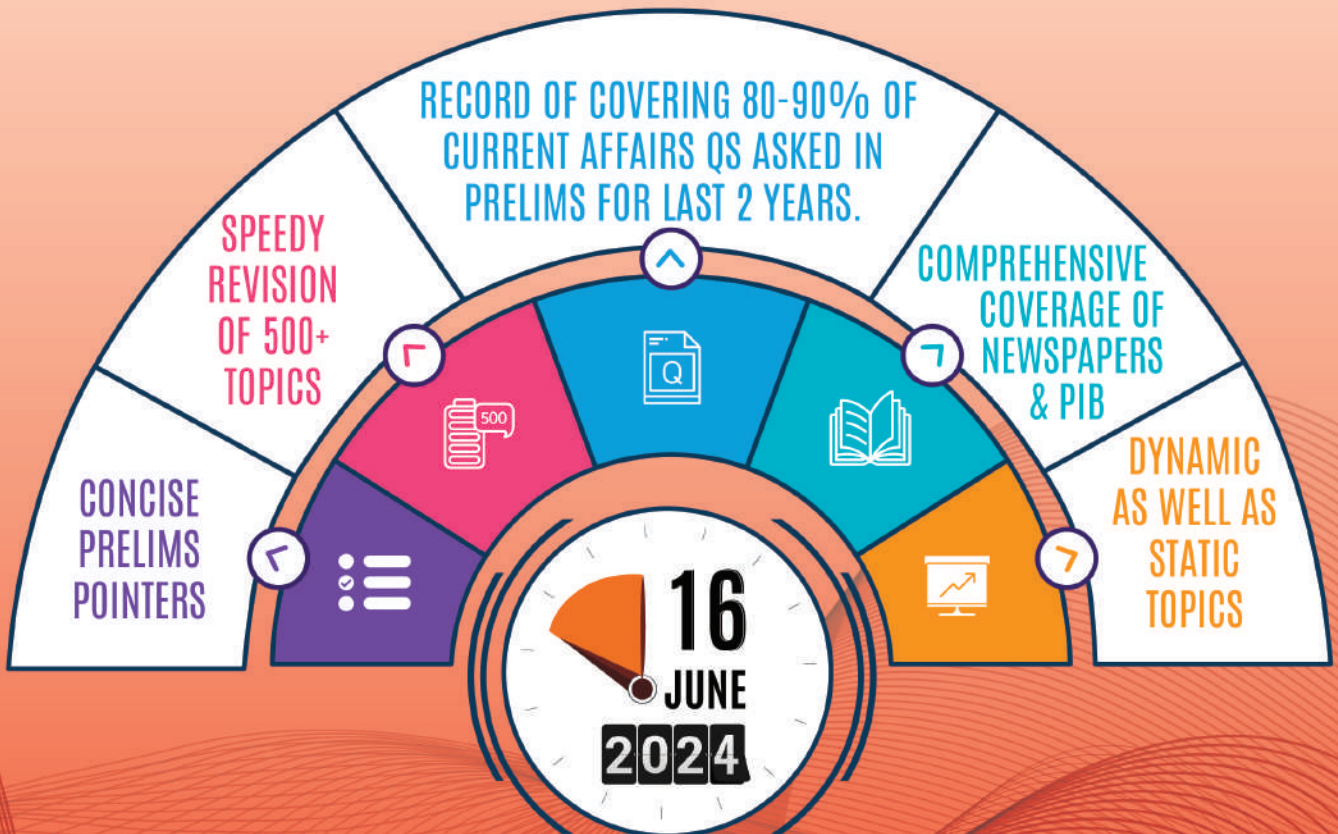
VAJIRAM & RAVI
Institute for IAS Examination

Prelims Quick Revision

2024

Part 2

Jan-Apr 2024



PRELIMS QUICK REVISION

Part 2

Jan – Apr 2024

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MAJOR CANALS OF WORLD

ART AND CULTURE

IMPORTANT PERSONALITIES AND AWARDS IN NEWS

Karpoori Thakur

- The Centre has announced that it would award the **Bharat Ratna posthumously** to Karpoori Thakur, former chief minister of Bihar. This is also the **birth centenary year of Thakur**.
- **Thakur** was born in village **Pitaunjhia (now known as Karpoori Gram)**, in the **Samastipur** district of Bihar, on **January 24, 1924**, into the **Nai Samaj (barber society)**.
- **Thakur** was a freedom fighter and was jailed during the **Quit India movement** in **1942**.
- Known as **Jannayak**, or People's Leader, he is seen as the **architect of the social justice** plank in Indian politics.
- He was also **part of the anti-Emergency movement** along with **Jayprakash Narayan**.
- He went on to serve **twice as Chief Minister of Bihar**.

Bharat Ratna

- Instituted in **1954**, Bharat Ratna is the **highest civilian award** of the country.
- It is awarded to any person **without distinction of race, occupation, position or sex** in **recognition of exceptional service/performance** of the highest order in **any field of human endeavour**.
- The award was **originally limited to** achievements in the **arts, literature, science, and public services**, but the government expanded the criteria to include "**any field of human endeavour**" in **2011**.
- **Recommendations** for the award are made **by the Prime Minister himself to the President**.
- The recipient receives a **Sanad (certificate) signed by the President** and a **peepul lead-shaped medallion**. The Award **does not carry any monetary grant**.
- **Though usually conferred on India-born citizens**, the Bharat Ratna has been awarded to one naturalized citizen – **Mother Teresa**, and to two non-Indians: **Abdul Ghaffar Khan and Nelson Mandela**.
- **The first recipients of the award in 1954 were: C. Rajagopalachari, Sarvepalli Radhakrishnan, C. V. Raman**

Swami Dayanand Saraswati

- Prime Minister of India will inaugurate the year-long celebrations commemorating the **200th birth anniversary of Maharishi Dayanand Saraswati**, at Indira Gandhi Indoor Stadium, Delhi.
- Swami Dayanand Saraswati was a **philosopher, social leader and founder of the Arya Samaj**, a reform movement of Vedic dharma.
- He **established the Arya Samaj** on April 7, 1875, in Bombay - with 10 principles that are based purely on God, soul and nature.

His Philosophy

- Central to his teachings was the principle that all actions should benefit humanity as a whole, rather than serving individual interests or religious symbols.
- While he **didn't entirely oppose the caste system**, he advocated for significant reform, citing the Vedas to argue that **caste should be based on merit rather than heredity**.
- Dayanand **opposed untouchability**, attributing it to centuries of brahmanical dominance, and pushed for Vedic education for all castes.
- He also **challenged orthodox Hindu views on women, advocating for their education** and opposing practices like child marriage.

His Legacy

- He was the **first to give the call for Swaraj as "India for Indian" in 1876**.
- He introduced a **complete overhaul of the education system** and is often considered one of the visionaries of modern India.

- The **Dayanand Anglo Vedic schools** came into existence in 1886 to realize the vision of Swami Dayanand Saraswati.
- The **first DAV School was established in Lahore** with Mahatma Hansarj as the headmaster.
- One of his most influential works is the **book Satyarth Prakash**, which contributed to the Indian independence movement.
- His **followers included Sri Aurobindo and S. Radhakrishnan**.

Sant Ravidas

- Guru Ravidas, also known as Raidas, Rohidas, and Ruhidas, was a **prominent saint in the Bhakti movement, celebrated for his devotional songs and verses**.
- **Birth and Background:** Born in **Seer Govardhanpur (Varanasi), Uttar Pradesh**, Guru Ravidas was a **disciple of Brahmin bhakti poet Ramananda**, emphasizing human rights and equality.
- **Spiritual Philosophy:**
 - Abandoned saguna forms of supreme beings, focusing instead on the **nirguna** form.
 - Advocated for gender equality, abolition of the caste system, social justice, and spiritual freedom.
- **Influence and Recognition:**
 - Opposed untouchability and his teachings had a significant impact on society.
 - 41 of his devotional songs and **poems are included in the Sikh Scriptures**, Guru Granth Sahib.
 - **Meera Bai**, a revered figure in Hindu spiritualism, **considered Guru Ravidas her spiritual Guru**.
- His teachings form the basis of the **Ravidassia religion**, where followers consider him a saint on par with other gurus.
- Guru Ravidas Jayanti is celebrated as a Hindu festival, commemorating his birth anniversary.

Rani Chennamma

- The Kittur or Kitturu Revolt, led by Rani Chennamma, celebrated its 200th anniversary recently.
- Chennamma was **born in Kakati**, a small village in today's Belagavi district of Karnataka in 1778.
- She became **queen of Kitturu (now in Karnataka)** when she married Raja Mallasarja of the Desai family.
- After Mallasarja's death in 1816, his eldest son, Shivalingarudra Sarja, ascended the throne.
- Before his death in 1824, Shivalingarudra adopted a child, Shivalingappa, as the successor.
- However, the British East India Company refused to recognise Shivalingappa as the successor of the kingdom under the '**doctrine of lapse**'.
- **Key facts about the Kittur Rebellion of 1824**
 - It was one of the first Indian armed rebellion against British EIC and is considered one of the earliest women-led anti-colonial struggles.
 - **John Thackeray**, the British official at Dharwad, launched an attack on Kittur in October 1824.
 - In this first battle British forces lost heavily and the Collector and political agent, St. John Thackeray was killed by the Kitturu forces.
 - Two British officers, **Sir Walter Elliot and Mr. Stevenson**, were also taken as hostages.
 - However, the British army again attacked the Kittur Fort and captured it.
 - Rani Chennamma and her family were imprisoned and jailed at the fort in Bailhongal, where she died in 1829.

Doctrine of Lapse

- Under the doctrine of Lapse, any princely state without a natural heir would collapse and would be annexed by the Company.
- The princely state of Kitturu was taken over by the British East India Company in 1824 by imposing the 'doctrine of lapse', even before it was officially articulated by Lord Dalhousie.

Durgawati Devi

- Durgawati Devi (1907-1999), also known as **Durga Bhabhi** or **Agni of India**, was an Indian revolutionary and activist who contributed to the Indian Freedom Movement.
- She was **married to Bhagwati Charan Vohra**, who wrote the famous article "**The Philosophy of Bomb**" encouraging youth to join revolutionaries.
- Durga Bhabhi was an active member of the **Naujawan Bharat Sabha**, which was founded by Bhagat Singh in 1926. She assisted in the escape of Bhagat Singh from Lahore after the Saunders killing in 1928 and opposed the sentence awarded to Bhagat Singh, Sukhdev, and Rajguru.
- In revenge, **Durga Bhabhi made an attempt to kill Lord Hailey, an ex-Governor of Punjab**, but was arrested and sentenced to three years. After independence, she opened a school for poor children in Lucknow.

Sant Meera Bai

- 525th birth anniversary of Sant Meerabai, a **Bhakti saint** and Hindu mystic poet, was celebrated recently.
- Born as Yashodha, **Princess of Mewar**, she married Rana Bhoj Raj in 1516, the son of Rana Sanga. After Bhoj Raj's death in 1521, she left Mewar to seek Lord Krishna.
- Meerabai followed **Saguna bhakti** and considered Lord Krishna as her husband.
- Her Braj language bhajans, including "**Paayoji maine Ram Ratan dhan paayo,**" were translated into English as '**Meerabai: Ecstatic Poems**'.
- Mirabai's compositions include- **Raag Govind, Govind Tika, Raag Soratha, Meera Ki Malhar, Mira Padavali, Narsi ji Ka Mayara**, etc.
- She relocated to several locations, including **Brindavan, and later to Dwarka**.
- She became a **disciple of Sant Ravidas** and challenged upper caste norms, becoming popular in Rajasthan and Gujarat.



Kazi Nazrul Islam

- Kazi Nazrul Islam, a Bengali poet and nationalist, was born in Churulia village, Burdwan district of West Bengal. He joined the Indian Army in 1917 and later became Battalion Quarter Master (Havildar). He left the military in 1920 and joined the **Bengali Muslim Literary Society**.
- Nazrul, known as the **Bidrohi Kobi** (Rebel Poet), is acknowledged for his works that rebelled against oppression through slavery, hatred, and tradition. He wrote and composed over 2000 songs, known as '**Nazrul Geeti**'.
- In 1919, he published his first piece, '**The Autobiography of a Delinquent**' or '**Saogat**'. He is famous for his works like **Bandhan-hara, 'Bodhan', 'Shat-il-Arab', and 'Badal Prater Sharab'**.
- For his famous poem '**Anondomoyir Agomone**', he was sent to prison for one year by the British authorities. In 1930, his book '**Pralayshikha**' was **banned** and he faced charges of sedition.
- He played a role in the national movement, motivating people to fight against the British through his poems, plays, and writings on Swadishi and Khilafat movements. He organized the **Sramik Praja Swaraj Dal**, a socialist political party **within the Indian National Congress (INC)**.
- He became a critic of the "Khilafat" struggle and the INC for not bargaining political independence from the British Empire.

- In 1960, he was awarded the **Padma Bhushan**, one of the highest civilian honors of India, and the **Ekushey Padak**, the second-highest civilian award of Bangladesh.

Sheetal Devi

- Election Commission has announced Para Archer and Arjuna Awardee, Sheetal Devi as its National Persons with Disabilities (PWD) icon.
- Sheetal Devi claimed a silver medal in the open women's compound archery event at the World Archery Para Championships 2023 in the Czech Republic.
- She was the first female armless archer to win a medal at the Para World Championships.
- Later, at the Asian Para Games 2023, she won gold medals in the individual compound and mixed team events apart from winning the silver medal in the women's doubles competition.

Pritzker Architecture Prize

- Japanese architect **Riken Yamamoto** was recently declared winner of the 2024 Pritzker Architecture Prize.
- The highest international award in the field, it is sometimes referred to as the "*Architecture Nobel*".
- The prize has been awarded every year since its **founding in 1979**. It was instituted by **Jay A Pritzker**, and his wife **Cindy**, to honour a living architect whose built work demonstrates talent, vision and commitment.
- The award comes with a prize of \$100,000, a citation, and a bronze medallion based on designs by **Louis Sullivan**, the Chicago architect known as the **father of the skyscraper**.
- Architects from Japan have won the largest number of Pritzkers, Yamamoto is the ninth laureate from Japan. The only Indian laureate is the late **Balkrishna Doshi (2018)**.

Rashtriya Khel Protsahan Puruskar

- The **Ministry of Youth Affairs & Sports** recently announced the **Rashtriya Khel Protsahan Puruskar (RKPP)** 2023.
- **Introduced in 2009**, RKPP is **given to corporate entities** (both in private and public sector), **Sports Control Boards, NGOs**, including sports bodies **at the State and National level**, who have **played a visible role** in the area of sports promotion and development.
- The **six core awards** which constitute India's National Sports Awards are-

Major Dhyan Chand Khel Ratna Award

Arjuna Award

Dronacharya Award

Major Dhyan Chand Award

Maulana Abul Kalam Azad Trophy

Rashtriya Khel Protsahan Puruskar

Kottai Ameer Communal Harmony Award

- The **Tamil Nadu government** recently awarded the **Kottai Ameer Communal Harmony Award, 2024**, to **Alt News co-founder Mohammed Zubair** during the Republic Day celebrations in Chennai.
- Mr. Zubair was **honoured for a series of fact-checking articles** he published on the rumours that migrant workers from north India were being attacked by natives in Tamil Nadu.
- The award was **instituted in the year 2000**. It is **presented to a person belonging to Tamil Nadu for outstanding services to promote communal harmony**.
- The award **includes a medal, certificate and cash award of Rs. 25,000**.

Jeevan Raksha Padak Series of Awards

- **President has approved** the conferment of Jeevan Raksha Padak Series of Awards-2023 on 31 persons.
- This series of awards are **given to a person for meritorious act of human nature in saving the life of a person**.
- The **award is given in three categories: Sarvottam Jeevan Raksha Padak; Uttam Jeevan Raksha Padak; a Jeevan Raksha Padak**.

- Persons of **all walks of life are eligible** for these awards. The award **can also be conferred posthumously**.
- The decoration of the award (**medal, certificate signed by the union Home minister and lump sum monetary allowance**) will be presented to the awardees in due course.

Indian of the Year Award

- **Team ISRO** was recently presented the **Indian of the Year Award** in the **Outstanding Achievement category**.
- **ISRO had a stellar 2023**. The space agency's lunar craft **Chandrayaan-3 successfully made a soft-landing** on the moon.
- In another extraordinary feat, **ISRO's Aditya-L1** successfully **reached its destination** Lagrange Point 1.
- Actor **Shahrukh Khan** won the **Indian of the Year of the award** for **2023**.
- Currently in its **13th edition**, **CNN-News18 Indian of the Year** is an initiative that **recognises Indians who have made significant contributions to various fields** and have had a **profound impact on the nation**.

Rashtriya Vigyan Puraskar

- The Rashtriya Vigyan Puraskar is a set of **National Awards in India for scientists, technologists, and innovators** in various fields of science, technology, and technology-led innovation.
- The awards recognize notable contributions made by individuals or teams in various fields and are one of the highest recognitions in India.
- Eligible individuals include scientists, technologists, and individuals working in government, private sector organizations, or outside organizations.
- **People of Indian origin staying abroad** with exceptional contributions benefiting Indian communities or society are also **eligible**.
- The awards are given in four categories:
 - Vigyan Ratna (VR)
 - Vigyan Shri (VS)
 - Vigyan Yuva - Shanti Swarup Bhatnagar (VY-SSB)
 - Vigyan Team (VT)
- All Awards will have a Sanad & a medal.
- The selection process involves nominations being placed before the Rashtriya Vigyan Puraskar Committee, which is headed by the **Principal Scientific Adviser**.
- Award will be given on August 23rd, which is recognised as National Space Day as Chandrayaan-3 mission made its soft landing on moon.

Jnanpith Award

- The 58th Jnanpith Award for the year 2023 has been bestowed upon Jagadguru Swami Rambhadracharya ji for Sanskrit and Shri Gulzar for Urdu.

About Jnanpith Award

- Instituted in 1961, this accolade has been conferred annually by Bharatiya Jnanpith since 1965 in recognition of outstanding contributions to Indian literature.
 - **Bharatiya Jnanpith**, established formally in 1944, stands as one of India's premier literary organizations and publishing houses.
- It is bestowed only on Indian writers writing in Indian languages included in the Eighth Schedule to the Constitution of India and English.
- There are no posthumous conferrals. Also, only works published during the preceding twenty years is considered for the award.
- Notable personalities including Presidents, Prime Ministers, and international celebrities have presented this prestigious award.

Booker Prize

- Irish novelist **Paul Lynch** won the Booker Prize in 2023 for his fifth **novel, 'Prophet Song'**.
- The Booker Prize, established in 1969, is open to English-language novels published in Britain and Ireland.
- The Booker Prize is awarded for English-written fiction books, while the International Booker Prize is for translated books.
- Indian-origin authors like VS Naipaul (1971), Salman Rushdie (1981), and Arundhati Roy (1997) have also won the prize.

Best FIFA Football Awards 2023

- The **Best FIFA Awards 2023** were recently awarded in **London**.
- **Lionel Messi** won the **best men's player** award **for the second successive year**.
- **Spain's Aitana Bonmati** was the winner for the **women's best player award**.
- It rewards **standout candidates in 9 categories, irrespective of championship or nationality**, for their respective achievements during the designated qualifying period.
- Best FIFA Football Awards was **first held in 2017**, honouring **achievements from year 2016**.

About FIFA

- **Founded in 1904**, FIFA or The **Fédération internationale de football association** is the international governing body of football.
- **Headquartered in Zurich, Switzerland**, its membership **comprises 211 national** associations.
- FIFA is a **member of the International Football Association Board (IFAB)**, that is responsible for setting the laws of the game.
- **FIFA** has the responsibility **to apply and enforce the rules** across all FIFA competitions.

Sahitya Akademi Awards

- Sahitya Akademi, an autonomous body under the **Ministry of Culture**, has announced its annual Sahitya Akademi Awards **in 24 languages (22 Scheduled languages as well as English and Rajasthani)**.
- Established in **1954**, it is registered as a society under the **Societies Registration Act, 1860**. Other awards given by Akademi include **Bal Sahitya Puraskar and Yuva Puraskar**.

Pradhan Mantri Rashtriya Bal Puraskar (PMRBP)

- The Pradhan Mantri Rashtriya Bal Puraskar (PMRBP) was conferred on 19 children by the President.
- PMRBP, awarded annually by the Ministry of Women and Child Development, honors children aged 5-18 for excellence in various fields such as bravery, art, culture, environment, innovation, science, technology, social service, and sports. Eligibility is limited to Indian residents residing in India.
- The awards come with a medal, certificate, and citation booklet, presented the week before Republic Day.

UNESCO's Prix Versailles Award

- Kempegowda International Airport Bengaluru Terminal 2, Karnataka, was recognized at UNESCO's 2023 Prix Versailles, a global architecture award that recognizes the best contemporary achievements worldwide.
- The award, which has been given annually since 2015, aligns with the principles of intelligent sustainability, considering ecological, social, and cultural impacts of projects, emphasizing the awardee's role in beautifying and preserving the environment.

Subhash Chandra Bose Aapda Prabandhan Puraskaar (SCBAPP) 2024

- 60 Parachute Field Hospital, Uttar Pradesh selected in the Institutional Category for Subhash Chandra Bose Aapda Prabandhan Puraskar-2024
- The SCBAPP is an award in India recognized for outstanding work in disaster management.

- It is administered by the National Disaster Management Authority and is awarded annually on Netaji Subhash Chandra Bose's birth anniversary. Every year, on January 23rd (Parakram Diwas), Netaji Subhash Chandra Bose's birth day is commemorated.
- The award, which includes cash prizes, is open to Indian nationals and institutions working in disaster management areas.

Mangal Pandey

- Mangal Pandey played a significant **role in Sepoy Mutiny of 1857** whose death anniversary is celebrated on April 8 every year.
- He is considered the **hero of the first war of Independence**, also known as the **Sepoy Mutiny of 1857**.
- He was **born on July 19, 1827** near Faizabad in Uttar Pradesh.
- In 1849, Pandey joined the army of the British East India Company and served as a sepoy in the 6th Company of the **34th Bengal Native Infantry in Barrackpore**.
- He **revolted against the East India Company for introducing cartridges that were greased with animal fat** as it hurt the religious sentiments of the soldiers.
- This movement of rebels reached other parts of India and led to a mass revolt against the colonial rulers. Common people too came out and opposed anti-India laws.
- **On March 29, 1857, Pandey mutinied and fired at his Senior Sergeant Major**. He was overpowered and hanged on April 8, 1857, by the order of a Court Martial at Lal Bagan in Barrackpore.

FAIRS AND FESTIVALS

Attukal Pongala

- It is a **10-day long festival** celebrated **annually at Attukal Bhagavathy Temple in Trivandrum, Kerala**.
- This festival is **dedicated to Attukal Bhagavathy**, also known as **Goddess Kannaki or Bhadrakali**.
- The pongala preparation starts with the ritual called 'Aduppuvettu'. This is the lighting of the pongala hearth (fireplace) called **Pandarayaduppu**.
- Pongala, which means 'to boil over', is the ritual in which women prepare sweet payasam (a pudding made from rice, jaggery, coconut and plantains cooked together) and offer it to the Goddess or 'Bhagavathy'. This ritual is performed on the 9th day.
- **Also known as the Sabarimala for women**, the festival is marked as the *largest annual gathering of women by the Guinness World Records*
- During the 10-days festivities, a sacrificial offering known as **Kuruthitharpanam** is also included in the religious event.

Sammakka Saralamma Jathara

- Sammakka Saralamma is one of the largest tribal festivals in the world, held every two years (biennially), in Medaram village, **Telangana**.
- **Historical Significance:** Commemorates the revolt led by Sammakka and Saralamma against taxes imposed by Kakatiya rulers during a drought.
- **Location:** Takes place in the **Eturnagaram Wildlife Sanctuary**, part of Dandakaranya, the largest surviving forest belt in Mulugu.
- **Rituals:** Offerings of bangaram or gold equivalent to one's weight are made to the goddesses.
 - Participants take a holy bath in **Jampanna Vagu, a tributary to River Godavari**.
 - Jampanna, the tribal warrior and son of tribal Goddess Sammakka, is also honored during the festival.
- **Cultural Significance:** Promotes understanding and harmony between people and tribal communities, while preserving their unique traditions, culture, and heritage on a global scale.

Paruveta Utsavam

- Efforts are underway to seek UNESCO recognition for the annual 'Paruveta Utsavam' (**mock hunting festival**) as an 'intangible cultural heritage'.
- This festival commences each year on Makarasankranti at the **Sri Narasimha Swamy temple in Ahobilam, Andhra Pradesh**, and extends for approximately 40 to 45 days.
 - Ahobilam, nestled amidst the **Nallamala Forest in the Eastern Ghats**, serves as a prominent center of worship for Narasimha, the lion-headed avatar of Lord Vishnu.
- It holds significance as one of the **108 Divya Desams (Temples of Shri Vishnu)**.

Bali Yatra

- The Bali Yatra fair, **Asia's largest open-air annual trade fair**, is held on the banks of the **Mahanadi River in Cuttack, Odisha**, during **Kartika Purnima**.
- The event commemorates Odisha's historical ties with Bali and its rich maritime legacy of transoceanic voyages to Southeast Asian nations. Locals use banana peels and Sola to create small boats and float in nearby ponds and rivers as a way to honour and remember the sea voyages undertaken by the ancient Kalinga civilization.
- Festivals like **Masakapan Ke Tukad in Bali** and **Loikrathong in Thailand** share **similarities** with the Bali Yatra fair, including floating toy boats.
- The fair is also associated with the **legend of 'Taapoi'**, a young maiden waiting for her sailor brothers' return.
- There is also a belief that Vaishnavite Saint Sri Chaitanya landed in Cuttack after crossing Bali on his way to Puri.
- Key rituals include '**Bhalukuni Osha**' or 'Khudurukuni Osha' and '**Bada Osha**'. The festival also observes the tradition of lighting lamps in boats, which is called Boita Bandana.
- Odisha, also known as Kalinga, was a significant maritime region in India's history. Its intrepid sailors established maritime links with various countries, including the Roman Empire, Africa, Persian coast, Arabian countries, China, Japan, Siam, Champa, Burma, and Ceylon. **Kalidas in his Raghuvamsa hailed the king of Kalinga as the "Lord of Sea."**

Garba

- The UNESCO has added the '**Garba of Gujarat**', a ritualistic and devotional folk dance, as the **15th Indian Addition** to its **Representative List of Intangible Cultural Heritage of Humanity (ICH)**.
- The dance, performed during the Hindu festival of Navaratri, is dedicated to the worship of the feminine energy or 'Shakti'.
- The word 'garba' comes from the **Sanskrit word 'garbha', meaning 'womb'**. The dance takes place around a perforated earthenware pot lit with an oil lamp or image of the **mother goddess Amba**.
- Dancers move around the pot in an **anti-clockwise circle**, singing and clapping hands in unison. Accompanied by traditional instruments, the dance is a **symbol of respect towards women and religious and spiritual connection**.

Year	Elements on the Lists of ICH from India
2023	Garba of Gujarat
2021	Durga Puja in Kolkata
2017	Kumbh Mela
2016	Nawrouz
	Yoga
2014	Traditional brass and copper craft of utensil making among the Thatheras of Jandiala Guru, Punjab,
2013	Sankirtana, ritual singing, drumming and dancing of Manipur
2012	Buddhist chanting of Ladakh
2010	Chhau dance
	Kalbelia folk songs and dances of Rajasthan
	Mudiyettu, ritual theatre and dance drama of Kerala
2009	Ramman, religious festival and ritual theatre of the Garhwal Himalayas
2008	Kutiyattam, Sanskrit theatre of Kerala
	Tradition of Vedic chanting
	Ramlila, the traditional performance of the Ramayana

UNESCO Convention for the Safeguarding of the ICH, 2003

- The UNESCO Convention for the Safeguarding of the ICH, 2003, was adopted in 2003 to protect intangible cultural heritage.
- The International Committee for the Safeguarding of the ICH (IGC) was established to review requests for the inscription of intangible heritage on the Lists.
- The IGC consists of 24 members elected in the General Assembly, with India serving as its fourth member in 2022.
- **Intangible Cultural Heritage (ICH)** is defined as practices, representations, expressions, knowledge, skills, instruments, objects, artefacts, and cultural spaces recognized by communities, groups, and individuals. These heritages can be manifested in oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe, and traditional craftsmanship.

ARCHITECTURE

Pran Pratishtha

- The Pran Pratishtha of the idol at Ayodhya's Ram temple was performed on 22nd January 2024.
- The basic meaning of Pran Pratishtha is **giving life to the idol**. It is the act which **transforms an idol into a deity**, giving it the capacity to accept prayers and grant boons.
- The process of the pranpratishtha is mentioned **in the Vedas** and elaborated upon **in various Puranas**, such as **Matsya Puran, Vaman Puran, Narad Puran**, etc.
- Pran pratishtha can be held for both **chalitmoorti** (household idols that can be moved about) and **sthirmoorti** (temple idols that once fixed remain so).
- When the mantra is chanted for pranpratishtha, the **prayer is both for the idol to come to life and to be prepared to give up that life**.
- **Two divine objects** — the **Shaligram** found in the **Gandki River**, and the **Narmadeshwar**, a shivling found in the **Narmada River**, do not need pranpratishtha, as they carry divinity within them.
- **Shobha Yatra**: One of the first stages of pranpratishtha. It is a **procession of the idol**, taken out **in the neighbourhood** of the temple.
- **Adhivaas**: During this, the **idol is submerged** in various materials i.e. **water, grain etc**. These adhivaas are meant to heal up all such injuries which are **sustained by idol from the craftsman's tools**.
- **Ritual Bath**: After this, the idol is given a **ritual bath with various materials**, depending on the scale of the ceremony.
- **Opening of the Eyes (netronmeelan)**: This ceremony involves **putting anjan**, somewhat like kohl, **around the deity's eyes, with a gold needle**. This process is **carried out from behind**, as it is believed that if one looks into God's eyes the moment they open, their brilliance can be too much to take.

Rajon ki Baoli

- A Baoli is a **step well** and a **reservoir** in which **water can be stored**.
- Rajon ki Baoli also referred as **Rajon ki Bain** is a famous **stepwell in Mehrauli Archaeological Park in Delhi**.
- It was **built in 1516**, by **Daulat Khan**, an **administrator under Ibrahim Lodi**. The name **Rajon** comes from the **masons** who were living at the baoli and using its water. **They were called Raj Mistri**, hence the baoli is called 'Rajon Ki Baoli'.
- **The enclosure** of Rajon Ki Baoli **includes a mosque and a tomb** and has an **Indo-Islamic design**.
- The **structure has four levels** and is described as a **U-shaped Baoli** with its **natural springs** as **source water**.

Kalaram Temple

- Kalaram Temple is a **Hindu temple** in **Nashik district** of **Maharashtra**.

- The Prime Minister recently visited the Kalaram temple **on the banks of the Godavari** in the Panchavati area of the city.
- The temple was built in **1792** with the efforts of **Sardar Rangarao Odhekar**. The Kalaram temple derives its name from a **black statue of the Lord** — Kala Ram translates literally to Black Ram.
- The main temple has **14 steps**, which **represent the 14 years of Ram's exile**. It has **84 pillars**, which represents the **cycle of 84 lakh species** that one has to complete in order to be born as a human.
- The temple is also the site of a landmark **agitation led by Babasaheb Ambedkar** and the Marathi teacher and social activist **Pandurang Sadashiv Sane**, known as **Sane Guruji** demanding **temple entry rights for Dalits** in **1930**.

Significance of Panchavati:

- The name Panchavati comes from the existence of **five banyan trees** in the area.
- A number of important events described in the epic story of **Lord Ram** took place here.
- **Ram**, along with **Sita** and **Lakshman**, **spent the first few years of their 14-year exile** in **Dandakaranya**, the dense forest in central India **of which Panchavati was a part**.
- It is from the Panchavati region that **Ravan**, the king of Lanka, **abducted Sita**.

Deepasthambham

- A 390-year-old Deepastambham (lamp post) has been discovered in **Mudimanikyam village in Nalgonda (Telangana)**.
- While Dhvajasthambam (flag poles) are part of temple architecture, lamp posts are rare in the Deccan while they are common in temples in the west coast including Goa.
- Another famous sight here is the Dwajasthambam. It is a flagstaff, around 70 feet tall, fully covered with gold.

Chausath Khamba

- Located near the Nizamuddin dargah in Delhi, Chausath Khamba is a tomb built in **1623-24**.
- Marked by marble pillars & elegant lattice work, Chausath Khamba **literally translates to 64 pillars**.
- The structure houses the **tomb of Mirza Aziz Koka**, foster brother of Mughal Emperor Akbar. It was built by his (Mirza Aziz Koka's) son, **Mirza Aziz Kokaltash**, governor of several provinces under Akbar.
- The mausoleum is unique as it is built entirely of marble, with 25 marble domes supporting the flat roof of the structure.
- The plan for Chausath Khamba could have been inspired from the wooden garden pavilions from Persia — such as the **Chihil Sutun (forty columns)**.
- In turn, the Chausath Khamba seems to have inspired the architectural design for Emperor Shahjahan's **Diwan-i-Aam, Hall of Audience**.
- In 2011-2014, the Aga Khan Trust for Culture along with the Archaeological Survey of India (ASI) undertook the conservation of Chausath Khamba. The project was **co-funded** by the **Federal Republic of Germany**.
- According to historian Sam Dalrymple, the structure is a piece of Gujarat in Delhi. He also points to the fact how regional architecture travelled across India centuries ago.
- The structure also finds mention in Sir Gordon Risdley Hearn's book The Seven Cities of Delhi.

Sharda Temple and Sharda Devi Peeth

Navratri puja was held at the newly built Sharda Devi Temple in **Teetwal village, near the Line of Control (LoC) in Jammu and Kashmir**. The temple was opened earlier this year, **on the route to the traditional Sharda Peeth** in Pakistan-occupied Kashmir.

Sharda Devi Peeth

- Sharda Peeth, a significant Hindu shrine in **Pakistan- occupied Kashmir**, was one of the three principal shrines of the region before the Partition of India and Pakistan, the other two being **Martand Sun Temple and the Amarnath Temple**. It shares similarities with the Martand Temple in architecture, design, and construction style. It was described by **Al- Beruni** in his travelogues.
- Sharda Peeth is considered **one of the 18 Maha Shakti Peethas** and is considered the **abode of Hindu Goddess Saraswati**.
- She is considered the principal deity of Kashmiri Pandits and is also known as **Kashmira Puravasini**.
- The peeth was also a university of higher learning for Vedic works, scriptures, and commentaries, with over 5,000 scholars and the largest library. It is also believed that Sharda University had a script known as **Sharada**.
- Renowned scholar **Adi Shankaracharya studied at Sharada University**, and **Ramanujacharya**, a key exponent of the Sri Vaishnav tradition, is believed to have visited the site and written his treatise, **Sri Bhasya**.



Maa Kamakhya Access Corridor

- Recently, the Prime Minister inaugurated the foundation stone laying ceremony for the Maa Kamakhya Access Corridor in Assam.
- It was **sanctioned under the Prime Minister's Development Initiative for the North Eastern Region (PM-DevINE) scheme**.
 - PM-DevINE is a **Central Sector Scheme** launched during the Union Budget 2022-23 with objectives including funding infrastructure projects, promoting social development in the North East Region, creating livelihood opportunities for youth and women, and addressing development gaps.
 - The Ministry responsible for the scheme is the **Ministry of Development of North Eastern Region**.

About Maa Kamakhya Temple:

- Maa Kamakhya Temple, one of the **Maha Shakti Peeths**, which is part of the 51 Shakti Peeths spread across India, Nepal, Bangladesh, Pakistan, China, and Sri Lanka, with 18 classified as Maha Shakti Peeths.
- It is dedicated to Maa Kamakhya/Kameswari, often referred to as the Goddess of Desire.
- The complex also includes five temples of Lord Shiva, namely Kameswara, Siddheswara, Kedareswara, Amratokeswara, Aghora, and Kautilinga, forming the Kamakhya temple complex.
- **Geographical Location:** Situated atop the **Nilachal Hills**, overlooking the Brahmaputra River on the outskirts of **Guwahati**, Assam.
- **History:**
 - Originally reconstructed in 1562 by Naranarayan, the King of the Koch dynasty, after being destroyed by Kala Pahar.
 - Mentioned in the inscriptions of the Allahabad pillar of Samudragupta.
 - Dedicated to various forms of Mother Shakti, including Sundari, Tripura, Tara, Bhuvaneshvari, Bagalamukhi, and Chinnamasta.
- **Architecture:**
 - The temple exhibits the **Nilachal Style of architecture**, a **blend of the Nagara (North Indian) and Saracenic (Mughal) styles**.
 - Notable features include a **dome made of bricks**, decorated with sixteen-sided polygons and horizontal bands.

- **Festivals:**
 - The temple hosts the **Ambubachi Mela**, a week-long fertility festival held annually in **June**.
 - During this period, the shrine remains closed as it is believed that the Goddess undergoes her annual menstrual cycle.
- **Centre of Tantrism:** It is considered a primary center for tantric Shaktism in the country, embodying various streams of tantrism such as Agama, Nigama, and Yamala.
- **Other Temples in Nilachal Hills:** Surrounding the Maa Kamakhya Temple are numerous other temples dedicated to deities like Bhubaneswari, Kali, Tara, Chhinnamasta, Bagala, Bhairavi, Doomavati, Matangi, and Kamala, collectively known as the Dasa-mahavidya.

Maratha Military Landscapes

- India has put forth Maratha Military Landscapes as its **candidate for recognition on the UNESCO World Heritage List for 2024-25**.
- The Maratha Military Landscapes, originally listed in the **Tentative List of World Heritage sites in 2021**, embody an exceptional system of fortifications and military strategy devised by the Maratha rulers.
- **Nominated under the cultural criteria category**, these landscapes trace their origins to **the 17th century under the reign of Chhatrapati Shivaji Maharaj**, continuing through subsequent rulers until the Peshwa rule until 1818 CE.
- They include **forts primarily located in Maharashtra and Tamil Nadu** integrating the unique features of the Sahyadri mountain ranges, the Konkan Coast, the Deccan Plateau, and the Eastern Ghats within the Indian Peninsula.
- The twelve component parts of this nomination are, Salher fort, Shivneri fort, Lohgad, Khanderi fort, Raigad, Rajgad, Pratapgad, Suvarnadurg, Panhala Fort, Vijay durg, Sindhudurg in Maharashtra and Gingee Fort in Tamil Nadu.

UNESCO World Heritage List of India

- At present in India there are **42 World Heritage sites**, out of which 34 are cultural sites, seven are natural sites whereas one is mixed site.
- In **Maharashtra** there are **six World Heritage Sites**:
 - Ajanta Caves (1983), Ellora Caves (1983), Elephanta Caves (1987), Chhatrapati Shivaji Maharaj Terminus (2004), Victorian Gothic and Art Deco Ensembles of Mumbai (2018)
 - Western Ghats of Maharashtra, Karnataka, Tamil Nadu and Kerala is serial property in natural category (2012).

Lepakshi's Sri Veerabhadra Temple

- Lepakshi Temple, located in **Anantapur, Andhra Pradesh**, was built in the 16th century during the **Vijayanagar empire**. It is placed in UNESCO's tentative World Heritage Sites list from India.
- It features three shrines: **Veerabhadra (Lord Shiva), Panaseswara, and Raghunatha**.
- Known for its largest **monolithic Nandi statue** and **Naga-siva-linga** with seven-hooded snake, it features **fresco paintings** on walls and ceilings depicting Ramayana, Mahabharata, gods, and legendary stories.
- The Lepakshi's significance is linked to the epic Ramayana, where the bird Jatayu, wounded by Ravana, fell after a battle against Lord Rama's wife Sita, who was being carried away by the Ravana.

Vadnagar

- A study by the Indian Institute of Technology (Kharagpur) has found evidence of human settlement in Vadnagar (Gujarat) dating back to 800 BCE, aligning with the late-Vedic/pre-Buddhist Mahajanapadas era.
- Vadnagar is a historically rich town with deep cultural significance. Situated strategically at the crossroads of ancient trade routes. The town's layout, characterized by an L-shape and surrounded by fortifications, reflects its multi-layered past.
- Historic landmarks in Vadnagar, include temples like **Ambaji Mata Temple and Hatkeshwar Temple**.

- The town is included in the tentative list of UNESCO World Heritage Sites. It is in proximity to Modhera, famous for Sun Temple.

Statue of Social Justice

- The Statue of Social Justice, also called Dr. B. R. Ambedkar Smriti Vanam, a 125-ft tall monument was recently inaugurated in Vijayawada, Andhra Pradesh.
- Dr. Ambedkar's statue, standing at a height of 206 feet, is 125 feet tall and is supported by an 81-foot-tall base building.

Statue Name	Depicts	Location	Height (ft)
Statue of Unity	Vallabhbhai Patel	Sadhu Bet, Sardar Sarovar Dam, Gujarat	597
Statue of Belief	Lord Shiva	Nathdwara, Rajasthan	369
Statue of Equality	Ramanuja	Hyderabad, Telangana	216
Statue of Social Justice	B. R. Ambedkar	Vijayawada, Andhra Pradesh	206
Statue of Dr. B. R. Ambedkar	B. R. Ambedkar	Hyderabad, Telangana	175

Guruvayur Temple

- Guruvayur Temple of Kerala, also known as the **Dwarka of the South**, is dedicated to Lord Vishnu and features a standing pose with four hands holding Shankh, Sudarshana Chakra, Lotus, and Mace.
- The temple is **carved from stone named Patala Anjana** and is positioned in a manner for the first sunbeams to directly touch Vishnu's feet.
- In 1931-32, a Sathyagraha led by K. Kelappan (Kerala Gandhi) aimed to allow untouchables into the temple, resulting in the Travancore Temple Entry proclamation of 1936.
- The Guruvayur Utsavam is a 10-day festival that begins with the Guruvayur Anayottam, an elephant race during the Malayalam month of Kumbham, usually in February.

Sri Ranganathaswamy Temple

- Ranganathaswamy Temple also known as Thiruvaranga Tirupati, is a Dravidian-style temple dedicated to Ranganatha (Lord Vishnu in reclining form) located in Tiruchirapalli, Tamil Nadu.
- It features 21 sculpted Gopurams, 50 sub-shrines, and 9 sacred pools. It's a temple-town with unique Saptaprakaram formation and is one of 108 Divya Desams dedicated to Lord Vishnu.
- Situated on **Srirangam island**, it's surrounded by **Cauvery and Kollidam rivers**. The Srirangam temple is one of the world's largest religious complex and the largest temple compound in India.

Sannati Buddhist Site

- The Sannati Buddhist site, left neglected for many years after it came to light through the ASI excavations in the 1990s, got a restoration project in 2022.
- Sannati Buddhist site is the **ancient Buddhist site on the bank of Bhima river** near **Kanaganahalli** in **Kalaburagi district, Karnataka**.
- It is also popular among tourists for the **Chandrala Parameshwari Temple**.

Major Findings in this site

- It is believed to have been developed in **three constructional phases – Maurya, Early Satavahana and Later Satavahana periods** stretching from 3rd Century B.C. to 3rd Century A.D.
- **Ranamandala** area of Sannati offers a unique chronological scale from prehistoric to early historic times.
- An **inscription written in the Prakrit language using the Brahmi script** is also found here.
- Notable findings include a **stone sculpture of Mauryan Emperor Ashoka** with words **“Raya Asoko”**, an **inscription in Prakrit language**, and dome slabs depicting Jataka stories and Buddhist missionaries.

Nagavi Ghatikasthanana

- The site of ancient **Nagavi Ghatikasthanana**, which was often **termed the Takshashila of the South** by historians, is around 40 km away from Sannati.
- The Ghatikasthanana was a major education hub during rulers of the **Rashtrakuta and Kalyana Chalukya dynasties** between the 10th and 12th Centuries.

OTHER ART FORMS

Subika Painting

- Efforts are being made to preserve the ancient Subika painting from **Manipur**. The style is found in six surviving manuscripts, but awareness of it has decreased, leading to its near extinction.
- Despite **Manipur's prominence in Raas leela and Nat Sangkritan**, it lags behind in visual arts.

Subika Laisaba

- The painting of Subika Laisaba is a **composition of cultural motifs** made by pre-existing features and other influences stimulated from their cultural worldviews.
- Among the six manuscripts, Subika Laishaba represents a direct and authentic continuation of the Meitei cultural tradition depicted through visual images.
- The illustrations of Subika Laishaba have visual language from the elements such as lines, shapes, forms, colours, and patterns.
- These visual images become Meitei's cultural motif, a structure to create visual effects as well as express cultural significance, meaning and values.
- The visual images found in this manuscript are painted on handmade paper.
- It is also found that materials of manuscript are prepared indigenously either handmade paper or barks of tree.



Petroglyphs and Geoglyphs

The Bombay High Court recently issued a notice to the Union Government and the Archaeological Survey of India (ASI) for the protection and preservation of ancient rock art petroglyphs or geoglyphs in the Konkan region.

Petroglyphs

- Petroglyphs are images created by removing part of a rock surface through carving, incising, picking, or abrading.
- The term "petroglyph" comes from the Greek words "petra," meaning stone, and "glyphein," meaning to carve.
- They are distinct from painted or drawn images on rocks, which are classified as pictographs.
- Petroglyphs are often associated with prehistoric cultures and have been discovered worldwide, except in Antarctica, with notable concentrations in Africa, Scandinavia, and Siberia.
- Estimated to be around 20,000 years old, petroglyphs are classified as protected monuments and are listed on UNESCO's tentative World Heritage Sites.



Geoglyphs

- Geoglyphs are large designs or motifs, typically longer than 4 meters, created on the ground using durable landscape elements like stones, gravel, or earth.
- They are a form of land art, sometimes categorized as rock art, and are produced by arranging or moving objects within a landscape.
- Positive geoglyphs are formed by arranging materials on the ground, resembling petroforms.



- Negative geoglyphs are created by removing part of the natural ground surface, resulting in differently colored or textured ground, akin to petroglyphs.

Mohiniyattam

- In a historic move, the Kerala Kalamandalam, a deemed university for arts and culture, has lifted gender restrictions, by allowing boys to learn Mohiniyattam.
- Mohiniyattam is one of the eight **Indian classical dance form** originating from the state of **Kerala**.

Origin and Meaning of Mohiniyattam

- Mohiniyattam derives its name from "mohini," meaning an enchantress, and "aattam," signifying graceful movements. Essentially, it translates to "dance of the enchantress."
- The name is also linked to Hindu mythology, where Mohini, the female avatar of Lord Vishnu, played a crucial role in the victory of the gods over demons through her allure.

Roots and Style

- Rooted in the **Natya Shastra**, an ancient Sanskrit text on performing arts, Mohiniyattam follows the **Lasya style**, characterized by **delicate and feminine movements**.
- It incorporates elements from other traditional Kerala art forms like Koothu and Kutiyattam.

Themes and Movements

- Major themes of Mohiniyattam revolve around **love and devotion to deities**, often featuring Lord Vishnu or Lord Krishna as central characters.
- The dance comprises approximately **40 basic movements known as adavukal**, conveying stories through hand gestures (mudras) as per the ancient **Hastha Lakshanadeepika** text.

Musical Accompaniment and Attire:

- Mohiniyattam is accompanied by **music known as chollu**, with **lyrics in Manipravalam**, a blend of Sanskrit and Malayalam.
- Dancers wear a **traditional attire consisting of a white sari** adorned with a broad **golden brocade** border, known as **kasavu** in Malayalam.

Warli Painting

- It is a style of tribal art created by the tribal people from the North Sahyadri Range in Maharashtra.
 - The Warli Tribe in Maharashtra has successfully coexisted with leopards near Sanjay Gandhi National Park, worshipping the leopard as a deity "Waghoba". The Warli tribe also has a three-day mask festival called Bohada.
- Warli art form can be traced back to 10th century AD but was first discovered and appreciated for its distinctive style only in the early 1970s.
- It was traditionally practised by women of the Warli tribe called **Suvasinis**, who decorated the **Lagna Chowk** or the wedding square.
- Warli represents the daily routine of rural life, the relationship of the tribal people with nature, their gods, myths, traditions, customs, and festivities.
- These rudimentary wall paintings use a set of basic geometric shapes: a circle, a triangle, and a square.
- The central motif in each ritual painting is the square, known as the "**chauk**" or "**chaukat**", mostly of two types known as **Devchauk** and **Lagnachauk**.
- One of the central aspects depicted in many Warli paintings is the **tarpa dance**.



Kolkali Art

- Kolkali Art, a **folk art from the North Malabar region of Kerala**, has a history of around two centuries. Known as Kolattam and Kolamu in Tamil Nadu and Andhra Pradesh, it **draws elements from Kalaripayattu**, a martial art from Kerala and Tamil Nadu.
- The dance involves participants holding sticks, executing circular movements, and striking rhythmic chords with accompanying music.
- The dance is also known as **Thattinmelkalia** and is performed with songs narrating devotional stories about regional deities.
- The dance is enhanced by musical instruments like **Chenda, Elathalam, Mathalam, and Chengala**. It is traditionally performed during the paddy harvest season. Kolkali has transcended its seasonal roots, finding a place in tribal festivals and celebratory events, including wedding ceremonies.
- It has also influenced folk dance forms in Bengal, Gujarat, Punjab, and Maharashtra. Currently, Kolkali is a prominent feature in the Kerala School Youth Festival, one of the largest cultural events in Asia.

Tamil Nadu's Panamalai Paintings

- The 1,300-year-old paintings at Talagirishwara temple, Villupuram, Tamil Nadu, depicting Lord Shiva with eight hands dancing, are fading.
- They resemble those in Ajantha and Chithannavasal.
- The temple, built by **Pallava** king Rajasimha, houses **Rajasimha's Sanskrit epigraphs**.



Vajra Mushti Kalaga

- It is a distinctive form of wrestling, diverging from conventional grappling, involving two fighters known as jettys. The battle is held on the ninth day of Navaratri at Mysuru Palace in Karnataka.
- In this intense battle, wrestlers wield 'Vajramushti,' knuckle-dusters embellished with diamonds symbolizing weaponry. Victory is determined by drawing blood from the opponent's head first.
- The art finds its mention in the the **Manasollasa**, by King Someshwara III of the Chalukya dynasty. **Portuguese traveler Fernano Nuniz** observed this wrestling during his time in the Vijayanagar empire.

Kumittipathi Rock Paintings

- These paintings are believed to be **around 3,000 years old** and are among the important rock arts in the Kongu region.
- **Theme:** The paintings depict an **elephant, ther** (chariot, some say it is a peacock), and the lives of early dwellers of the region.
- There are **small pits and holes in the cave**, which are believed to have been used to store water and other belongings.
- **Material used:** They used an inorganic white pigment, along with natural gum to paint the figures.
- While most of the rock painting sites in Tamil Nadu are found on rock shelters, those at Kumittipathi are drawn inside a cave.

MISCELLANEOUS

Lalit Kala Akademi

Recently, the **Ministry of Culture** has curtailed the powers of the Lalit Kala Akademi (LKA) Chairman, barring him from taking any “administrative actions”.

About Lalit Kala Akademi	
Establishment	Inaugurated on 5th August 1954 by the then Minister for Education, Maulana Abul Kalam Azad and registered under the Societies Registration Act 1860.
Collection	Preserves and documents a permanent collection reflecting contemporary, modern, folk, and tribal art in India.
Purpose	National academy of fine arts to promote and propagate understanding of Indian art, domestically and internationally.
International Promotion	Promotes Visual Art of India in various countries worldwide through Cultural Agreements and Cultural Exchange Programmes.
Annual Event	The National Exhibition of Art , the most prestigious annual event of the Lalit Kala Akademi.
Funding	Funded by the Ministry of Culture .
Headquarters	New Delhi with Regional centres located in Chennai, Lucknow, Kolkata, Bhubaneswar, and Garhi.

Geographical Indication Tags

Several products like the Majuli mask, Majuli manuscript painting and Rupa Tarakasi were recently given Geographical Indication (GI) tags.

Majuli Mask

- Majuli, the largest river island in the world and the seat of Assam's neo-Vaishnavite tradition, has been home to the art of mask-making since the 16th century.
- The handmade masks are traditionally used to depict characters in **bhaonas, or theatrical performances** with devotional messages under the neo-Vaishnavite tradition.
- Bhaonas were introduced by the 15th-16th century reformer saint **Srimanta Sankardeva**.
- Srimanta Sankardeva established this art of **masks** through a play called **Chinha Jatra**. The word means explaining through images.
- The masks can depict gods, goddesses, demons, animals and birds — Ravana, Garuda, Narasimha, Hanuman, Varaha Surpanakha all feature among the masks.
- They can range in size from those covering just the face (mukh mukha), to those covering the whole head and body of the performer (cho mukha).
- The masks are made of bamboo, clay, dung, cloth, cotton, wood and other materials available in the riverine surroundings of the makers.

Sattras

- Sattras are monastic institutions founded by Srimanta Sankardev and his disciples.
- They serve as centers for religious, social, and cultural reform.
- They also foster traditional performing arts like borgeet (songs), xattriya (dance), and bhaona (theatre), integral to the Sankardev tradition.

Majuli Manuscript Painting

- It is a form of painting — also originating in the 16th century — done on **sanchi pat**, or manuscripts made of the bark of the sanchi or agar tree, using homemade ink.
- The earliest example of an illustrated manuscript is said to be a rendering of the **Adya Dasama of the Bhagwat Purana in Assamese** by Srimanta Sankardev.
- This art was patronised by the **Ahom kings**. It continues to be practised in every sattra in Majuli.

Rupa Tarakasi

- Odisha's Cuttack is known for its **silver filigree work**, of intricate design and fine craftsmanship.
- In Odia, "**tara**" means **wire** and "**kasi**" means **to design**. Thus, as part of Rupa Tarakasi, silver bricks are transformed into thin fine wires or foils and used to create jewellery or showpieces.

- While the exact origin of the filigree art in Cuttack is not clear, it is known to have existed as far back as the **12th century**. The art form received considerable **patronage under the Mughals**.
- The silver filigree work of Cuttack is identical in character with that of Arabia, Malta, Genoa, Norway, Sweden and Denmark.
- Popular product categories found in Cuttack are jewellery, decorative artifacts, accessories, home décor and religious/cultural pieces.

Madhika Language

- In a remote colony of **Kookanam (Kerala)**, the **Chakaliya community** is dealing with the possible loss of its unique language Madhika as at the moment, **only 2 fluent speakers** are left.
- Despite **sounding similar to Kannada**, Madhika can still confuse listeners due to its diverse influences. It is a **blend of Telugu, Tulu, Kannada, and Malayalam**.
- **However**, it is **largely influenced by Havyaka Kannada**, an old form of Kannada.
- The language's **neglect is associated to the social stigma** with the **Chakaliya community**, who were **considered untouchables**.

Chakaliya Community

- The community in **northern Malabar** migrated from the **hilly regions of Karnataka** centuries ago.
- The community was **nomadic and worshippers of Thiruvengkatramana and Mariamma**.
- **Initially recognised as Scheduled Tribe**, it was later **included in the Scheduled Caste category** in Kerala.

Language Preservation Efforts:

- The **Union Government** has initiated a Scheme called **Scheme for Protection and Preservation of Endangered Languages of India (SPPEL)**.
- Under this Scheme, the **Central Institute of Indian Languages (CIIL), Mysore** works on protection, preservation and documentation of all the mother tongues/languages of India **spoken by less than 10,000 people** which are called **endangered languages**.
- Apart from that, **University Grants Commission (UGC)** runs two schemes- '**Funding Support to the State Universities for Study and Research in Indigenous and Endangered languages in India**' and '**Establishment of Centres for Endangered Languages in Central Universities**' for protection of endangered languages.

Classical Language

- West Bengal Chief Minister Mamata Banerjee has asked the Central Government to officially list Bangla as a classical language.
- Currently, **six languages** enjoy the 'Classical' status: **Tamil** (declared in **2004**), **Sanskrit (2005)**, **Kannada (2008)**, **Telugu (2008)**, **Malayalam (2013)**, and **Odia (2014)**.

Criteria for Classification of Classical Languages:

- High antiquity of its early texts/recorded history over a period of **1500-2000 years**.
- A **body of ancient literature/texts**, which is considered a **valuable** heritage by generations of speakers.
- A **literary tradition** that is **original** and not borrowed from another speech community.
- The classical language and literature **being distinct from modern**, there may also be a **discontinuity** between the classical language and its later forms or its offshoots.

Benefits for Classical Languages

- Two major international awards for eminent scholars.
- Establishment of a Centre of Excellence.
- Creation of Professional Chairs in Classical Languages within Central Universities.
- UGC support for research projects promoting these languages.

National Games of India

- The 37th edition of India's National Games recently concluded in Goa. These Olympics-style games, see participation from athletes representing various states, Union Territories, and the Services Sports Control Board (Armed Forces).
- The event's regulations fall under the **Indian Olympic Association's** purview.
- **Originating as the Indian Olympic Games in 1924** at Lahore, it adopted its current name after the 1938 edition in Calcutta. **Lucknow hosted the first post-independence National Games**, while the first Olympic-style edition took place in New Delhi in 1985.
- In **37th edition, Maharashtra clinched the Raja Bhalendra Singh trophy** for the overall championship. Notably, Raja Bhalendra Singh (a sports administrator and former cricketer) played a crucial role in bringing the 9th Asian Games to Delhi in 1982.
- Pranati Naik and Sanyukta Kate received the Best Woman Athlete trophy, while Shrihari Natraj was awarded the Best Man Athlete trophy.
- The torch for the upcoming 38th National Games was passed to Uttarakhand, with Meghalaya set to host the 39th edition.

Indian Olympic Association (IOA)

- The Indian Olympic Association (IOA) is the national Olympic organization of India. The IOA was **established in 1927 with Sir Dorabji Tata as the founding president** and Dr. A.G. Noehren as the founding secretary general. The IOA is registered as a **non-profit organization under the Societies Registration Act of 1860**.
- The IOA is responsible for **representing athletes and teams participating in the Olympic Games, Commonwealth Games, Asian Games, and other international multi-sport competitions**.
- PT Usha became the first woman President of the IOA in 2022. She also became the first Olympian and first international medallist to head the IOA.

Lahore Resolution

- Pakistan held its National Day celebrations in New Delhi again this year, after a four-year gap caused by the Covid-19 pandemic and the deteriorating ties between the two countries.
- Pakistan National Day is observed on **March 23, the day the Lahore Resolution was adopted in 1940 by the Muslim League**.
- In India, Pakistan National Day is celebrated at the Pakistan's embassy complex in New Delhi.

Khaksar Tragedy

The 1940 Lahore session of Muslim League was held days after the Khaksar tragedy, when members of a Muslim group called the Khaksars, fighting for India's independence, were shot at by the British on March 19, 1940, in Lahore, killing many.

Lahore Resolution

- The Lahore Resolution, commonly known as the **Pakistan Resolution** was adopted by the **All-India Muslim League** during its **general session in Lahore** from March 22 to March 24, 1940.
- The resolution was presented at **Minto Park** (now renamed **Iqbal Park**), in Lahore. It was written and prepared by Muhammad Zafarullah Khan and was presented by A. K. Fazlul Huq, the first Prime Minister of Bengal during the British Raj.
- It **formally called for an independent state for India's Muslims**. While the resolution does not include the word 'Pakistan' anywhere, there have been debates if its text calls for one separate nation or two. Pakistan celebrates it as its National Day.
- In 1956, on the same day, the country officially adopted its first Constitution, which transformed the Dominion of Pakistan to the Islamic Republic of Pakistan.

- Between 1960 and 1968, the **Minar-e-Pakistan** was built at the site where the resolution was adopted. The text of the resolution is inscribed at the base of the tower.

Kutia Kondh Tribe

- Two members of Kutia Kondh Tribe attended Republic Day parade in New Delhi as special guests.

Tribe	Kutia Kondh (Kutia Kandha)
Recognition	Particularly Vulnerable Tribal Groups (PVTGs) from Odisha. Among 75 tribes designated as PVTGs in India, Odisha houses the highest number, with 13 tribes.
Society and Culture	Families mostly nuclear and patriarchal. Worship nature and known for buffalo sacrifice ritual called "Kedu" to honor their "Earth Goddess".
Agriculture	Engage in shifting cultivation, also known as slash-and-burn agriculture. Term for shifting cultivation: dongar chaas or podu chaas.

Mitakshara Law and Dayabhaga Law

- According to the Supreme Court, children born out of void or voidable marriages are eligible to inherit property under the 1956 Hindu Succession Act (HSA), which acknowledges Mitakshara Law.

Mitakshara Law

- Mitakshara Law, one of the two major Hindu law schools, governs the succession of property in Hindu families. In the Mitakshara system, sons can claim property rights during their father's lifetime. It recognizes the **concept of coparcenary, where ancestral property is jointly held by all male members of the family with equal rights.**
- However, a woman cannot become a coparcener due to the fluctuating shares. The Hindu Succession (Amendment) Act, of 2005, empowered women to become coparceners like males in ancestral property.
- Mitakshara Law is prevalent throughout India, except in some eastern parts** where Dayabhaga School is followed.
- There are five sub-schools of Mitakshara Law:
 1. Dravidian/Madras school of thought
 2. Maharashtra school of thought
 3. Banaras school of thought
 4. Mithila school of thought
 5. Punjab school of thought

Dayabhaga Law

- Jimutuvahana's** commentary on the **Yagnavalkya Smriti** serves as the primary foundation of the Dayabhaga Law.
- According to this school of law, inheritance is founded on the concept of spiritual benefit.
- This tradition involves gifting rice balls to departed ancestors, known as pinda,
- It is exclusively practiced in Bengal and some areas of Assam.

Feature	Mitakshara School	Dayabhaga School
Concept of Coparcenary	Recognizes coparcenary, a joint ownership of ancestral property by male descendants from a common ancestor.	Does not recognize coparcenary. Sons acquire ownership only upon father's death.
Start of Coparcenary	Birth of a son to the father.	Death of the father.
Nature of Ownership	Unity of ownership. All coparceners collectively own the property.	Unity of possession, but divided shares. Each coparcener has a defined share.

Partition	Can be demanded by any coparcener, including women after 2005 amendment.	Can be demanded by any adult coparcener, male or female.
Father's Power over Property	Limited and qualified. Cannot dispose of ancestral property without consent of coparceners.	Absolute power over all property, separate or ancestral.
Coparcener's Power over Share	Cannot alienate undivided share by sale, mortgage, etc.	Can alienate defined share even before partition.

Punganur Cow

- The Punganur Cow, a dwarf cattle breed native to Punganur village in Andhra Pradesh, stands at 70-90 cm tall and weighs less than 200 kg.
- The horns are crescent-shaped and often lose curving backward and forward in males and lateral and forward in females.
- It is known for its high resilience to drought and adaptability to low-quality feed. The milk of a Punganur cow is prized for its high fat content, making it ideal for producing ghee.
- A Punganur cow can give around 1 to 3 litres of milk a day, with an 8 percent fat content compared to 3 to 4 percent in other native breeds. The milk is rich in nutrients like Omega fatty acids, calcium, potassium, and magnesium. Its milk is used in many temples in Andhra Pradesh for Ksheeraabhishekam, a milk offering to the deity.
- The Punganur cow is considered eco-friendly, requiring less water, feed, and space compared to hybrid breeds. Because of their decreasing population, the Andhra Pradesh government initiated 'Mission Punganur' in 2020.

Sapinda Marriages

- A sapinda marriage is a **marriage between two people who are related to each other within a certain degree of closeness**. The term "sapinda" is used in the context of cousin marriages.
- Section 3 of the Hindu Marriage Act (HMA) defines sapinda marriages:
 - Two people are "sapindas" of each other if one is a direct ascendant of the other.
 - Two people are "sapindas" of each other if they have a common direct ascendant who is within the limits of sapinda relationship.
- Specifically, they cannot marry anyone within three generations of their lineage on the mother's side or within five generations on the father's side.
- The Delhi High Court recently upheld the validity of Section 5(v) of the HMA, which prohibits marriages between "sapindas". The court emphasizes the requirement for stringent proof of established customs to justify sapinda marriages.

West Bengal Notified State Day & State Song

- The West Bengal government has declared **Poila Boisakh as State Day** and **Banglar Mati Banglar Jal as State Song**.
- Poila Boisakh, the first day of the Bangala Divas month, is a significant Bengali festival celebrated by communities across West Bengal, Tripura, Jharkhand, and Assam. In 2023, it will be celebrated on April 15th.
- Banglar Mati Banglar Jal (The Soil of Bengal, The Water of Bengal) song is written by Rabindranath Tagore.

Khelo India Para Games (KIPG)

- The 1st edition of Khelo India Para Games (KIPG) 2023 were held in **Delhi** in December 2023, featuring seven sports disciplines: Para Archery, Para Athletics, Para Badminton, Para Table Tennis, Para Powerlifting, CP Football, and Para Shooting.
- The **mascot was Ujjwala, a sparrow**. Haryana topped the medal table, followed by Uttar Pradesh.
- KIPG is part of India's Khelo India initiative, which includes the Khelo India Youth Games, Khelo India University Games, and Khelo India Winter Games.
- The **Khelo India Scheme, Central Sector Scheme, was proposed in 2017** to revive India's sporting culture by engaging with children at the grassroots level.
- Khelo India programme has been divided into 12 verticals to achieve the above goals. (refer infographic)
- Since 2018, 11 Khelo India Games have been successfully held, including 5 Khelo India Youth Games, 3 Khelo India University Games, and 3 Khelo India Winter Games.



Animal Sports in India

Event	Description
Hori Habba	Also known as Hatti Habba, a bull-taming rural sport held in Karnataka
Jallikattu	Bull-taming sport held during Pongal in Tamil Nadu.
Kambala	Traditional buffalo race from coastal Karnataka.
Rooster fight	Associated with gambling in many states, including Andhra Pradesh.
Bulbul fights	Held in Assam during Magh Bihu.
Bullock Cart Race	Traditional event found in states like Maharashtra, Karnataka, Tamil Nadu, etc.

Urbicide

- Multiple activists are characterizing Israel's targeting of Gaza's hospitals, bakeries, and schools as "urbicide."
- Derived from Latin, "**urbicide**" translates to 'city killing.'
- It denotes a deliberate, ritualized violence against built infrastructures. Initially coined by scholars in the 1980s, the term gained prominence during the Yugoslav wars (1992-1996), describing the widespread destruction of Balkan towns.
- However, "urbicide" extends beyond physical city destruction; it encompasses the obliteration of memories, identities, and cultural roots entrenched within a city's framework.

Grantham Inscriptions

- The Grantham inscriptions, discovered near **Kangayam in Tamil Nadu**, include stones bearing writings from the 11th century as well as Tamil inscriptions from the 16th century.
- The **Grantha script, utilized in Tamil Nadu for inscribing Prakrit and Sanskrit languages, finds its origins in the Pallava period.**
- It is **evident in Mahendravarman's Tiruchirappalli rock-cut cave** and other cave temple inscriptions.
- Additional Grantha inscriptions comprise those found at Narsimhan's Mamallapuram, Kanchi Kailasnatha temple, Pandyan Nedunjadaiyan's Anaimalai inscription, and inscriptions from the Cholas of Thanjavur.

SOCIETY

EDUCATION

Annual Status of Education Report (ASER) 2023

- The ASER 2023 is based on a survey conducted in 28 districts across 26 states, reaching out to 34,745 youths in the 14-18 age group.
- The **ASER, is an annual, citizen-led household survey** to track trends in school enrolment, attendance and reading and arithmetic abilities.
- ASER has been **conducted every year** since 2005 in all **rural districts of India** by **NGO Pratham**.

ASER 2023 Key Findings

- 55.7% of the young people in this age group were enrolled in the Arts/Humanities stream, followed by STEM (31.7%) and Commerce (9.4%).
- More males report enrolling in the STEM stream (36.3%) than females (28.1%).
- Overall (of those aged 14-18), 26.5% could not read a Class 2-level textbook in their regional language, and 42.7% could not read sentences in English.
- (56.7% of the surveyed students could not solve a simple 3-digit by 1-digit division problem.
- 85% of surveyed youths can measure length using a scale when the starting point is 0 cm but this drops sharply to 39% when the starting point is moved.
- Around 89% of those surveyed had a smartphone in the household and 92% said they knew how to use it. However, males were more than twice as likely to own their own smartphone than females.

The youths were surveyed on 4 points –

- Basic reading, math and English abilities
- Application of basic skills to everyday calculations
- Reading and understanding written instructions
- Financial calculations that need to be done in real life

All India Survey on Higher Education (AISHE) Report 2021-22

- Ministry of Education has recently released AISHE Report 2021-22. Ministry of Education (MoE) initiated an All-India Survey on Higher Education (AISHE) in the year 2010-11 to build a robust database and to assess the correct picture of higher Education in the country.
- **Objectives:**
 - Identify & capture all the institutions of higher learning in the country
 - Collect the data from all the higher education institutions on various aspects of higher education
- Data is being collected on several parameters, such as teachers, student enrolment, programmes, examination results, education finance, and infrastructure.
- Indicators of educational development such as Institution Density, Gross Enrolment Ratio, Pupil-teacher ratio, Gender Parity Index, Per Student Expenditure will also be calculated from the data collected through AISHE

Major Findings of AISHE 2021-22

Student Enrolment in Higher Education	Total enrolment increased to nearly 4.33 crore in 2021-22 from 3.42 crore in 2014-15. Female enrolment rose to 2.07 crore, marking a 32% increase since 2014-15.
Caste Breakdown of Total Enrolled Students	Scheduled Caste: 15.3% Scheduled Tribe: 6.3% Other Backward Class: 37.8% Other Communities: 40.6%
Top States in Terms of Enrolment	UP, Maharashtra, Tamil Nadu, MP, West Bengal, and Rajasthan account for 53.3% of total enrolment.

Number of Foreign Students	Total foreign students enrolled: 46,878. Nepal constitutes the highest share (28%), followed by Afghanistan (6.7%), United States (6.2%), Bangladesh (5.6%), UAE (4.9%), and Bhutan (3.3%).
Teaching Staff in Higher Education	Total faculty/teachers: 15.98 lakh. Male: 56.6%, Female: 43.4%.

PRERANA Programme

- Department of School Education & Literacy, Ministry of Education, has launched 'Prerana: An Experiential Learning Program'.
- This programme will operate from the vernacular school in Prime Minister Narendra Modi's birthplace Vadnagar, Gujarat where he studied.
- Prerana is driven by a strong commitment to integrate principles of Indian education system and the philosophy of value-based education which is a corner stone of the National Education Policy (NEP) 2020

About the Programme:

- **Objective:** To offer a meaningful, unique, and inspiring experience to all participants, thereby empowering them with leadership qualities.
- **Themes:** Curriculum of Prerana School prepared by IIT-Gandhinagar is rooted in 9 value-based themes.
- It is a week-long residential program for selected students of class IX to XII.
- A batch of 20 selected students (10 boys and 10 girls) will attend the program, every week from various parts of the country.
- It will contribute by making the youth of today, a flame holder for Viksit Bharat.

Regulation of Foreign Higher Educational Institutions (FHEIs) in India

- The University Grants Commission (UGC) has notified regulations to allow foreign universities to establish campuses in India.

Key Highlights:

- **Approval:** The UGC will establish a **permanent committee to review applications** from FHEIs seeking to establish campuses in India, which will evaluate each application based on factors like the **credibility of the institution, the proposed programs**, etc. Recommendations will be provided within 45 days, and upon approval, the FHEI must set up its campus in India within two years.
- **Eligibility:** FHEIs that are in the top 500 global rankings (either overall or subject-specific rankings) and FHEIs that Institutions of repute in their home countries are eligible.
- **Degrees and Quality of Education:** Degrees awarded and quality of education in Indian campuses of FHEIs shall be equivalent to those awarded in their home countries. Further, FHEIs cannot offer programmes in online, open and distance learning modes.
- **Autonomy:** FHEIs will have autonomy over their admissions process and criteria, (for domestic and international students). They must maintain a transparent and reasonable fee structure. Additionally, they are permitted to hire faculty and staff from India and abroad, provided the faculty meet the qualifications required by the institution's main campus in their home country.
- **Restrictions:** The operation of FHEIs must align with the sovereignty and integrity of India, the security of the state, friendly relations with foreign states, public order, decency, and morality.

SATHEE (Self-Assessment Test and Help for Entrance Exams)

- The Ministry of Education has launched SATHEE - a free learning and assessment platform for students, providing free training and coaching for competitive exams.
- The platform is designed to help economically disadvantaged students who cannot afford coaching.

- The materials are available in English, Hindi, and regional languages, and are particularly beneficial for exams like JEE, NEET, CAT, GATE.
- The platform also features instructional videos from prestigious institutions and uses the AI program **Prutor developed by IIT-Kanpur**.

HEALTH

Centre Set to Roll Out Vaccine Drive to Fight Cervical Cancer

- In a bid to reduce cases of cervical cancer, the government is all set to roll out an immunisation campaign against Human Papillomavirus (HPV) by mid-2023.
- The drive will involve **CERVAVAC** vaccine which is based on VLP (Virus-Like Particles), similar to the Hepatitis B vaccination.
- Girls between the ages of 9 and 14 years across India will be vaccinated for free in three phases under the government's programme over the next three years.
- Once the "catch-up" is done, the HPV vaccine will be included in the government's routine immunisation programme for 9-year-old girls.

About Cervical cancer

- Cervical cancer is the fourth most common cancer in women globally with around 660000 new cases and around 350000 deaths in 2022.
- It starts in the cells of the cervix. The cervix is the lower, narrow end of the uterus (womb).
- Cervical Cancer usually develops slowly over time with initial appearance of abnormal cells in the cervical tissue. Later, cancer cells start to grow and spread more deeply into the cervix and to surrounding areas.

Causes

- HPV, a common sexually transmitted infection, causes most cervical cancer. It affects the skin, genital area, and throat.
- The body's immune system typically prevents HPV damage, but in a small percentage of people, the virus survives for years, contributing to the development of cervical cancer cells.

How does the vaccine prevent cancers?

- The quadrivalent vaccines, including the Serum Institute of India's Cervavac, prevent the entry of four of the most common types of HPV 16, 18, 6 and 11 thereby preventing infections, genital warts, and eventually cancer.

HPV Vaccines Available

- **Quadrivalent vaccine (Gardasil):** protects against four types of HPV (HPV 16, 18, 6 and 11).
- **Bivalent vaccine (Cervarix):** protects against HPV 16 and 18 only.
- **Non-valent vaccine (Gardasil 9):** protects against nine strains of HPV.

Swachh Survekshan Awards 2023

- The President of India conferred Swachh Survekshan awards 2023 at Bharat Mandapam, New Delhi hosted by the Ministry of Housing and Urban Affairs (MoHUA).
- Surat in Gujarat and Indore in Madhya Pradesh were jointly declared cleanest cities of the country.

About Swachh Survekshan

- It is an annual survey of cleanliness, hygiene and sanitation in cities and towns across India, launched as part of the Swachh Bharat Abhiyan (SBA-Urban).

SWACHH SURVEKSHAN 2023 SURVEY:

<p>CLEANEST CITIES (with population of more than 10 lakh):</p> <ol style="list-style-type: none"> 1. Indore & Surat 2. N/A 3. Navi Mumbai 4. Visakhapatnam 5. Bhopal 	<p>CLEANEST CITIES (with population less than 1 lakh):</p> <ol style="list-style-type: none"> 1. Sasvad (Maharashtra) 2. Patan (Gujarat) 3. Lonavala (Maharashtra) 4. Karad (Maharashtra) 5. Panchgani (Maharashtra) 		
<p>STATE RANKING (states with more than 100 urban local bodies):</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>TOP 5</p> <ol style="list-style-type: none"> 1. Maharashtra 2. Madhya Pradesh 3. Chhattisgarh 4. Odisha 5. Telangana </td> <td style="width: 50%; vertical-align: top;"> <p>BOTTOM 5</p> <ol style="list-style-type: none"> 23. Tripura 24. Nagaland 25. Rajasthan 26. Mizoram 27. Arunachal Pradesh </td> </tr> </table>		<p>TOP 5</p> <ol style="list-style-type: none"> 1. Maharashtra 2. Madhya Pradesh 3. Chhattisgarh 4. Odisha 5. Telangana 	<p>BOTTOM 5</p> <ol style="list-style-type: none"> 23. Tripura 24. Nagaland 25. Rajasthan 26. Mizoram 27. Arunachal Pradesh
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- It was launched by the Ministry of Housing and Urban Affairs (MoHUA) with Quality Council of India (QCI) as its implementation partner.
- The first survey was undertaken in 2016 (covering 73 cities), which had grown to cover 4242 (by the 2020 survey).
- The methodology for measuring cleanliness rests on two main criteria – citizen feedback and field assessment.

Category	Winners
Cleanest Cantonment Board	Mhow Cantonment Board (Madhya Pradesh)
Cleanest Ganga Towns	Varanasi, Prayagraj
Best Performing State	Maharashtra, Madhya Pradesh, Chhattisgarh
Best Safaimitra Surakshit Sheher	Chandigarh

Operation AMRITH (Antimicrobial Resistance Intervention for Total Health)

- The Kerala Government's Operation AMRITH has implemented the **original H1 rule**, which **mandates the requirement of a doctor's prescription for the purchase of any class of antibiotics**.
- This initiative makes Kerala as the first state to enforce this regulation since its announcement.

Rules for Selling of Drugs Under Schedule H1 of Drugs and Cosmetics Rules, 1945

- **Original H1 Rule of 2011:** The Union government introduced the H1 rule, **prohibiting over-the-counter (OTC) sales of antibiotics without a prescription**, in response to the growing concern over Antimicrobial Resistance (AMR).
- **Modified H1 Rule of 2013:** Following the **Chennai Declaration** and initiatives by medical societies in India, the Indian government modified the rule to **restrict OTC sales only for second- and third-line antibiotics**. This modification aims to ensure accessibility of life-saving antibiotics, particularly in remote areas where access to doctors may be limited.

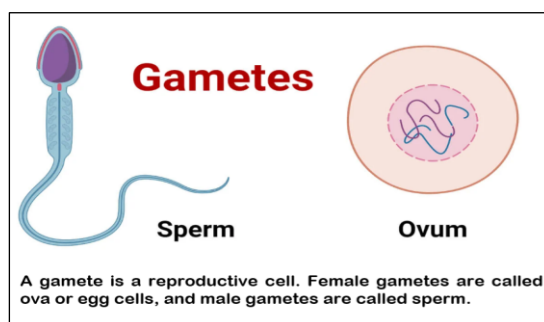
Drugs and Cosmetics Rules, 1945

- The Drugs and Cosmetics Rules, 1945 classify drugs into various schedules and provide guidelines for their storage, sale, display, and prescription, with major schedules being:

Schedule H	<ul style="list-style-type: none"> • Drugs can only be sold with a prescription from a registered medical practitioner, with sales limited to the specified amount on the prescription. • Drugs must be labeled with the 'Rx' symbol
Schedule X	<ul style="list-style-type: none"> • Similar rules to Schedule H, with the added requirement for drug retailers to retain a copy of the prescription for two years. • Drugs must be labeled with the 'XRx' symbol, • Schedule X includes drugs containing narcotic and psychotropic substances.
Schedule H1	<ul style="list-style-type: none"> • Introduced to regulate the use of antibiotics, anti-TB, and certain other drugs. • Drug packages must feature a mandatory warning printed in a box with a red border, labelled with the symbol Rx which shall be in red.

Govt allows use of a Donor Gametes for Surrogacy

- The Central government has amended Surrogacy (Regulation) Rules, 2022 to allow use of a donor gamete – ova or egg cells and sperm.
- The **Surrogacy (Regulation) Act, 2021**, restricted married couples from getting donor gametes.
- A fresh notification by the Union Ministry of Health and Family Welfare said the couple undergoing surrogacy must use their own gametes for having a surrogate child.



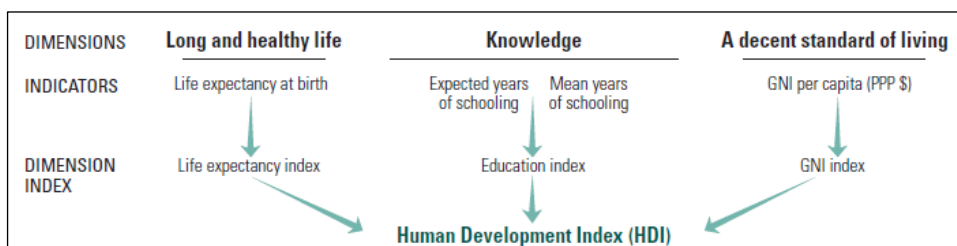
- However, in case a **District Magistrate Board certifies** that either husband or wife suffers from a medical condition, then the couple can use a donor gamete.
 - But the notification allows **only one of the two partners – either wife or husband – to use a donor gamete.**
 - **A child to be born through surrogacy must have at least one gamete from the intending parents.**
 - This means a married couple where both partners have medical issues or are unable to have their own gametes cannot opt for surrogacy.

Human Development Index (HDI)

- In 2022, India's position on the United Nations Human Development Index (HDI) got a little better. It moved up one spot from 135 to 134 out of 193 countries ranked. Switzerland is at the top of the list.

About Human Development Index (HDI)

- The Human Development Index (HDI) was first introduced in 1990 by the United Nations Development Programme (UNDP). It was developed by Pakistani economist **Mahbub ul Haq**.
- It is a way to measure **how well people are doing in different countries**. It measures average achievement of a country in **3 basic dimensions**. (shown in figure)
- Along with the HDI, the Human Development Report (HDR) also shows
 - Multidimensional Poverty Index (MPI)
 - Inequality-adjusted Human Development Index (IHDI)
 - Gender Inequality Index (GII) (since 2010)
 - Gender Development Index (GDI) (since 2014)
- This index reflects Amartya Sen's "capabilities" approach to assessing human well-being, which prioritizes ultimate goals such as a decent standard of living over mere means such as income per capita.



Key Highlights of the HDR 2023/24 – India

- India in the **medium** human development category: Between 1990 and 2022, the country saw its HDI value increase by 48.4%, from 0.434 in 1990 to 0.644 in 2022.
- **Performance of India's Neighbourhood**
 - Sri Lanka ranked at 78, while China is ranked 75, both categorised under the High Human Development category.
 - Bhutan stands at 125 and Bangladesh at 129th position.
 - Nepal (146) and Pakistan (164) have been ranked lower than India.


Mission Utkarsh

- The Ministry of Ayush and Ministry of Women and Child Development have signed a Memorandum of Understanding (MoU) to implement **Ayurveda interventions for nutritional improvement in adolescent girls** aged 14-18 under Mission Utkarsh.
- Under the ambit of Mission Utkarsh, the concerted **efforts of 15 central ministries/departments** will be directed

Anaemia

» According to the WHO, anaemia is a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal.

» If there are too few red blood cells, or not enough haemoglobin, there will be a decreased capacity of the blood to carry oxygen to the body's tissues.



ANEMIA

Factors

- » The most common nutritional cause of anaemia is iron deficiency although deficiencies in folate, vitamins B12 and A are also important causes.
- » Certain chronic diseases, such as kidney disease, liver disease, cancer, or autoimmune disorders, can interfere with the production of red blood cells.
- » Inherited conditions, such as sickle cell anemia or thalassemia, affect the structure or function of red blood cells, leading to chronic anemia.

towards uplifting districts that currently lag behind state and national averages.

- Initially, the emphasis will be placed on enhancing the anaemic status of adolescent girls aged 14-18 in **five aspirational districts spanning across five states: Assam (Dhubri), Chhattisgarh (Bastar), Jharkhand (Paschimi Singhbhum), Maharashtra (Gadchiroli), and Rajasthan (Dhaulpur).**

Lancet Projects Further Fall in India's Fertility Rate

- A recent study by Lancet on global fertility rates has projected fall in India's total fertility rate (TFR).
 - TFR** is the average number of children a woman would have during her lifetime if she were to experience the current age-specific fertility rates, and if she lived from birth until the end of her reproductive life.
 - Calculation:** The total fertility rate is the sum of the age-specific fertility rates for all women multiplied by five. The age-specific fertility rates are those for the 7 five-year age groups from 15–19 to 45–49.
 - Replacement Level Fertility:** Replacement level fertility is the level of fertility at which a population exactly replaces itself from one generation to the next. In developed countries, replacement level fertility can be taken as requiring an average of **2.1 children per woman.**
- Global trends in Total Fertility Rate:**
 - Researchers estimate that **by 2050, 155 of 204 countries** (76% of the world) will be **below the replacement level** of fertility.
- Decline in India's fertility rate:**
 - In India, the **TFR was 6.18 in 1950** which **reduced to 4.60 in 1980** and further **declined to 1.91 in 2021.** It is projected to **dip further to 1.29 in 2050** and **1.04 in 2100.**

Food Waste Index Report 2024

- Food Waste Index Report 2024** has been launched by **the United Nations Environment Programme (UNEP)** and **WRAP (Waste and Resources Action Programme)**, a U.K.-based non-profit organization. It was **first launched in 2011.**
- The objective** of this report is to catalyze essential action towards reducing food waste and achieving UN's Sustainable Developmental Goal (**SDG 12.3**).

Key Highlights of the Food Waste Index Report 2024:

- In 2022,** the world **wasted 1.05 billion tonnes** of food.
- Out of the total food wasted in 2022, **households** were responsible **for 631 million tonnes.**
- On average, each person wastes **79kg** of food annually.
- Hotter countries** appear to have more food waste per capita in households than cooler countries.
- In middle-income countries rural areas generally wasting less food than the urban areas.

India TB Report 2024

- The India TB Report 2024, as released by the Union Health Ministry, highlights a narrowing gap between estimated and actual tuberculosis (TB) cases.
- This development is crucial as it signifies progress towards identifying and treating cases, thereby curbing the spread of infection. Achieving this milestone contributes significantly to **India's objective of eliminating TB by 2025.**

About the Report

- The annual India TB Report is **prepared and published under the National TB Elimination Programme (NTEP)** by the **Central TB Division of the Ministry of Health and Family Welfare**
- Published from the year 2001,** it captures the policy updates, programme implementation, and state and district wise performance indicators.

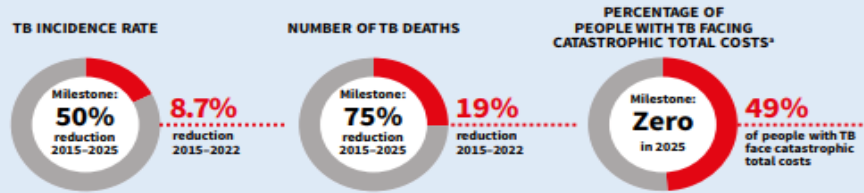
TB CASES IN INDIA OVER THE YEARS

	India TB Report 2020	2023	2024
Estimated TB cases	26.9 lakh	27.4 lakh	27.8 lakh
Number of cases reported	24.04 lakh	24.2 lakh	25.5 lakh
Reporting from private sector	6.8 lakh	7.3 lakh	8.4 lakh
% cases from private sector	28.20%	30%	32.90%
Estimated mortality	4.36 lakh	3.2 lakh	3.2 lakh

WHO's END TB Strategy

- It was adopted in 2014 with the aim to end the TB epidemic globally by 2035.
- It aims at 95% reduction by 2035 in the number of TB deaths compared with 2015, 90% reduction by 2035 in the TB incidence rate compared with 2015 and Zero TB-affected families facing catastrophic costs due to TB by 2035.

WHO End TB Strategy: 2025 milestones



About Tuberculosis

Infection Agent	Mycobacterium tuberculosis bacteria
Symptoms	Persistent cough, coughing up blood, chest pain, weight loss, fatigue, fever, night sweats
Transmission	It is spread from person to person through the air. When people with lung TB cough, sneeze or spit, they push the tuberculosis germs into the air.
Treatment	Antibiotic therapy (usually a combination of drugs taken for several months), directly observed therapy (DOT) for ensuring adherence to treatment
Vaccine	Bacillus Calmette-Guérin (BCG) vaccine, but its effectiveness varies geographically.

Obesity and Undernutrition Persist in India

- According to a new study published by the Lancet, India has become one of the countries with a high “double burden,” of Obesity and Undernutrition.

Meaning of Obesity & Undernutrition in Health-Related Studies

- Undernutrition**
 - Undernutrition is defined as insufficient intake of energy and nutrients to meet an individual's needs to maintain good health.
- Obesity**
 - Adults — anyone over the age of 20 years — are considered to be obese, if they have a BMI of 30 kg/m² or more.
 - School-aged children and adolescents — anyone between the ages of 5 and 19 years — are considered obese, if their BMI is two standard deviations above the mean.
- Underweight**
 - An adult is considered underweight if their BMI is less than 18 kg/m².
 - School-aged children and adolescents are considered underweight if their BMI is two standard deviations below the mean.

WHAT IS BMI ?

Body Mass Index (BMI) is a test that calculates a person's weight in kilograms divided by the square of height in meters.

Highlights of the Study

- There were 44 million women living with obesity in 2022.
- 13.7% of women and 12.5% of men were underweight in India.

Social Isolation and Loneliness

- Loneliness is a serious problem that affects people's health all over the world. It is estimated that, social isolation is associated with about a 50% increased risk of dementia, 29% increased risk of heart disease and 32% increased risk of stroke.
- In light of this, the World Health Organization (WHO) has started a new project to help people feel more connected and less alone. The **WHO Commission on Social Connection (2024–2026)** aims to make social connection a top priority for everyone's well-being.

- The new WHO Commission will work on creating a plan for social connection that everyone can follow. They will also spread the word and team up with others who can help find the best ways to support people, communities, and countries in overcoming loneliness.

Draft National Menstrual Hygiene Policy, 2023

- Recently, the Ministry of Health and Family Welfare released the Draft National Menstrual Hygiene Policy, 2023.
- The policy recognizes menstruation as a natural bodily function for girls and women and aims to address the ongoing challenges related to menstruation in our country.
- **Period Poverty:** Period poverty is a lack of access to menstrual products, education, hygiene facilities, waste management, or a combination of these. It affects an estimated 500 million people worldwide.
- Only two states, **Kerala and Bihar**, currently have menstrual leave policies for women.
- **Current programs for Menstrual hygiene management:**
 - **Menstrual Hygiene Scheme (MHS):** By Ministry of Health and Family Welfare for promotion of menstrual hygiene among adolescent girls in the age group of 10-19 year in rural areas.
 - **National Guidelines for Menstrual Hygiene Management (2015):** These national guidelines (by Ministry of Education) offer a blueprint for all states to enhance their efforts regarding menstrual hygiene management.
 - **Swachh Bharat Mission (2014):** Menstrual hygiene management is a part of SBM (Gramin) initiative.

Mayer-Rokitansky-Küster-Hauser syndrome (MRKH)

- MRKH is a disorder that mainly affects the female reproductive system.
- This condition causes the vagina and uterus to be underdeveloped or absent, although external genitalia are normal.
- Affected individuals usually do not have menstrual periods due to the absence of a uterus.
- People with MRKH syndrome have normally functioning ovaries. People with this condition are usually unable to carry a pregnancy, they may be able to have children through assisted reproduction.

Hepatitis

- According to the Global Hepatitis Report 2024 released by the World Health Organisation (WHO), India is one of the countries with the highest burden of viral hepatitis.

About Hepatitis	
Definition	Inflammation of the liver, categorized as acute (short-term) or chronic (long-term) infection.
Types of Hepatitis	<ul style="list-style-type: none"> • Viral hepatitis: Caused by hepatitis viruses A, B, C, D, and E. • Alcoholic hepatitis: Resulting from heavy alcohol use. • Toxic hepatitis: Due to poisons, chemicals, medicines, or supplements. • Autoimmune hepatitis: Chronic condition where the body's immune system attacks the liver.
Spread of Viral Hepatitis	<ul style="list-style-type: none"> • Hepatitis A and E: Spread through contaminated food or water, or undercooked food. • Hepatitis B, C, and D: Spread through contact with infected blood or other bodily fluids, including through drug needles or unprotected sex.
Symptoms	<ul style="list-style-type: none"> • Fever, fatigue, loss of appetite, nausea, vomiting, and other symptoms. • Some individuals may not show symptoms.
Treatment	<ul style="list-style-type: none"> • Treatment varies based on the type and whether it is acute or chronic. • Acute cases may resolve on their own. Different medicines are available for chronic hepatitis.

Whooping Cough

- The number of cases of whooping cough has been rising in several countries like China, the Netherlands and Czech Republic.
- It is a highly contagious infection which impacts the respiratory tract.

About Whooping Cough

Cause	Bordetella pertussis bacteria
Symptoms	Begins with cold-like symptoms and low-grade fever. Progresses to severe coughing fits with a "whooping" sound. May lead to vomiting and sleep apnea.
Transmission	Spread via droplets when an infected person coughs or sneezes.
Complications	Particularly severe in infants . May lead to pneumonia and death in severe cases.
Treatment	Vaccination with Diphtheria, Tetanus, and Pertussis (DTaP) vaccines .

VULNERABLE SECTIONS

Pradhan Mantri Anu Suchit Jaati Abhyuday Yojana (PM-AJAY)

- Pradhan Mantri Anu Suchit Jati Abhyuday Yojana (PM- AJAY), is an amalgamation of three Centrally Sponsored Schemes (CSS). It was launched in the fiscal year 2021-22. These three Centrally Sponsored Schemes are:
 - **Pradhan Mantri Adarsh Gram Yojana (PMAGY)**: For integrated development of Scheduled Castes majority villages.
 - **Special Central Assistance to Scheduled Castes Sub Plan (SCA to SCSP)**: To give a thrust to family-oriented schemes of economic development of SCs below the poverty line (BPL), by providing resources for filling the critical gaps.
 - **Babu Jagiwan Ram Chhatrawas Yojana (BJRCY)**: For construction of hostels, especially for SC girls, towards the broader vision of containment and reduction of their dropout rate.

Objective of PM-AJAY:

- **Reduce poverty** among SC communities through skill development and income-generating schemes.
- **Improve socio-economic indicators** in SC-dominated villages by enhancing infrastructure and services.
- **Boost literacy** and enrollment in schools and higher education among SCs by providing quality residential facilities, including in aspirational districts and SC-dominated areas nationwide.

Components of PM-AJAY:

- Development of SC dominated villages into "Adarsh Gram".
- Grants-in-aid for District/State-level Projects for socio-economic & overall betterment of SCs.
- Construction of Hostels in higher educational institutions which are ranked top according to the National Institutional Ranking Framework (NIRF).

Appraisal, Monitoring, Evaluation & Social Audit of PM-AJAY:

- **Advisory Committees at the Central and State level:** The Central Advisory Committee would be headed by the Union Minister for Social Justice and Empowerment (SJ&E).
- **Project Appraisal-cum-Convergence Committees (PACC) at Central, State and District level:** The Central level PACC will be headed by the Secretary, Department of SJ&E.
- **Village Level Convergence Committee (VLCC):** VLCC will be headed by the Sarpanch/Pradhan of the village and will have all SC members of the Panchayat.
- **Evaluation:** NITI Aayog or the other designated agency of the Central or State Government.
- **Social Audit:** The Gram Sabha should undertake social audit of the scheme at least once a year.

Jenu Kuruba Tribe

- For generations, the indigenous Jenu Kuruba tribe has resided in the forests of the Western Ghats, facing deprivation of their fundamental rights and limited access to development opportunities.
- As their name suggests, the Jenu Kurubas are **traditional honey gatherers**. The term "**Jenu**" in **Kannada translates to honey**, while "**kuruba**" **refers to their caste**.
- They are one of the original inhabitants of the Western Ghats forests, spanning Karnataka, Kerala, and Tamil Nadu.
- Their **settlements, known as Hadi**, are small and scattered throughout the region.
- Historically, their main occupation revolved around food gathering and collecting minor forest produce, notably honey, from the forests. They also engage in **shifting cultivation**.
- The Jenu Kurubas maintain a **semi-nomadic lifestyle** that is not governed by external authorities like rulers or religious institutions.
- Instead, **each settlement is self-regulated, with a head-man (yajamana) and a ritual leader (gudda)** overseeing community affairs.

Muria Tribe (Gutti Koyas)

- The Muria tribe lacks access to primary education, safe drinking water, and social welfare benefits also remains a dream and they are at risk of displacement.
- Muria tribe are located in the states of Telangana, Andhra Pradesh, Chhattisgarh, and Odisha.
- The **Muria settlements** are known as **habitations of Internally Displaced People (IDPs)**, whose population is around 6,600 in Andhra Pradesh, and they here are **referred to as 'Gutti Koyas' by the native tribes**.
- They speak **Koya**, which is a **Dravidian language**.
- They have progressive perspective towards marriage and life as a whole. The biggest example being the **Ghotul (a commune or dormitory)**, which is meant to create an environment for Muria youth to understand their sexuality.
- **Gutti Koyas held ST status in Chattisgarh** but they were not granted ST status in their migrated states such as Telangana.

Pahariya Tribe

- The community name Paharia is believed to have been derived from the word **pahar** meaning **hills**.
- They live mainly in the states of **Jharkhand and West Bengal**. There are also scattered groups of them in **Uttar Pradesh, Maharashtra and Odisha**.
- They **practise jhum or shifting cultivation** which involves clearing land by burning vegetation for farming for a few years.
- In Jharkhand, there are two types of Pahariyas.
 - **Mal Pahariya**: These people live in the southern hills of Damin-i-koh and in the south and east of Santhal Parganas. They are a race of Proto-Ostroloid.
 - **Shauria Pahariya** (or Maler Paharia): They are mostly found in Santhal Parganas.
 - Both these tribes are listed as **Particularly Vulnerable Tribal Groups (PVTG)** in the state of **Bihar and Jharkhand**.
- Their main residential place was in the area of Karnataka. At present, they live in mountains of Rajmahal and Santhal Pargana. Their own language is "**Malto**".
- They worship their household, clan and village deities like Mait, Maa, Gangadi, Sunadi, Rupadi, Budharaj.
- They speak their own **Pahariya language** at home. Their language is influenced by Havli and Chharisgarhi.

Hattees Get ST Tag

- The state government of Himachal Pradesh gave green signal for the inclusion of '**Hattees**' in the Scheduled Tribes (ST) list of the state, months after the President gave his nod for the same.

About Hattee Tribe:

- Hattees are a close-knit community residing around the **Himachal-Uttarakhand** border in the basin of the **Giri and Tons rivers**, both tributaries of the Yamuna River.
- Hattis living in the Trans-Giri area in today's Himachal Pradesh and Jaunsar Bawar in Uttarakhand were once part of the **royal estate of Sirmaur**.
- They derive their name from their tradition of selling homegrown vegetables, crops, meat and wool etc. at small markets called '**haat**' in towns.
- They are governed by a traditional council called **Khumbli** and the men from this community generally wear a distinctive white headgear during ceremonies.
- The two Hattee clans, in Trans-Giri and Jaunsar Bawar, have similar traditions, and **inter-marriages are common**.

Process of Inclusion in the ST List:

- As per the modalities for inclusion first framed in 1999, the proposal for inclusion must originate from the respective State or Union Territory government.
- Then the proposal is sent to the Union Tribal Affairs Ministry, which sends it to the Office of the Registrar General of India (ORGI).
- If the ORGI approves the inclusion, the proposal is forwarded to the National Commission for Scheduled Tribes.
- After the concurrence of these institutions, the proposal will move to the Cabinet for the necessary amendment to the Constitution (Scheduled Tribes) Order, 1950.

Criteria to be Recognised as ST:

- Laid out by the Lokur Committee in 1965.
- indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness.

Divorced Muslim Women's Right to Maintenance

- The Supreme Court has decided to examine if a divorced Muslim woman is entitled to a claim of maintenance under Section 125 of the Criminal Procedure Code (CrPC) against her former husband.

Muslim Women (Protection of Rights on Divorce) Act of 1986

- The **Muslim Women (Protection of Rights on Divorce) Act of 1986** is a legislation passed to address the specific needs of Muslim women undergoing divorce.
- It was **enacted in response to the Shah Bano Case**, which recognized a Muslim woman's entitlement to seek maintenance from her divorced husband under Section 125 of CrPC. The Act aimed to reconcile this decision with religious personal laws.
- Section 3 of the 1986 Act mandates **maintenance payment to a divorced Muslim woman by her former husband solely during the iddat period**.
 - **Iddat, typically lasting three months**, is a waiting period after divorce or widowhood before a woman can remarry.
 - The maintenance amount stipulated in Section 3 is **equivalent to the mahr or dowry** provided to the woman at the time of marriage or thereafter.
- **Following the iddat period**, if the woman remains unmarried and financially dependent, she may **seek maintenance from a first-class magistrate**.

Section 125 of the Criminal Procedure Code

- In contrast, Section 125 of the Criminal Procedure Code establishes a secular law for the maintenance of wives, children, or parents.
- This provision enables individuals facing financial hardship to claim support from their spouses or children if they are incapable of self-sustainment.

Annual Death Penalty Report for 2023

- In the Annual Death Penalty Report for 2023, it was revealed that appellate Courts in India, including the Supreme Court and all High Courts combined, confirmed only one death sentence throughout the year.
 - The majority of cases either saw the death sentences commuted or resulted in the prisoners being acquitted entirely.
- The report, titled '**Death Penalty in India: Annual Statistics 2023**,' was compiled by **Project 39A**, a criminal justice program associated with the National Law University, Delhi.
- **According to Section 366 of the Criminal Procedure Code (CrPC), all death sentences issued by trial courts must undergo confirmation by the respective High Courts.**

NITI Aayog's Discussion Paper - Multidimensional Poverty in India since 2005-06

- As per the NITI Aayog's Discussion Paper 'Multidimensional Poverty in India since 2005-06', 24.82 crore people escaped multidimensional poverty in last nine years.
- Significant decline in multidimensional poverty in India from 29.17% (2013-14) to 11.28% (2022-23) (reduction of 17.89% points).
- **States with largest decline:** Uttar Pradesh topped the list with 5.94 crore people escaping poverty followed by Bihar (3.77 crore) and Madhya Pradesh (2.30 crore).
- The report said India is all set to reach single-digit poverty levels during 2024.

PM SURAJ Portal

- The **Ministry of Social Justice and Empowerment** launched the '**Pradhan Mantri Samajik Utthan and Rozgar Adharit Jankalyan**' (PM-SURAJ) national portal.
- The portal is being launched in order to set up a **one-stop point** where people from **disadvantaged sections** of society can apply for and monitor the progress of **all loan and credit schemes** already available to them.
- The portal will help in **providing financial assistance directly to beneficiaries**, eliminating middlemen and commissions.
- The credit support will be **provided to eligible persons** across the country and facilitated **through banks, NBFC-MFIs**, and other organisations.

Transgender in Sports

- The ICC (International Cricket Council) has barred cricketers who experienced male puberty from international women's games, regardless of surgery or gender reassignment treatment.
- ICC's new policy is based on the principle of protection of the integrity of the women's game, safety, fairness, and inclusion.
- **Other Sport Authorities:**
 - **As per World Athletics (WA)**, Differences in Sex Development (DSD) athletes — those who have genes which are generally associated with one sex but whose reproductive organs may not be atypical — must keep their testosterone below 2.5 nmol/L for 24 months to participate in the female category across events.
 - World Governing Bodies for cycling (UCI), swimming (FINA) and World Rugby have **barred trans women** from competing in women's events.
 - The International Olympic Committee has given individual federations the responsibility to establish eligibility criteria for their sports for transgender individuals.

G HAR Portal

- The National Commission for Protection of Child Rights (NCPCR) launched the **G HAR (GO Home and Re-Unite) Portal** earlier.

- This portal is designed to **digitally monitor and track the restoration and repatriation of children** according to the protocols outlined in the Juvenile Justice (Care and Protection of Children) Act, 2015.

National Commission for Protection of Child Rights (NCPCR)	
Act	Commission for Protection of Child Rights (CPCR) Act, 2005
Composition	<ul style="list-style-type: none"> Chairperson: Person of eminence with significant contributions to children's welfare. Term: 3 years or until 65 years, with a maximum of 2 terms. 6 Members: At least 2 women, individuals eminent in fields such as education, child health, juvenile justice, etc. Term: 3 years or until 60 years, with a maximum of 2 terms.
Appointment	<ul style="list-style-type: none"> Chairperson and Members appointed by Central government. Chairperson appointed based on recommendation of a committee chaired by the Minister of Education.
Removal	<ul style="list-style-type: none"> Central Government can remove Chairperson or Member if found insolvent, engages in paid employment outside duties, refuses to act, convicted of offense involving moral turpitude, etc. No removal without opportunity for a hearing.
Functions and Responsibilities	<ul style="list-style-type: none"> Review and recommend measures for effective implementation of child rights safeguards. Report annually to the central government on the effectiveness of safeguards. Investigate violations of child rights and recommend legal actions. Review policies, programs, and activities related to child rights and suggest improvements, Promote research in child rights. Raise awareness through publications, media, and seminars. Inspect institutions where children reside and recommend actions if needed. Investigate complaints and take suo motu notice of issues related to child rights violations. Additional responsibilities under RTE Act, POCSO Act, etc.
Powers	<ul style="list-style-type: none"> Summon and enforce attendance of witnesses, examine them on oath. Require discovery and production of documents. Receive evidence on affidavits. Requisition public records or copies. Issue commissions for examination of witnesses and documents. Recommend prosecution, approach courts for directions, and recommend interim relief.

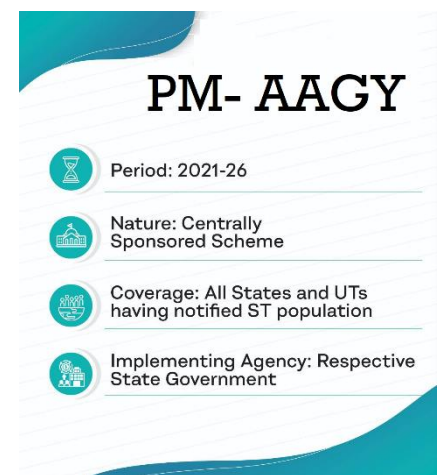
Office of Chief Commissioner for Persons with Disabilities

- The Office of the Chief Commissioner for Persons with Disabilities was set up under Section 57 of The **Persons with Disabilities Act, 1995**. (Replaced by Rights of Persons with Disabilities Act, 2016). It works under **Ministry of Social Justice and Empowerment**.
- Structure:** It consists of one chief commissioner for persons with disability and two commissioners to assist the chief commissioner.
- Appointment:** A person, who has special knowledge or practical experience with respect to matters relating to rehabilitation, is appointed as chief commissioner by Central Government.
- Functions and Powers:**
 - Identify any laws, policies, programs, or procedures that conflict with the PwD Act 2016.
 - Examine the protections offered by the PwD Act 2016 or any other law.
 - Examine what prevents persons with disabilities from enjoying their rights and suggest solutions.
 - Conduct and encourage research on disability rights.
 - Raise awareness about disability rights and available protections

- For the purpose of discharging his functions CCPD has been vested with powers of a civil court in respect of- summoning and enforcing the attendance of witnesses, requiring the discovery and production of any document, receiving evidence on affidavits etc.
- **Government initiatives for making infrastructures accessible:**
 - **Accessible India Campaign (Sugamya Bharat Abhiyan)** to make a barrier-free and conducive environment for PwDs all over the country
 - **Sugamya Bharat app** was launched by the Department of Empowerment for Persons with Disabilities to enable persons with disabilities to report any building that is inaccessible
 - **Harmonised Guidelines and Space Standards** for Barrier Free Built Environment for Persons with Disabilities and Elderly Persons
 - **Scheme for Implementation of Rights of Persons with Disabilities Act (SIPDA), 2016**, a Central Sector Scheme to provides financial assistance in making existing Government buildings accessible to PwDs.

Pradhan Mantri Adi Adarsh Gram Yojana (PMAAGY)

- Ministry of Tribal Affairs has revamped the existing Scheme of 'Special Central Assistance to Pradhan Mantri Adi Adarsha Gram Yojana.
- The scheme aims to transform villages with significant tribal population into model village (Adarsh Gram) covering about population of 4.22 crore (About 40% of the total Tribal Population).
- **Objectives:**
 - Achieve integrated socio-economic development in selected villages through convergence.
 - Improve infrastructure in vital sectors: health, education, connectivity, and livelihood.
 - Maximize coverage of government benefit schemes for individuals/families.
 - Address gaps in 8 key development sectors: road and telecom connectivity, schools, Anganwadi centres, health facilities, and drinking water.
- **Why Revised:** The Scheme was revised to capture the Gaps in critical socio-economic 'Monitorable Indicators' as part of various sectors/domains namely; water and sanitation, education, health and nutrition.
 - The identification of needs or Gaps with regard to the 'Monitorable Indicators' will be based on a Need Assessment exercise.
 - The 'Village Development Plan' (VDP) is based on the data collected as part of the Need Assessment exercise.



Scheme for Providing Drones to Women

- The Government of India has recently launched **Central Sector Scheme for providing drones to the Women Self Help Groups (WSHGs).**
- The scheme aims to provide drones to 15,000 selected Women SHGs during period 2023-24 to 2025-2026, for **providing rental services to farmers for agriculture purpose i.e. application of fertilizers and pesticides.**
- Women SHG with "A" grade as per the Deendayal Antyodaya Yojana (DAY-NRLM) guidelines will be selected for providing drones.
- Scheme will converge the resources and efforts of, Department of Agriculture & Farmers Welfare (DA&FW); Department of Rural development (DoRD); Department of Fertilizers (DoF) and Lead Fertilizer Companies (LFCs).
- **Training:** The State Rural Livelihood Mission and LFCs will select one qualified member from SHGs who is at least 18 years old to undergo a 15-day training program.

Child Labour

- The Parliamentary Standing Committee on Labour, Textiles and Skill Development presented its report on 'National Policy on Child Labour – An Assessment'
- The report finds presence of ambiguity in the definition of child in various legislations as a roadblock in attaining the SDG goal 8.7 (to end all forms of child labour by 2025).
- For instance, **Right of Children to Free and Compulsory Education Act, 2009** defines child as a person aged 6 to 14 years, while **Juvenile Justice (Care and Protection of Children) Act, 2015** defines child as a person who has not completed 18 years of age.
- The report identifies two main hotspots for child labour and trafficking: areas receiving immigrants from Bengal and Bangladesh, and tribal areas of Assam.
- **Steps Against Child Labour:**
 - **Article 24:** Prohibits the employment of children below the age of 14 years in any factory, mine, or hazardous occupation.
 - **PENCil Platform:** To ensure effective enforcement of child labour laws and end child labour.
 - **ILO Conventions:** India has ratified both ILO conventions (138 and 182) that deals with ending the child labour.
 - **Legislations:** India has passed progressive legislations like: Child Labour (Prohibition and Regulation) Act, 1986 (amended in 2016), Right to Education Act 2009, (Care and Protection of Children) Act, 2015 etc.

Child Labour

According to the Child Labour (Prohibition and Regulation) Act, 1986, a "child" is a person who has not yet attained the age of 14 years.

This Act prohibits the employment of a child in any employment, including as a domestic help. It is a cognizable criminal offence to employ a child for any work.

Global Alliance for Global Good - Gender Equity and Equality

- **India unveiled** a "Global Alliance for Global Good- Gender Equity, and Equality" on the sidelines of the 54th annual World Economic Forum (WEF) meeting in Davos.
- The alliance **aims to consolidate global best practices, facilitate knowledge exchange, and provide investment prospects in women's education, health, and entrepreneurship.**
- It serves as a significant stride towards fulfilling various Sustainable Development Goals (SDGs), notably SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), SDG 5 (Gender Equality and Empowerment), SDG 17 (Global Partnership for Development), and more.
- Noteworthy industry leaders such as MasterCard, Uber, Tata, TVS etc. and over 10,000 partners from various sectors via the Confederation of Indian Industry (CII) have pledged their support.
- The initiative has garnered backing from the **Bill and Melinda Gates Foundation**, with the CII Centre for Women Leadership serving as its home and anchor.
- Key partnerships include the **World Economic Forum (WEF)** as a 'Network Partner' and **Invest India** as an 'Institutional Partner'.



Jal Diwali

- Ministry of Housing and Urban Affairs (MoHUA) launched **Jal Diwali - "Women for Water, Water for Women Campaign"** under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in partnership with National Urban Livelihood Mission (NULM).

- It commenced on 7th November and continued till 9th November, 2023.
- **Aim:** To provide a platform for inclusion of women in water governance and to instil a sense of ownership and belonging among women towards water infrastructure.
- **Focus Areas:**
 - A) Familiarize women with Water Treatment Plants and testing facilities,
 - B) Promote inclusivity through souvenirs and articles from Women SHGs, and
 - C) Educate them about the AMRUT scheme and its impact on water infrastructure.
- **The Phase 1** of the campaign witnessed participation from all States and Union Territories except states under Model code of Conduct (Telangana, Rajasthan, Chhattisgarh, MP and Mizoram), due to assembly elections in these states.

Khula under Islamic Law

- The Supreme Court recently issued notice regarding an appeal challenging two Kerala High Court rulings affirming that Muslim women possess the absolute right to seek unilateral and extra-judicial divorce through Khula under Islamic law.

About Khula

- Khula is a provision within Islamic law that **grants Muslim women the authority to seek separation from their husbands independently.**
- This practice is **explicitly mentioned in the Quran and is intended to protect women's rights** within the framework of Islamic law.
- The Khula process **involves the wife formally petitioning the court for divorce, citing reasons** such as incompatibility, abuse, or neglect.
- Additionally, during Khula, there's the **option for the woman to return the 'Mehr' or negotiate a financial settlement** with her husband as part of the divorce agreement.
- Following a Khula divorce, the **husband becomes responsible for providing education and financial support for the children.**

Comparing with Talaq

- In contrast, **Talaq is the form of divorce initiated by the husband.** According to Muslim law, when a man pronounces 'Talaq,' the marriage is **immediately dissolved.**
- Unlike Khula, where the woman must provide a reason for divorce, **Talaq allows a Muslim man to divorce his wife with or without cause, without a specific procedure.**
- After Talaq, the husband must compensate his former wife with her dowry and any property she owned.

Anganwadi Protocol for Divyang Children

- The Anganwadi Protocol for Divyang Children was launched by the Union **Ministry for Women and Child Development.**
- The protocol embodies a Social Model for Divyangjan inclusive care under the POSHAN Abhiyan, with a step-by-step approach:
 - Step 1: Screening for early disability signs
 - Step 2: Inclusion in community events and empowering families
 - Step 3: Referral support via ASHA/ANM & Rashtriya Bal Swasthya Karyakram (RBSK) teams.
- Through the Divyang protocol, every district administration will be guided in addressing special needs for education and nutrition, providing **Swavlamban Cards** for the empowerment of divyang children and their families.
- The protocol is in line with the National Curriculum Framework for Foundational Stage 2022.

POLITY AND GOVERNANCE

CONSTITUTION

Minority Character of AMU

- A seven-judge Bench of the Supreme Court (SC) is hearing a matter pertaining to Aligarh Muslim University's (AMU) minority character, a dispute which dates back to almost 57 years.
- Although there is **no specific definition provided for the word "minority"** in our Constitution, it has been used in **Articles 29** (Protection of Interest of Minorities) and **Article 30** (Right of minorities to establish and administer educational institutions).
- **Article 30** defines two types of minorities- **Linguistic Minorities** and **Religious Minorities**.
- Minority Educational Institutions (MEIs) are colleges or institutions established by a minority group to protect and promote their culture and traditions. In case the property is taken over by the state, due compensation is to be provided to establish institutions elsewhere.

Aligarh Muslim University

- It was established by **Sir Syed Ahmad Khan** in **1875** as the **Muhammadan Anglo-Oriental (MOA) College**.
- In 1920, university status was conferred upon MOA and all its assets were transferred to Aligarh Muslim University following the AMU Act.
- Aligarh Muslim University and Banaras Hindu University have been included in the Union List within the Seventh Schedule of the Indian Constitution. Any institution listed in the Union List is ineligible to be classified as a minority institution.

Recognition of Minorities

- The recognition of the minority community falls within the purview of the **Concurrent List**.
- Presently, the determination of minority community status in India is carried out by the central government in accordance with the National Commission for Minorities Act, 1992.
- In March 2022, the Supreme Court was informed by the central government that the determination of minority status for eligible communities within their territorial jurisdiction could be decided by the states also.

Article 142 of the Constitution

- The article 142 gives a **special power to the SC** to pass such decree or make such order as is necessary for **doing complete justice** in any cause or matter pending before it if a law or any statute fails to do so.
- Such orders are **enforceable throughout the territory of India** as prescribed by any law made by Parliament or order of the President of India.

Scope of Article 142 as defined by SC

- **An Order Should Be Consistent with Fundamental Rights:** Any order made under Article 142 must align with both fundamental rights guaranteed by the Constitution and relevant statutory laws.
- **An Order Cannot Override a Substantive Law:** The powers under Article 142 are supplementary and cannot override substantive laws. The court cannot create new legal frameworks where none existed before.
- **An Order Should Not Cause Injustice** to a person who is not a party to the case.

Curative Petition

- Final remedy for reconsidering dismissed review petitions.
- Considered only in cases involving: **Violation of principles of natural justice** or **Question of bias** against the presiding judge or court.
- Must be **certified by a senior advocate**.
- If found frivolous, court may impose exemplary costs on the petitioner.
- Finds its basis in **Articles 137 and 142**
- Coined by the Supreme Court in 2002 by its judgment in the case of Rupa Ashok Hurra v. Ashok Hurra.

Role of Governor

Recently, Tamil Nadu government approached SC against Governor due to pendency of bills.

Important Constitutional Provisions about the Governor's Role

Article 163	There shall be a council of ministers with the chief minister as the head to aid and advise the governor in the exercise of his functions, except in so far as he is required to exercise his functions in his discretion.
Article 164	The chief Minister shall be appointed by the Governor and the other Ministers shall be appointed by the Governor on the advice of the Chief Minister, and the Ministers shall hold office during the pleasure of the Governor.
Article 174	The Governor can also summon, prorogue, and dissolve the Legislative Assembly. By convention, he does this on the advice of the Council of Ministers while they enjoy the confidence of the Assembly.
Article 200	Every Bill passed in an Assembly has to be sent to the Governor, after which he has four options a) To assent to the Bill, b) Withhold assent, c) Reserve the Bill for the consideration of the President, or d) Return the Bill to the legislature, asking it to reconsider the Bill or an aspect of it. The Governor can also suggest an amendment to the Bill.

Supreme Court Cases

- **State of Punjab vs Principal Secretary to the Governor of Punjab:** Chief Justice of India (CJI) has linked withholding assent with mandatory reconsideration, stating that the Governor's power to withhold assent is absolute. This means that if the Governor chooses to withhold assent, they must send the bill back to the Assembly for reconsideration.
- **Durga Pada Ghosh versus State of West Bengal (1972):** The first proviso of Article 200 states "as soon as possible," but the Constitution does not specify its meaning. The Supreme Court interpreted this phrase to mean "as early as practicable without avoidable delay".
- **SR Bommai Case (1994):** SC established that the Governor's power should be limited to exceptional circumstances and that their subjective satisfaction should be subject to judicial review.

LEGISLATURE

Foreign Contribution Regulation Act (FCRA)

The Ministry of Home Affairs (MHA) has cancelled the Foreign Contribution Regulation Act (FCRA) licence of leading think-tank Centre for Policy Research (CPR), about a year after it was suspended, for allegedly violating provisions of FCRA.

About FCRA

- FCRA was enacted in 1976 (during Emergency period) to regulate the utilization of foreign contributions by individuals and associations to keep such donations consistent with the values of a sovereign, democratic republic.
- **Prohibition:** The Act prohibits the receipt of foreign contributions "for any activities detrimental to the national interest".
- **Registration:** Organizations require to register themselves with Ministry of Home Affairs to seamlessly and legitimately receive funds from abroad.
- **Implementation:** The Act is implemented in convergence with various Union government Ministries and agencies, State authorities, and a network of formal and informal institutions and individuals.

Historical Evolution of FCRA

1976	Introduction of FCRA during Emergency due to concerns about foreign interference in India.
1984	Amendment requiring all NGOs to register with the Home Ministry.
2010	Enactment of amended FCRA consolidating laws on foreign fund utilization.

2015	MHA notification mandating NGOs to ensure foreign funds do not compromise Indian interests.
2017	Finance act allowing political parties to receive foreign funding outside FCRA regulations.
2020	Further amendment to strengthen compliance, transparency, and accountability in fund usage.

Key Provisions in 2020 Amendments

- **Public servants are prohibited** from accepting foreign donations.
- Foreign donations cannot be transferred to any other person, regardless of their registration status under the Act.
- Aadhaar, passport copy, or Overseas Citizen of India card must be provided as identity proof by those seeking permission, registration, or renewal of registration to accept foreign donations.
- Foreign donations can only be received in an “FCRA account” in a specified branch of the State Bank of India in New Delhi.
- The government can halt the use of unutilised foreign donations if the Act is violated.
- Every person with a registration certificate must renew it within six months before it expires.
- The **limit for using foreign donations for administrative purposes** has been reduced from 50% to **20%**.
- The government can suspend the registration of a person for up to 360 days, instead of 180 days.

MPLADS e-SAKSHI Application

- The MPLADS e-SAKSHI Mobile Application was launched by the Ministry of Statistics and Programme Implementation (MoSPI) for revised fund flow procedure under Members of Parliament Local Area Development Scheme (MPLAD) Scheme.
- This application will allow Members of Parliament (MPs) to engage with and manage development projects in their constituencies by allowing them to propose, track, and oversee the projects at their fingertips.
- **Objective:** To enhance transparency, accessibility, and efficiency in the execution of MPLAD scheme.

About Members of Parliament Local Area Development (MPLAD) Scheme

Launch Year	1993
Type	Central Sector Scheme
Objective	To enable each Member of Parliament to recommend developmental works focusing on durable community assets.
Implemented By	MPLAD division of Ministry of Statistics and Programme Implementation (MoSPI)
Funds	<ul style="list-style-type: none"> • Each MP can suggest works worth Rs. 5 Crores per annum (non-lapsable) in their constituency. • Rajya Sabha MPs can recommend works in one or more districts from the state they represent. • Nominated Members of Lok Sabha and Rajya Sabha can select districts from any state in the country. • MPLADS suspended in 2020-21 due to COVID-19 pandemic, no funds allocated for that financial year.
Role of MPs	Limited to recommending works; district authority responsible for sanctioning, executing, and completing them.

Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985

- Supreme Court (SC) recently overturned an order by Madras High Court (HC) granting anticipatory bail to a respondent accused under the Narcotic Drugs and Psychotropic Substances Act, 1985.
- **NDPS Act was introduced to control and regulate drug abuse** and prohibit activities related to the production, cultivation, sale, purchase, transport, storage, and/or consumption of any narcotic drug or psychotropic substance.
- This Act also **provides for identification, treatment, rehabilitation, social re-integration** of the addict among

Constituted	In 1950 as the Opium Department (Now CBN)	In 1986 under the NDPS Act, 1985.
Functions	<ul style="list-style-type: none"> License farmers to cultivate opium poppy Procures the opium produced by licenced cultivators 	<ul style="list-style-type: none"> Coordinating entity between various narcotics and drug law enforcement agencies within the country India's nodal point with international agencies like UNODC

Rule 3(1)(b) of the Intermediary Rules (IT Rules 2021)

- The government is poised to issue Google a notice under Rule 3(1)(b) of the Intermediary Rules (IT Rules 2021) after the company's AI platform, Gemini, presented unsubstantiated allegations in response to a query.
- Rule 3(1)(b) of the Intermediary Rules (IT Rules) of the IT Act states that **online platforms are required to inform users not to host, display, upload, modify, or share any information that belongs to another person** and is grossly **harmful, defamatory, obscene, pornographic, paedophilic**, or otherwise unlawful in any manner.

Water (Prevention and Control of Pollution) Amendment Act, 2024

- The Water (Prevention and Control of Pollution) Amendment Act, 2024 which seeks to amend the Water (Prevention and Control of Pollution) Act, 1974 received assent from the President.
- The objectives are to decriminalize certain violations and impose penalties instead. The aim is to ensure that citizens, businesses, and companies operate without fear of imprisonment for minor defaults.
- The Amendment Act 2024 will **initially apply to Himachal Pradesh, Rajasthan, and Union territories**, with other states having the option to adopt it.

Water (Prevention and Control of Pollution) Act, 1974

- The Water (Prevention and Control of Pollution) Act, 1974, enacted under Article 252 of the Constitution, aimed to prevent water pollution.
- It **established the Central and State Pollution Control Boards (CPCB and SPCBs) to monitor and prevent contamination of public water resources**. The CPCB provides technical guidance, while the SPCBs enforce compliance and file cases.
- The Act mandates industrial units to obtain permission from State boards before setting up factories and comply with prescribed norms.

Key Changes	Water (Prevention and Control of Pollution) Act, 1974	Water (Prevention and Control of Pollution) Amendment Bill, 2024
Consent Exemptions for Industries	Requires SPCB consent for certain industrial plants	Central government may exempt certain industrial plants from consent requirement
Chairman of State Board	Nominated by state government	Terms and conditions of service prescribed by central government
Penalty for Offences	3 months Imprisonment and Rs. 10000 fine for offences that are unspecified	Removes imprisonment as a punishment and prescribes a penalty between Rs 10,000 and Rs 15 lakh.
Adjudicating Officer	-	Central government appoints adjudication officers to determine the penalties, appeals to such penalties will be to National Green Tribunal
Cognizance of Offences	a court may take cognizance of an offence if a complaint is made by the CPCB or SPCB, or a	Adds Adjudicating officer as complaint basis for court cognizance

	person who has given a notice of the complaint to the Boards.	
Offences by Government Departments	Department head deemed guilty for offences	Department head pays penalty equal to one month's salary if department violates Act

Cross Voting in Rajya Sabha

- The Member of Parliament (MP) elections for Rajya Sabha in Uttar Pradesh, Himachal Pradesh and Karnataka witnessed crossvoting by MLAs belonging to different parties, raising concerns about the sanctity of the election process.
- Article 80(4) of the Constitution provides for the election of Rajya Sabha MPs by elected MLAs through the proportional representation process with the single transferable vote (STV) system where each MLA's vote is counted only once.
- The polls for Rajya Sabha **will be required only** if the number of candidates exceed the number of vacancies.

What is a Cross Voting?

- It is a phenomenon where a legislator goes against his party's designated candidate and votes for a candidate belonging to a different part or alliance.

Tenth Schedule and Rajya Sabha elections

- **10th Schedule** provides that a member of a House of Parliament or State legislature who voluntarily gives up the membership of their political party or votes against the instructions of their party in a House are liable for disqualification from such House.
- However, the **elections to Rajya Sabha are not treated as a proceeding** within the Legislative Assembly.
- The Election Commission, **drawing reference to Supreme Court judgments**, had issued a clarification in July 2017, specifying that the **provisions of the 10th Schedule**, with respect to voting against the instruction of the party, **will not be applicable for a Rajya Sabha election**.
- Furthermore, **political parties cannot issue any whip** to its members for such elections.

Special and Local Laws

- Several bills have been proposed to reform substantive criminal law but Special and Local Laws (SLLs) have been largely overlooked.
- Cognizable crimes are categorized either under the 'Indian Penal Code (IPC)' or under the 'Special and Local Laws (SLL)'.
- The SLL identify criminal activities that the state government frames for specific issues.
- **Special Laws:**
 - A "special law" is a law applicable to a particular subject. Special laws are those that cover specific issues.
 - Examples of these laws include the Excise, Opium, Cattle Trespass, Gambling, and Railway Acts.
- **Local Laws:**
 - A "local law" is a law applicable only to a particular part of India.
 - Laws applicable to a particular locality only are termed local laws, e.g., Portuguese Civil Code, 1867 – Goa's Civil Code

- **Cognizable Offences** are serious crimes that can be investigated without a warrant, and the accused can be arrested under specific circumstances.
- **Non-cognizable Offences** are less serious and require a complaint from the victim or a court order for investigation. They can only be arrested with a warrant, except in specific situations.

Right to Information Act 2005

- Right to Information is derived from the fundamental right of freedom of speech and expression under **Article 19** of the Constitution.

- If we do not have information on how our Government and Public Institutions function, we cannot express any informed opinion on it.
- The basic object of the Right to Information Act is to empower the citizens, promote transparency and accountability in the working of the Government.
- The Act and its rules define a format for –
 - Requisitioning information,
 - A time period within which information must be provided,
 - A method of giving the information,
 - Charges for applying and
 - Exemptions of information which will not be given.
- **Key Provisions of the RTI Act include –**
 - **Sec. 4** of the Act imposes an obligation on public authorities to maintain its records duly catalogued and indexed in a manner and form which facilitates the right to information under the Act.
 - **Sec. 6** of the Act entitles a person desirous of obtaining any information under the Act, to make a request in writing to the Central or State Public Information Officer specifying the particulars of the information sought by him.
 - **Sec. 7** of the Act requires the Public Information Officer to either provide the information or reject the request for any of the reasons specified in Secs. 8 and 9 **within 30 days of receipt of the request.**
 - Under **Sec. 19**, if a person does not receive a decision within 30 days or is aggrieved by a decision of the Public Information Officer, he may prefer an appeal to an Officer who is senior in rank to the Public Information Officer in that Public Authority.
 - Exemptions under the Act – the information sought must not be related to **defence, national security, or personal details.**
- Before the advent of the RTI act, the disclosure of information in India was restricted by the Official Secrets Act and some other special laws. The RTI Act relaxed many such laws in the country.

Curbing Film Piracy

In order to curb film piracy, the Union government has appointed nodal officers to order taking down pirated content from digital platforms. The decision was taken in the wake of the Cinematograph Amendment Bill 2023, which was passed in the Parliament and received the presidential assent recently.

Cinematograph (Amendment) Act, 2023

- It amends the Cinematograph Act, 1952. The 1952 Act constitutes the Board of Film Certification for certifying films for exhibition.
- Such certifications may be subject to modifications/deletions. The Board may also refuse the exhibition of a films.

Key Features of the Cinematograph (Amendment) Act, 2023:

- **Additional Certificate Categories:**
 - The Bill adds certain additional certificate categories based on age. Also, the Bill provides for separate certificate for television/other media.
- **Unauthorized recording and exhibition to be punishable:**
 - The Bill prohibits carrying out or abetting: (i) the unauthorized recording and (ii) unauthorized exhibition of films.
 - The above offences will be punishable with: (i) imprisonment between three months and three years, and (ii) a fine between three lakh rupees and 5% of the audited gross production cost.
- **Certificates to be perpetually valid:**
 - Under the 1952 Act, the certificate issued by the Board is valid for 10 years. The 2023 Act provides that the certificates will be perpetually valid.
- **Revisional powers of the Central government:**

- The 1952 Act empowers the central government to examine and make orders in relation to films that have been certified or are pending certification. The Board is required to dispose matters in conformance to the order.
- The 2023 Act removes this power of the central government.

National Cadet Corps

- Recently, the National Cadet Corps (NCC) celebrated its 75th Anniversary on November 26, 2023.
- It is a **Tri-Services organisation**, comprising the Army, Navy and Air Force, engaged in grooming the **youth into disciplined and patriotic citizens** with **Headquarters in New Delhi**.
- It is **divided into 17 Directorates**, each of which is responsible for a specific state or group of states.
- The NCC's aim is to develop character, comradeship, discipline, leadership, secular outlook, and the spirit of adventure in the youth of the country.
- It came into existence under the **National Cadet Corps Act XXXI of 1948** under the **Ministry of Defence (MoD)**.
- It is a **voluntary organisation** that recruits cadets from high schools, colleges, and universities all over India.
- The cadets are given basic military training in small arms and parades. They are given preference in military service over normal candidates during selections.
- It is **headed by the Director General (DG)**, an Army officer of the rank of Lieutenant General.



Epidemic Diseases Act, 1897

- The 22nd Law Commission of India (LCI) has submitted a report titled "A Comprehensive Review of the Epidemic Diseases Act, 1897,". It recommends amending the current law or introducing new comprehensive legislation to address existing gaps in the Epidemic Diseases Act, 1897 and the International Health Regulation, 2005.

Epidemic Diseases Act, 1897	
Origin	British government introduced EDA in 1897 to tackle the bubonic plague epidemic in erstwhile Bombay Presidency during Lord Elgin-II's tenure as Viceroy .
Powers to Government	Grants extensive powers to regulate, prevent, and control dangerous epidemic diseases . Allows inspection of ships and vessels at ports .
Punishment Provisions	Violation may result in a fine of up to Rs. 1,000 or imprisonment of up to six months under Section 188 of the Indian Penal Code, 1860.
2020 Amendment	The Epidemic Diseases (Amendment) Act, 2020 was enacted to address violence against healthcare workers during the COVID-19 pandemic.

International Health Regulations

- The International Health Regulations (2005), abbreviated as IHR, is a **binding international legal agreement** involving 196 countries worldwide, including all Member States of the World Health Organization (WHO).
- It was adopted by the World Health Assembly in 1969 and revised in 2005.
- Its **objective is to assist the global community in preventing and**

What's the difference between an endemic, epidemic and pandemic disease?



ENDEMIC DISEASE
is constantly present in a certain population or region, with relatively low spread (or there may be periods when it doesn't affect people at all, if it is only present in the environment).



EPIDEMIC DISEASE
is when there is a sudden increase in cases spreading through a large population like a country (an outbreak is similar, but usually covers a smaller geographic area).



PANDEMIC DISEASE
is when there is a sudden increase in cases spreading through several countries, continents, or the whole world.

responding to acute public health risks that have the potential to spread across borders and endanger people worldwide.

- The Regulations also delineate the criteria used to ascertain whether a specific event qualifies as a "public health emergency of international concern."

Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014

The Minister of Housing and Urban Affairs highlighted the slow progress in implementing the Street Vendors Act, 2014, and unveiled a revamped PAiSA Portal Dashboard and PM SVANidhi Mission Monitoring Portal during an event.

Key Features of the Street Vendors Act, 2014

- **Rights of Street Vendors:** Street vendors are entitled to conduct their business according to the terms specified in their vending certificates.
- **Duties of Street Vendors:** Responsibilities include daily removal of goods at the end of allotted time-sharing periods, maintaining cleanliness and hygiene in vending areas, and upkeeping civic amenities and public property, along with payment of maintenance charges.
- **Town Vending Committees (TVCs):** These committees, established within Local Authorities, are responsible for identifying, enumerating, and allocating vending zones within cities. They must be constituted with at least 40% elected members being street vendors, one-third of whom must be women.
- **Survey of Street Vendors:** A periodic survey, conducted at least once every five years, is necessary for issuing Certificates of Vending (CoVs) to identified vendors.
- **Ceiling Limit on Vendors:** A cap of 2.5% of the population of the respective ward, zone, town, or city is imposed to accommodate vendors in designated vending zones.
- **Grievance Redressal Committees:** State-level committees, chaired by retired judicial officers, are mandated to address grievances of street vendors with impartiality.
- **Release of Seized Goods:** Non-perishable goods must be released within two working days, while perishable goods are to be released on the same day of claim.

PM SVANIDHI Scheme	
Launch	On June 01, 2020 to provide affordable working capital loans to street vendors affected by Covid-19 lockdown
Micro-credit Facility	Collateral-free loan of Rs. 10,000 with interest rates below 12% for one year
Extension	Originally until March 2022, extended to December 2024 with focus on enhanced collateral-free loan corpus, increased digital transactions, and socio-economic development
Implementation Agency	Small Industries Development Bank of India (SIDBI)
Eligibility for Loan	Street vendors who were vending prior to March 24, 2020, and possessing a certificate of vending from the Town Vending Committees as per the Street Vendors Act 2014
PAiSA Portal	The portal is a centralized platform for processing interest subsidies to eligible beneficiaries under various schemes, including PM Svanidhi, Interest Subsidy. It also facilitates direct transfer of interest subsidies to beneficiaries' bank accounts and provides a centralized data repository.

Two Bills on Jammu and Kashmir (J&K) Receive President's Assent

- The Jammu and Kashmir Reservation (Amendment) Act, 2023 and the Jammu and Kashmir Reorganization (Amendment) Act, 2023 have received the assent of the President.

Jammu and Kashmir Re-organisation (Amendment) Act, 2023

- **Number of seats in the Legislative Assembly: The 2019 Act** amended the Second Schedule of the 1950 Act to specify the total number of seats in the **Jammu and Kashmir Legislative Assembly to be 107**.
 - The 1950 Act reserved six seats for Scheduled Castes. No seats were reserved for Scheduled Tribes.
 - The **Act increases the total number of seats to 114**. It also reserves 7 seats for Scheduled Castes and 9 seats for Scheduled Tribes. The increase is based on the report of the **Delimitation Commission**.
- **Nomination of Kashmiri migrants:** The Act adds that the **Lieutenant Governor may nominate up to 2 members** (One of them must be a woman) **from the Kashmiri migrant community** to the Legislative Assembly.
 - Migrants are defined as persons who migrated from the Kashmir Valley or any other part of the state of Jammu and Kashmir after **November 1, 1989** and are registered with the Relief Commissioner.
- **Nomination of displaced persons:** The Act adds that the Lieutenant Governor may nominate to the Legislative Assembly 1 member representing displaced persons from **Pakistan-occupied Jammu and Kashmir**.
 - Displaced persons refer to individuals who left or were displaced from their place of residence in Pakistani-occupied Jammu and Kashmir and continue to reside outside such place.

The J&K Reorganization Act stipulates that 24 Assembly seats will remain vacant until Pakistan-occupied Kashmir ends, resulting in an effective strength of 83, which the amendment seeks to increase to 90.

J&K Reservation (Amendment) Act, 2023

- The J&K Reservation (Amendment) Act, 2023, amends the 2004 Act, which grants **reservation in jobs and professional institutions to Scheduled Castes, Scheduled Tribes, and other socially and educationally backward classes**.
- The amendment replaces weak and underprivileged classes with **other backward classes declared by the Union Territory of J&K**.

JUDICIARY

The Bilkis Bano Case

- The Supreme Court recently struck down the remission granted by the Gujarat government to the convicts who were serving life imprisonment for the gangrape of Bilkis Bano during the communal riots in Gujarat in 2002.

About Remission

- Remission of a sentence means reducing the duration of the sentence imposed.
- **Constitutional Provision:** The Constitution of India empowers the **President (Article 72)** and the **Governor (Article 161)** to grant pardon, suspend, remit or commute sentences in certain cases.
- **Statutory Provision:** The Criminal Procedure Code, 1973 (CRPC) empowers the government to suspend or remit or commute a sentence awarded by any court under
 - **Section 432:** As per this provision, an 'appropriate government' may suspend or remit a sentence, in whole or in part, with or without conditions.
 - **Section 433A:** If a person has been sentenced to life imprisonment for an offence where death is one punishment provided, or where the death sentence has been commuted to life imprisonment, then he can be released only after serving at least fourteen years of imprisonment.

Recent Initiative

- The Central Government as part of the 'Azadi ka Amrit Mahotsav', granted special remission to certain categories of prisoners and ordered their release in three phases- 15th August 2022 (75 years of Independence), 26th January 2023 (Republic Day), and 15th August 2023.
- **Eligibility:**

- Women and transgender convicts of 50 years of age and above who have completed 50% of the total sentence period.
- Male convicts of 60 years of age and above.
- Physically challenged/disabled convicts with certified 70% disability who have completed 50% of their total sentence period, etc.
- **Exclusion:**
 - Special remission was not granted to persons convicted of a death sentence or where the death sentence had been commuted to life imprisonment or persons convicted for an offence for which the punishment of death had been specified as one of the punishments.
 - Persons convicted with a sentence of life imprisonment; convicted for terrorist activities, dowry death, rape, human trafficking, POCSO, NDPS Act, etc.

Injunction

- The Supreme Court recently ruled that an injunction suit may be dismissed if the plaintiff fails to prove property title while seeking the injunction.
- Injunction is a **preventive remedy used by a party aggrieved by the actions of defendants to restrain them from such acts**. It serves as a **preventive measure against legal wrongs or as a remedy to enforce rights**.
- **Injunctions are discretionary** and the court considers various factors like urgency, balance of convenience, and likelihood of success before granting one.
- It can be **sought in cases like preventing publication of content, halting construction on land, prohibiting property sale or transfer**, granting search orders, or preventing someone from leaving the country.
- If a party violates an injunction, they may be found in contempt of court, leading to penalties such as fines or imprisonment.

Concept of Dynamic Injunction

- Dynamic injunctions are employed by courts **to protect copyrighted works even before their public release, distribution, or creation**.
- They aim to prevent irreparable loss to authors and owners due to the imminent risk of unauthorized distribution on rogue websites or immediate piracy upon release.

Supreme Court Legal Services Committee

- Justice BR Gavai, a Supreme Court (SC) judge was recently appointed as the Chairman of the Supreme Court Legal Services Committee (SCLSC).

Supreme Court Legal Services Committee:

- It is a committee constituted by the SC under Section 3A of the Legal Services Authorities Act, 1987 to provide free and competent legal services to the weaker sections of society.
- **Composition:** It consists of **a chairperson and nine members** nominated by the CJI.
- The appointment of officers and other employees is done on the criteria as **prescribed by the Centre**, in consultation with the CJI.
- **Constitutional Provisions:** **Articles 14** (right to equality), **Article 22(1)** (rights to be informed of grounds for arrest) and **Article 39-A** (free legal aid) make it obligatory for the State to ensure equality before the law and a legal system that promotes justice based on equal opportunity.

Legal Services Authority Act, 1987

It aims to provide free and competent legal services to-

- SC/ST persons,
- Persons whose annual income does not exceed Rs. 1 lakh
- Victims of human trafficking or beggar,
- Women or child,
- Mentally ill or otherwise disabled persons,
- Victims of mass disaster, ethnic violence, caste atrocity, flood, drought, etc.
- Industrial workers,
- Persons in judicial custody/juvenile home

Various Bodies under Legal Services Authority Act, 1987

- **National Legal Services Authority (NALSA)** is the apex body constituted under this act to lay down policies and distribute funds for the purpose of free legal aid.
- **The State Legal Services Authority** is constituted in every state to give effect to the policies and directions of NALSA and to give legal services to the people and conduct Lok Adalats in the State.
 - It is **headed by** the Chief Justice of the State High Court (HC) and a serving or retired HC Judge is nominated as its Executive Chairman.
- **The District Legal Services Authority** is constituted in every District to implement Legal Aid Programmes and Schemes on District level. District Judge is its ex-officio Chairman.
- **Taluk Legal Services Committees** are constituted for each of the Taluk or Mandal or for their groups. It is headed by a senior Civil Judge operating within the jurisdiction of the Committee.

D.K. Basu Guidelines for Arrest and Detention

- The Supreme Court recently found the incident of flogging men after tying them in a pole by four Gujrat Police personnels in contempt of D.K. Basu guidelines (1996) against police abuse and custodial violence.

The D.K. Basu vs State of West Bengal Case

- The Supreme Court in this case ruled that custodial violence or extra-judicial killings violate the dignity of any human being.
- The fundamental right to life as outlined in Article 21 (Protection of life and personal liberty) cannot be deprived from convicts, undertrials, detenus, and other prisoners in custody, except the procedure established by law.
- Hence, The SC laid down elaborate guidelines to be followed by the police and other investigative agencies mandatorily in cases of arrest, detention and interrogation.

Tribunal System in India

- The Supreme Court recently clarified that tribunals functioning under the strict parameters of their governing legislation cannot direct the government to make policy.

Tribunals in India

- **Constitutional Recognition:** Article 136 of the Constitution empowers the Supreme Court to grant special leave to appeal from any judgment, decree, order, determination, sentence, or order passed or made by any tribunal in India.
 - **Article 227** enables every High Court to exercise power of superintendence over all tribunals throughout the territories over which it exercises jurisdiction.
 - The **42nd Amendment Act, 1976**, inserted Articles 323-A and 323-B.
 - **Article 323A** empowers **Parliament** to constitute **administrative Tribunals (both at the central and state levels)** for adjudication of matters related to the recruitment and conditions of service of public servants.
 - **Article 323B** specifies **certain subjects (such as taxation and land reforms)** for which **Parliament or state legislatures** may constitute tribunals by enacting a law.
- **Composition of Tribunals:** The presence of **expert members (technical members) along with judicial members** is a key feature of tribunals, which distinguishes them from traditional courts.
 - The Supreme Court has noted that the members of a tribunal may be selected from departments of the central government as well as from various other fields of expertise.
 - Only persons with a judicial background (such as judges of the High Court and lawyers with the prescribed experience who are eligible for appointment as High Court Judges) may be considered for appointment as Judicial Members.
 - The Supreme Court specified that there is no need of a technical member if jurisdiction of courts is transferred to tribunals to achieve expeditious disposal of matters.

- **Term of office:** In 2020, the Supreme Court stated that the term of office for the Chairperson and other members must be five years (subject to a maximum age limit of 70 years for the Chairperson and 67 years for other members)
- **Jurisdiction:** Each tribunal is granted specific authority to adjudicate cases within its specialized field. Some tribunals possess appellate jurisdiction, allowing them to review decisions made by lower authorities or governmental bodies.
- **Appeals:** Appeals from tribunals typically **fall under the purview of the respective High Court**; however, certain laws stipulate that appeals may be heard by the Supreme Court. For instance, in the *Chandra Kumar Case* (1997), appeals against tribunal decisions were permitted to be heard by the division bench of High Courts.
- **Principle of Natural Justice:** Tribunals operate under the principle of natural justice, ensuring fair hearings and impartiality. Unlike traditional courts, they are not constrained by the strict rules of procedure and evidence as stipulated in the Civil Procedure Code (CPC).

Disposal of Cases Against MPs/MLAs

The Supreme Court has issued guidelines to monitor the speedy disposal of criminal cases against Members of Parliament (MPs) and Members of Legislative Assemblies (MLAs).

Provisions that deal with disqualification under the RPA

- Section 8 of the RPA deals with disqualification for conviction of offences.
 - Section 8(1A) of the act includes specific offences such as **promoting enmity between two groups, bribery, and undue influence or personation at an election.**
 - Section 8(2A) lists offences that deal with **hoarding or profiteering, adulteration of food or drugs** and for conviction and sentence of at least six months for an offence under any provisions of the **Dowry Prohibition Act.**
 - Section 8(3A) disqualifies a convicted person who has been sentenced to imprisonment for not less than **two years.**
- The member is disqualified from the date of such conviction and shall continue to be disqualified for a further period of **six years since his release.**

Related SC Cases	Ruling
Lily Thomas v Union of India (2013)	Legislators with minimum 2 years of imprisonment would cease to be members of the house.
Union of India v Association for Democratic Reforms (2002)	Established the fundamental right to know the antecedents of candidates contesting elections.
Public Interest Foundation v Union of India (2018)	Made it mandatory for political parties to publish details of criminal cases pending against their candidates.

No Immunity to Legislators for Accepting Bribes

- In a landmark judgement, a **seven-judge Constitution Bench** unanimously overruled its **1998 judgment in P.V Narasimha Rao v. State** and took away the immunity, the Members of Parliament (MPs) and Members of Legislative Assemblies (MLAs) enjoy from being prosecuted for accepting bribes to cast a vote or make a speech in the House in a particular fashion.
- **Therefore,** the law enforcement agencies will now be able to initiate prosecution against legislators in bribery cases **under the Prevention of Corruption Act (PCA), 1988.**

Privileges to Legislators: Covered in Prelims Quick Revision Part 1

Fast Track Special Courts (FTSCS) Scheme

- Recently, the Union Cabinet approved the continuation of fast-track courts, dedicated to dispensation of justice in cases of sexual offences, for a period of three years.

- This Centrally Sponsored Scheme was established in August 2019 to establish FTSCs for rape and POCSO cases, initially for one year. It was extended for two years and further extended until 31.03.2026, with a financial outlay of Rs. 1952.23 crore.
- **Fund:** The Central Share is funded from the **Nirbhaya Fund**.
- These are designed as dedicated courts which are expected to ensure swift dispensation of justice, offering quick relief to victims while strengthening the deterrence framework for sexual offenders.
- **Nodal Ministry:** It is implemented by the **Department of Justice, Ministry of Law & Justice**.
- It augments State Government resources for establishing FTSCs across the country, ensuring the swift disposal of cases related to rape and the POCSO Act.
- All States/Union Territories have participated in the Scheme, operationalizing 761 FTSCs, including 414 exclusive POCSO Courts.

Criminal Defamation

The Law Commission, in its report titled **"The Law of Criminal Defamation,"** has recommended retaining the offence of criminal defamation in the new criminal law.

About Criminal Defamation

- According to the Black's Law Dictionary, **defamation refers to "The offence of injuring a person's character, fame, or reputation by false and malicious statements."**
- **Indian Penal Code (IPC) section 499** prohibits communicating false information about an individual to harm their reputation, with a **maximum punishment of two years**.
- However, **Section 354(2)** of the **2023 Bharatiya Nyaya Sanhita Act** states different penalties for defamation, including **simple imprisonment, a fine, or community service**.
- The Supreme Court of India, in *Subramanian Swamy v. Union of India* (2016), upheld criminal defamation, aiming to balance free speech with the right to protect reputation.
- The Law Commission emphasized that reputation is a vital aspect of **Article 21** of the Constitution, which cannot be compromised merely for the sake of exercising freedom of speech, especially at the expense of hurting another's sentiments.
- **Article 19 (2)** lists grounds for imposing restrictions on freedom of speech and expression, including defamation.
- According to UNESCO data, **160 countries worldwide criminalize defamation**.

Two Types of Defamation

- **Libel** constitutes an untrue defamatory statement made in **writing**.
- **Slander** is an untrue defamatory statement spoken **orally**.
- **Under Indian law, both libel and slander are considered criminal offences**, requiring the statements to be made in public to constitute defamation.

Plaint

The Supreme Court recently ruled that under Order 6 Rule 17 of the CPC, no amendment to a plaint should be allowed if it changes the fundamental nature of the lawsuit.

About the Plaint

- A plaint is a **formal written complaint that contains all the grievances of the plaintiff and outlines all possible causes of action**. It is **presented to a civil court to initiate a civil lawsuit**.
- A plaint is a **legal document**.
- The plaintiff is the individual who initiates legal action against another party in court.

Central Administrative Tribunal (CAT)

- The Allahabad High Court recently held that an **appeal against an order of the CAT while exercising its contempt jurisdiction lies before the Supreme Court**.

About Central Administrative Tribunal (CAT)	
Establishment	Central Administrative Tribunal (CAT) was established under Article 323-A of the Constitution.
Mandate	To adjudicate disputes and complaints regarding the recruitment and conditions of service of persons appointed to public services and posts in connection with the affairs of the Union or other authorities under the control of the Government.
Jurisdiction	Exercises jurisdiction over service matters of parties covered by the Administrative Tribunals Act 1985.
Covered Organizations	Government has notified about 214 organizations under Section 14(2) of the Administrative Tribunals Act, 1985 , bringing them within CAT's jurisdiction.
Benches and Circuit Benches	17 Benches and 21 Circuit Benches spread across India.
Composition	Each bench consists of one Judicial Member and one Administrative Member.
Conditions of Service	<ul style="list-style-type: none"> • Chairman and Members of CAT have the same conditions of service as applicable to a Judge of High Court. • Salaries, allowances, and conditions of service of officers and other employees specified by the Central Government.
Powers	<ul style="list-style-type: none"> • Guided by principles of natural justice, not bound by Civil Procedure Code. • Empowered to frame own rules of procedure and practice. • Exercises jurisdiction over contempt of itself, akin to a High Court.

Contempt of Court

- **Constitutional Provisions: Article 129** of the Constitution says that the **Supreme Court shall be the 'Court of Record'** and it has all the powers of such courts including the power to punish for contempt of itself. **Article 215** conferred a corresponding power on the **High Courts**.
- According to the **Contempt of Courts Act, 1971**, contempt of court can either be civil contempt or criminal contempt.

Type of Contempt	
Civil Contempt	<ul style="list-style-type: none"> • Willful disobedience to any judgment, decree, direction, order, writ, or other process of a court, or • Willful breach of an undertaking given to a court.
Criminal Contempt	<p>The publication (whether by words, spoken or written, or by signs, or by visible representations, or otherwise) of any matter, or the doing of any other act whatsoever which:</p> <ul style="list-style-type: none"> • Scandalizes or tends to scandalize, or lowers or tends to lower the authority of, any court. • Prejudices, or interferes with, or tends to interfere with, the due course of any judicial proceeding. • Interferes or tends to interfere with, or obstructs or tends to obstruct, the administration of justice in any other manner.

- **Punishment: Simple imprisonment for a term which may extend to six months, or fine which may extend to two thousand rupees, or both**, provided that the accused may be discharged or the punishment awarded may be remitted on apology being made to the satisfaction of the court.

Reporting judicial proceedings in a fair and accurate manner does not constitute contempt of court. Similarly, offering **fair criticism** regarding the merits of a judicial order after a case has been heard is not contempt.

Predicate Offence

- The Supreme Court recently dismissed a money laundering case, citing the absence of both predicate offence and proceeds of crime in the case.

- A predicate offence refers to a **primary criminal act that forms part of a larger criminal activity, often linked to money laundering or organized crime**. It serves as the initial unlawful act that generates proceeds for subsequent illegal activities.
- The term "predicate offence" typically pertains to activities related to money laundering or terrorist financing.

Predicate Offence under the Prevention of Money Laundering Act (PMLA)

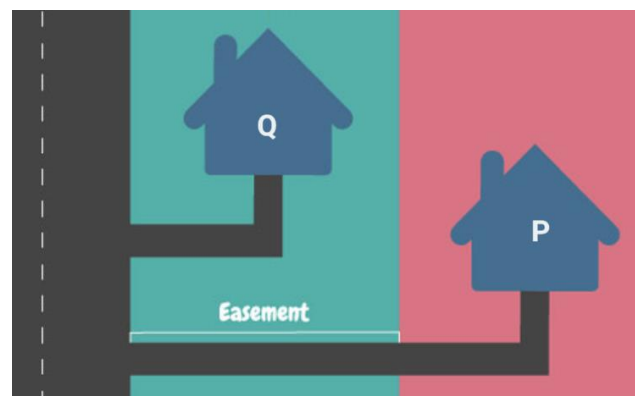
- The legislative objective behind predicate offences under the PMLA **aims to combat not only unlawfully acquired wealth but also income that is lawfully earned yet concealed from public authorities' scrutiny**.
- The PMLA identifies specific offences as predicate offences through its Schedule.

Doctrine of Harmonious Construction

- The Doctrine of Harmonious Construction is a legal principle used in **statutory interpretation**, particularly in cases **where there may be conflicts or inconsistencies between different provisions of a law**.
- The basic idea behind this doctrine is to interpret statutes in a way that **reconciles apparent conflicts or inconsistencies, rather than treating them as irreconcilable**.
- The doctrine suggests that courts should strive to give effect to all parts of a statute and avoid interpretations that render any part meaningless or redundant.
- Instead of favoring one provision over another, courts aim to harmonize conflicting provisions to give effect to the overall purpose and intent of the law.

Easementary right

- An easementary right is a type of right defined in the Indian Easements Act, 1882.
- It allows the owner or occupier of one piece of land to do something on another piece of land that isn't theirs, for the benefit of their own land.
- It's given because without this right, the owner or occupier wouldn't be able to fully enjoy their own property.
- It includes the right to do something on someone else's land, or to prevent something from happening on that land, all for the enjoyment of their own property.
- It is **not a transfer of property**. It is **just a permission granted to use someone else's land for specific purposes**. It can be created, changed, or ended, and it's usually documented in writing, except in cases where it has been used without restrictions for a long time.
- **Parties Involved:**
 - The owner or occupier who gets the benefit is called the Dominant Owner, and their land is called the Dominant Heritage.
 - The owner of the land on which the right is exercised is called the Servient Owner, and their land is called the Servient Heritage.
- **Example:** Let's say person P owns a house but needs to cross person Q's land to get to the street. P has a right of way over Q's land to do this.



Vakalatnama

- Vakalatnama is a **legal document in India that appoints an advocate to represent a party in court proceedings**. It is derived from the words "Vakalat" meaning authority and "Nama" meaning a document.
- When a person engages a lawyer, they sign a Vakalatnama, which formally appoints the lawyer to act on their behalf.
- **The document outlines the lawyer's authority**, the specific case or matter for which representation is sought, and other relevant details.
- It is also known as a memo of appearance, Vakilat Patra, or VP.

- The **definition of Vakalatnama is defined in the Advocates Welfare Fund Act, 2001**, which includes a memorandum of appearance or other document by which an advocate is empowered to appear or plead before any court, tribunal, or other authority.

INSTITUTIONS AND BODIES

Bureau of Police Research and Development

- The Bureau of Police Research and Development (BPRD) warned WhatsApp users of different scams perpetrated through the messaging platform's new 'screen share' feature.

Bureau of Police Research and Development (BPRD)	
Establishment Year	1970
Ministry	Ministry of Home Affairs
Functions	<ul style="list-style-type: none"> • Identify needs and problems of police forces and suggest solutions. • Conduct research projects and studies. • Assist states in modernizing State Police Forces and Correctional Administration. • Aid Ministry of Home Affairs and Central Police Forces (CPF) in developing standards and quality requirements. • -Anchor and coordinate the National Police Mission

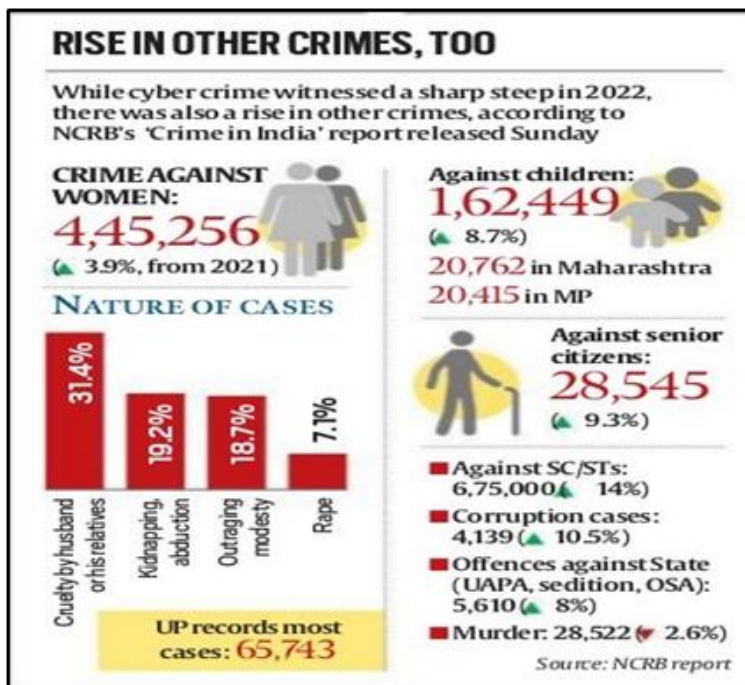
Kavach

The Centre launched a national level 'hackathon' in 2023 with the aim to address cyber security challenges and cybercrimes in the country. It is jointly conducted by the Ministry of Education's Innovation Cell and BPR&D.

Crime in India 2022 Report

- The National Crime Records Bureau (NCRB) released its annual report on crime in India for the year 2022.

- **National Crime Records Bureau (NCRB):** NCRB is an Indian government agency (headquartered in New Delhi) established in 1986 and is part of the Ministry of Home Affairs (MHA), Government of India.
 - It was set up based on the recommendation of the National Police Commission, 1977 and a Task force, 1985.
 - It is responsible for collecting and analysing crime data (as defined by the Indian Penal Code (IPC) and Special and Local Laws).
 - Along with the Crime in India report (oldest and most prestigious publication brought out by NCRB), It also publishes - **Prisons Statistics India Report.**



Lokayukta

- The Maharashtra Lokayukta Bill, 2022, was passed by the Maharashtra legislative council, replacing the Maharashtra Lokayukta and Upa-Lokayuktas Act, 1971.

- The First Administrative Reforms Commission recommended the establishment of Lokpal and Lokayukta as Ombudsman to address corruption complaints and grievances among citizens.
- They are headed by a panel of judges or retired judges, while Lokpal is a national-level institution and Lokayukta is a state-level institution, investigating allegations against public bodies and related matters.

Key provisions of the Lokpal and Lokayukta Act 2013:

- **Selection Committee:** which includes the Prime Minister as Chairperson, Speaker of Lok Sabha, Leader of Opposition in Lok Sabha, Chief Justice of India or a Judge nominated by him/her and one eminent jurist appointed by President.
- **Jurisdiction:** Jurisdiction includes the Prime Minister, Ministers, Members of Parliament, and group A, B, C, and D of government employees.
- **Composition:** It is composed of a chairperson and a maximum of eight members, with half of them being judicial members. 50% of members belong to Scheduled Castes, Scheduled Tribes, Other Backward Classes, minorities, and women.
- **Superintendence:** It has the power of superintendence and directs any investigative agency, including the Central Bureau of Investigation, for cases referred to it by the Lokpal.
- **Foreign Contribution (Regulation) Act, 2010 (FCRA):** Jurisdiction includes foreign donations in excess of Rs 10 Lakhs per year under the Foreign Contribution Regulation Act.
- The Act provides a requirement for establishing Lokayukta institutions through state legislation within 365 days of the Act coming into effect.

ELECTIONS

Electoral Bond Scheme (EBS)

- A Constitution Bench led by CJI DY Chandrachud unanimously declared the Electoral Bond Scheme unconstitutional, citing it as arbitrary and a violation of the Right to Information under Article 19(1)(a).

About Electoral Bond Scheme (EBS)

Electoral Bonds (EBs)	<ul style="list-style-type: none"> • They are Interest-free bearer bonds or money instruments for making donations to eligible political parties. • No cap on the number of bonds one can purchase. • Donations are exempted from tax.
Eligible Political Parties	<ul style="list-style-type: none"> • Registered under Section 29A of the Representation of the People Act, 1951 • Securing at least 1% of votes polled in the last General Election to the Lok Sabha or Legislative Assembly.
Face Value	<ul style="list-style-type: none"> • Sold in multiples of Rs 1,000, Rs 10,000, Rs 1 lakh, Rs 10 lakh, and Rs 1 crore through authorized branches of the State Bank of India (SBI).
Purchasing Period	Available on the first 10 days of January, April, July, and October each year from designated SBI branches.
Validity	<ul style="list-style-type: none"> • Valid for 15 calendar days from the date of issue. • Unencashed proceeds after 15 days are deposited in the Prime Minister Relief Fund (PMRF).
Purchasers Eligibility	<ul style="list-style-type: none"> • Any person with a KYC-compliant account can purchase EBs for anonymous donations. • Includes individuals, HUFs, companies, firms, associations, or bodies of individuals, incorporated or not.

Returning Officer (RO)

Who is a RO?	The one who conducts the election in a constituency (or sometimes two) and returns elected candidate is a returning officer.
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Appointment	He/she is appointed by the Election Commission of India (ECI) in consultation with the concerned State Government or Union Territory.
Duties and Responsibilities	<ul style="list-style-type: none"> • Publishing election notices • Implementing a Model Code of Conduct • Accepting and scrutinizing nomination forms • Publishing candidate affidavits • Printing and dispatching postal ballot paper • Preparing electronic voting machines (EVMs) and voter-verified paper audit trails (VVPATs) • Training polling personnel, sector officers, and area/zonal magistrates, • Ensuring a free and fair election • Designating counting centers • Sending notices to candidates • Counting votes, declaring results • Ensuring speedy grievance redressal.

Income Tax Rules for Political Parties

- Recently, the Congress party alleged that the Income Tax department withdrew Rs 65 crore from its accounts in different banks.

Do political parties get tax exemptions? If so, how much?

- Under Section 13A of the Income Tax Act, 1961 Political parties registered with the Election Commission of India (ECI) are exempt as long as the political parties file their Income Tax Returns every Assessment Year along with their audited accounts, Income/ Expenditure details and balance sheet.
- **They enjoy 100% tax exemption, if the income comes under the heads of:**
 - Income From House Property
 - Income from other sources
 - Capital gains
 - Income from voluntary contributions.

Voter Verifiable Paper Audit Trail (VVPAT)

- The Supreme Court has recently asked for input from both the Election Commission (ECI) and the Centre regarding a request to conduct a thorough count of VVPAT slips during elections.

About Voter Verifiable Paper Audit Trail (VVPAT)

- Voter Verifiable Paper Audit Trail (VVPAT) was **introduced in India during the 2014 Lok Sabha elections.**
- It's a **standalone system** comprising a VVPAT Printer and a VVPAT Status Display Unit (VSDU) **attached to Electronic Voting Machines (EVMs).**
- This setup **enables voters to confirm that their votes are accurately recorded.**
- After casting a vote, a slip is printed displaying the candidate's serial number, name, and symbol. This slip remains visible through a transparent window for **7 seconds** before being automatically cut and dropped into a sealed drop box within the VVPAT.
- To verify the results of EVMs, the slips stored in VVPAT drop boxes can be used. While polling officials can access the VVPAT, voters cannot.
- In situations where there are allegations of fraud or errors, the paper slips hold more weight than EVM tallies. However, voter verification through VVPAT is typically reserved for extreme cases.
- **The ECI has the authority** to request that votes be verified using VVPAT slips in response to such complaints.
- **Currently, VVPAT slips are counted in one randomly selected polling station per Assembly or Parliamentary constituency,** depending on the type of election.
- It's important to note that EVMs and VVPATs are distinct entities and are not connected to any network.

- These machines are **manufactured by the Electronics Corporation of India Limited (ECIL) and Bharat Electronics Ltd (BEL).**

Model Code of Conduct

- With the announcement Lok Sabha (LS) election schedule, the Model Code of Conduct has come into force

About Model Code of Conduct (MCC):

- The **Model Code of Conduct (MCC)** is a set of norms and principles to guide the political parties and candidates during elections, evolved with the consensus of political parties to abide by the principles embodied in the said code and also binds them to respect and observe it in its letter and spirit.
- **Article 324** of the Constitution gives ECI the power to supervise and conduct free and fair elections to the Parliament and State Legislatures.
- **Legal status of MCC:** The MCC by itself is **not legally enforceable** but certain provisions of the MCC may be enforced through invoking corresponding provisions in other statutes such as RPA 1951, IPC and CrPC.
- **Social media:** MCC will also apply to content posted by political parties and candidates on the Internet, including on social media sites.
- **Regarding its violation:** The ECI issues a notice to a politician or a party either on its own or based on a complaint by another party or individual. Once a notice is issued, the person or party must reply in writing either accepting fault and tendering an unconditional apology or rebutting the allegation.
- If the person or party is found guilty subsequently then it can attract a written censure from the ECI.

Cost of campaigning

- **For General Campaigning** it is borne by the concerned political party.
- When **sharing the stage with a candidate**, the entire campaign cost except expenditure incurred on travelling is added to the candidate's election expenses.
- **If only the posters or photographs of candidates** have been displayed in the constituencies where a star campaigner holds a poll rally, the entire expense is added to the election expenses of the contestants.
- **If Prime Minister (PM) is the Star Campaigner**, the expenditure incurred on security of the PM including on the bullet-proof vehicles is borne by the government itself. But **if another campaigner travels with the prime minister** or a former minister, **50% of the expenditure** incurred on the security arrangements must be borne by the individual candidate.

Star campaigners (under Section 77 of RPA, 1951) often include top leaders of political parties, celebrities, popular public figures, and influential personalities from various fields.

GOVERNANCE

DigiYatra

- Recently, air travellers expressed their shock and anger on social media platforms about their privacy infringement at various airports through the Digi Yatra initiative being aggressively promoted by the Union government.

DigiYatra (Biometric Enabled Seamless Travel experience – BEST)	
Introduction Year	2018
Initiating Ministry	Ministry of Civil Aviation
Initiative Type	Voluntary
Technology Used	Facial Recognition Technique (FRT)
Objective	<ul style="list-style-type: none"> • Digitizing manual operations and reducing queue time. • Providing a unique DigiYatra ID for air travelers for Biometric Boarding across all airports in India.

	<ul style="list-style-type: none"> Offering seamless navigation through airports via digital guidance systems, interactive kiosks, and augmented reality apps. Enhancing security standards through real-time biometrics with the "DigiYatra ID".
Implementing Authority	DigiYatra Foundation, a not-for-profit company under Companies Act 2013, with initial shareholding from various airports.
Responsibilities of Foundation	<ul style="list-style-type: none"> Custodian of the passenger ID validation process. Defines compliance criteria and guidelines for local airport systems.
Availability	<ul style="list-style-type: none"> Initially launched at Delhi, Varanasi, and Bangalore airports in 2022. Currently available at 13 airports. Planned expansion to 24 more airports in 2024.

Digital Intelligence Platform and "Chakshu"

- Recently, the Minister of Communications, Railway, and Electronics & Information Technology inaugurated the Department of Telecommunication's (DoT) initiatives, namely the "Digital Intelligence Platform (DIP)" and the "Chakshu" facility.

Digital Intelligence Platform (DIP)

- Developed by the Department of Telecommunications (DoT)**, the Digital Intelligence Platform (DIP) is a **secure and integrated platform designed to combat the misuse of telecom resources in cyber-crime and financial frauds.**
- Purpose:** The platform facilitates real-time information exchange and coordination among various stakeholders, including Telecom Service Providers (TSPs), Law Enforcement Agencies (LEAs), Banks and Financial Institutions (FIs), Social Media Platforms, and Identity Document Issuing Authorities.
- Accessibility:** While **citizens are excluded from direct access**, all stakeholders can securely access the platform for information relevant to their respective roles.
- Backend Repository:** It serves as a **backend repository for citizen-initiated requests on the Sanchar Saathi portal**, facilitating actions by the relevant stakeholders.

Chakshu (Report Suspected Fraud Communication)

- The "Report Fraud Communication" facility is a **citizen-centric feature** available on the Sanchar Saathi portal (sancharsaathi.gov.in). Its purpose is to **enable citizens to report suspected fraudulent communications received via calls, SMS, or WhatsApp.**
- These communications typically involve attempts to commit fraud by falsely claiming KYC expiry, requesting updates to bank accounts, payment wallets, SIM cards, gas connections, etc.

About Sanchar Sathi Portal

- The Sanchar Sathi Portal is a citizen-centric initiative by the Department of Telecommunications (DoT) aimed at empowering mobile subscribers and enhancing their security. The portal offers several modules to achieve this goal:

Module Name	Features
Central Equipment Identity Register (CEIR)	<ul style="list-style-type: none"> Allows users to identify mobile connections issued in their name Enables users to disconnect connections that were not taken by them or are unnecessary.
Telecom Analytics for Fraud Management and Consumer Protection (TAFMCP)	<ul style="list-style-type: none"> Enables users to block and trace stolen or lost mobile phones.
Know Your Mobile (KYM)	<ul style="list-style-type: none"> Helps users verify the authenticity of devices when purchasing new or old mobile phones.

Chakshu Module	<ul style="list-style-type: none"> Allows users to report suspected fraud communications.
Reporting Incoming International Calls with Local Indian Number (RICWIN)	<ul style="list-style-type: none"> Assists the government in identifying suspected illegal telecom setups. Helps prevent loss to the government's exchequer and addresses national security concerns.
Know Your Wireline Internet Service Provider (KYI)	<ul style="list-style-type: none"> Provides details of Wireline Internet Service Providers (ISPs) by entering PIN code, address, or ISP name.

Government Initiatives to check Cybercrime

- **Indian Computer Emergency Response Team (CERT-In):** Established in 2004, CERT-In is the national agency for responding to computer security incidents in India as they occur.
- **Indian Cybercrime Coordination Centre (I4C):** Established in 2018 by the Ministry of Home Affairs, I4C provides a framework and ecosystem for dealing with cybercrime.
 - **Joint Cyber Coordination Teams (JCCTs):** Constituted under I4C, JCCTs cover the entire country based on cybercrime hotspots/areas with multijurisdictional issues. They enhance coordination among law enforcement agencies (LEAs) of states/union territories (UTs).
 - **CyTrain:** Developed under I4C, CyTrain is a Massive Open Online Courses (MOOC) platform for providing online training to police officers on critical aspects of cybercrime investigation, forensics, and prosecution, along with certification.
 - **National Cyber Forensic Laboratory (Investigation):** Part of I4C, this laboratory provides early-stage forensic assistance to investigating officers (IOs) of police.
- **Cyber Surakshit Bharat (CSB):** Launched by MeitY in association with the National e-Governance Division and industry partners, CSB aims to educate and enable Chief Information Security Officers (CISOs) and the broader IT community of central/state governments, banks, and public-sector undertakings to address cyber security challenges.
- **National Cyber Crime Reporting Portal:** Launched in 2019, this portal provides a centralized mechanism for citizens to report all types of cybercrime incidents, with a special focus on cybercrimes against women and children.
 - **Citizen Reporting:** A part of the National Cyber Crime Reporting Portal, this integrated platform ensures collaboration among stakeholders, including LEAs, banks, payment wallets, crypto exchanges, and e-commerce companies, to take effective action against cyber fraud.
 - **Toll-Free Number:** Operationalized to assist in lodging cyber incidents.
- **Cyber Crime Prevention against Women and Children (CCPWC):** Financial aid provided by NCRB for capacity building, such as setting up forensic-cum-training laboratories and hiring junior cyber public prosecutors and judicial officers.
- **Digital Personal Data Protection Act, 2023:** Enacted to regulate the processing of digital personal data, recognizing individuals' rights to protect their data while allowing lawful processing.
- **Cyber Swachhta Kendra:** A Botnet Cleaning and Malware Analysis Centre aimed at creating a secure cyber space by detecting botnet infections, notifying users, and securing their systems to prevent further infections.

National Generic Document Registration System (NGDRS) and ULPIN

- The National Generic Document Registration System (NGDRS) and Unique Land Parcel Identification Number (ULPIN) were launched in Assam last month, alongside a pilot launch of Blockchain technology in select districts. These initiatives aim to revolutionize land records management.

About National Generic Document Registration System (NGDRS)	
Initiated by	Department of Land Resources under the Ministry of Rural Development as part of the Digital India Land Records Modernisation Programme (DILRMP)
Development	Developed by the National Informatics Centre (NIC), Pune

Objective	To provide a single, generic platform for property registration and document submission across the country , empowering citizens with property valuation and online document submission capabilities
Key Features	<ul style="list-style-type: none"> • Online document entry and valuation with instant payment facility for citizens, accessible from anywhere within concurrent jurisdiction. • Transaction details of restricted properties, aiding buyers in informed decision-making. • Single login credentials and role-based access for users. • SMS/email alerts for citizens and departmental users. • E-KYC with UID-based authentication using biometric or iris scanning. • Integration with land records systems and stamp inventory software to prevent duplicate usage of stamp paper. • Storage, viewing, and downloading of registered documents, with options for generating certified copies. • Unicode-based local language support for enhanced accessibility.

Unique Land Parcel Identification Number (ULPIN)

- ULPIN is a **14-digit alphanumeric identification** number assigned to each land parcel based on its longitude and latitude coordinates.
- It serves as a unique identifier for land parcels, similar to Aadhar or **Bhu-Aadhar for land**, ensuring standardization, easy sharing of land records, protection of government land, and transparency.
- Some states are **integrating ULPIN into the SVAMITVA portal** for comprehensive land record management.

Fact Check Unit

- The Supreme Court of India has put on hold the Fact Check Unit which was notified by the Centre to identify fake news on social media platforms.

About Fact Check Unit	
Establishment	The Fact Check Unit (FCU) was established under PIB in November 2019, under the provisions of Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 .
Objective	The FCU aims to deter creators and disseminators of fake news and misinformation.
Mandate	<ol style="list-style-type: none"> 1. Counter misinformation on Government policies, initiatives, and schemes. 2. Actively monitor, detect, and counter disinformation campaigns.
Fact Checking Procedure	<p>The FCU categorizes information into three categories: fake, misleading, and true.</p> <ul style="list-style-type: none"> • Fake News: Completely false information intended to deceive or manipulate the audience. • Misleading: Content with selective presentation or distortion of facts to mislead readers. • True: Factual content confirmed by the fact-checking process.
Organisation	<ul style="list-style-type: none"> • FCU is headed by a senior DG/ADG level officer of the Indian Information Service (IIS). • The day-to-day operations of the Unit are handled by IIS officers at various levels. • The Unit reports to the Principal Director General, PIB.

National Cooperative Database (NCD)

- The National Cooperative Database (NCD) is a **web-based digital dashboard** developed by the **Ministry of Cooperation** to support a cooperative-centric economic model.

Features of National Cooperative Database:

- **Data Collection:** The NCD captures information on cooperative societies, including National/State Federations, based on various parameters such as registration details, location, membership, economic activities, and financial statements.
- **Implementation Phases:**
 1. Mapping of approximately 2.64 lakh societies in Primary Agricultural Credit Societies (PACS), Dairy, and Fisheries sectors was done.
 2. Collection and mapping of data from various sources like National Federations, State Federations, and Cooperative Banks was done.
 3. Data mapping of the remaining 8 lakh primary cooperative societies in other sectors was completed.

Benefits:

- **Identifying Gaps:** Areas with fewer cooperatives, facilitating the expansion of the cooperative sector.
- **Understanding Linkages:** Provides information on vertical and horizontal linkages among cooperatives, aiding in planning and policy-making.
- **Facilitating Market Connectivity:** Enables connection of PACS and Mandis with the global market, enhancing market access for cooperatives.

Special Category Status

- Special Category Status (SCS) is a **classification given by the central government of India to certain states to provide them with additional financial and developmental assistance**. It aims to bridge the developmental gap between these states and other, more developed states in the country. Special Category Status used to be **granted to some regions that have historically** been at a disadvantage compared with the rest of the country.
- **Origin of Concept:** The concept of a special category state was first introduced in 1969 when the **5th Finance Commission** sought to provide certain disadvantaged states with preferential treatment in the form of central assistance and tax breaks.
 - Initially three states **Assam, Nagaland and Jammu & Kashmir** were granted special status. But since then eight more have been included (**Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Tripura and Uttarakhand**).
- **Criteria:** This decision was taken by the National Development Council (NDC), a body of the former Planning Commission, and was based on various parameters such as: **Hilly and difficult terrain, Low population density, Low resource base, Sizable share of tribal Population, Strategic location along the borders of the country** etc.
- **Funding:** The Centre-State funding of centrally sponsored schemes is divided in the **ratio of 90:10**, far more favorable than the 60:40 or 80:20 splits for the general category States.
- **Benefits for States under SCS:** SCS states also have the advantage of concessions in customs and excise duties, income tax rates, and corporate tax rates to attract investments and set up new industries. Additionally, SCS states have access to debt-swapping and debt-relief schemes.
- **Changes by 14th Finance Commission:** The Gadgil-Mukherjee formula, which allocated 30% of central assistance to SCS States, has been replaced by an increased devolution of divisible pool funds for all states, with the 15th FC increasing this to 41% from 32%, following the abolition of the Planning Commission and recommendations from the 14th and 15th FC.

Annual NeSDA Way Forward Report of 2023

- The Annual **National e-Governance Service Delivery Assessment (NeSDA) Way Forward Report of 2023, released by the Department of Administrative Reforms and Public Grievances (DARPG)**, underscores efforts to enhance e-service delivery.
- E-service delivery include the **provision of public and other services**, such as form submission, license issuance, and monetary transactions, **through electronic means**.

Key Highlights from the report include:

- Jammu and Kashmir leads with the provision of the highest number of e-services (1117) among all States and Union Territories.
- 76% of mandatory e-services are now available, marking an increase from 48% in the NeSDA 2019 assessment.
- Jammu and Kashmir, Kerala, Assam, and Odisha have successfully transitioned 100% of their services to their designated Single Unified Service Delivery Portals.
- The tourism sector demonstrates the highest saturation in providing all mandatory e-services in 23 out of 36 States and Union Territories
- **Best Practices in e-Service Delivery:**
 - **eUNNAT (Jammu & Kashmir):** Implemented the Unified Service Delivery Portal.
 - **Nivesh Mitra (Uttar Pradesh):** Introduced for streamlining Ease of Doing Business.
 - **Seva Sindhu (Karnataka):** Designed to provide Government services directly to citizens' doorsteps.

National e-Governance Service Delivery Assessment (NeSDA)

- The NeSDA is a **framework developed by the Department of Administrative Reforms and Public Grievances (DARPG)** to evaluate the delivery of e-services by States/UTs and Central Ministries across **seven sectors**.
- These sectors include Local Governance & Utility Services, Social Welfare (including Health, Agriculture, Home & Security), Finance, Labour & Employment, Education, Environment, and Tourism.
- NeSDA is **released by the Ministry of Personnel, Public Grievances and Pensions**.

Pandaram Lands

- The Lakshadweep administration has persisted in numbering trees on Pandaram lands, asserting government ownership, sparking controversy.
- The **Laccadive Minicoy and Amini Islands Land Revenue and Tenancy Regulation of 1965 defines Pandaram lands** as:
 - Land wherein the Government holds a proprietary right prior to the Regulation's commencement.
 - It encompasses any land where the Government could acquire such rights under this Regulation or any other law.
- Under the same regulation, **land other than Pandaram lands, where an individual holds proprietary rights according to the Islands' customary law, is termed "jenmam land."**
- Covering over **60% of Lakshadweep's land**, Pandaram lands span Androth, Kalpeni, Kavaratti, Minicoy, Agatti islands, and six uninhabited ones.

Social Audit Advisory Body

- First meeting of the Social Audit Advisory Body (SAAB) was held recently.

Social Audit: A social audit is a process of evaluating and assessing the impact of social and economic policies and programs on the intended beneficiaries. It involves collecting and analyzing information from various stakeholders to understand the social, environmental, and economic effects of these initiatives.

- SAAB is set up in National Institute of Social Defence (NISD), a first of its kind body in India.
- It falls under the Department of Social Justice & Empowerment (DoSJE), Ministry of Social Justice and Empowerment.
- It will assist Ministry in institutionalizing social audits for its various schemes and promote capacity building of the members of the SAUs (Social Audit Units)

Portals for an Enhanced Media Landscape

- The **Ministry of Information and Broadcasting** has introduced **four new** media-related portals to streamline services within the media sector:
 - **Press Sewa Portal:** Automation of the newspaper registration process.

- **NaViGate Bharat Portal:** A single platform with an interactive user interface for government videos.
- **National Register for Local Cable Operators:** Aimed at streamlining regulatory processes in the cable television sector.
- **Transparent Empanelment Media Planning and eBilling System for Central Bureau of Communication:** Enhancing transparency and efficiency in media planning.

Corruption Perceptions Index (CPI)

- India's ranking on the Corruption Perceptions Index for 2023 was 93 out of 180 countries, compared to 85 in 2022.
- The CPI is **released by Transparency International**.
- It ranks countries and territories based on their perceived levels of public sector corruption, ranging from **0 (highly corrupt) to 100 (very clean)**.
- In 2023, **Denmark secured the top rank**, followed by Finland, New Zealand, and Norway.

Suvidha Portal

- Suvidha Portal is **technological solution developed by the Election Commission of India (ECI)** to ensure free, fair, and transparent elections.
- It aims to **streamline the process of obtaining and acting upon requests for permissions and facilities from political parties and candidates during the election period**.

About Suvidha Portal	
Purpose	Facilitates a level playing field in elections by catering to diverse permission requests transparently, following the First in First Out principle.
Online Submission	Political parties and candidates can submit permission requests seamlessly online from anywhere and at any time.
Offline Options	Offers offline submission options to ensure inclusivity and equal opportunity for all stakeholders.
Permissions Handled	Handles permissions for various campaigning activities such as organizing rallies, opening temporary party offices, door-to-door canvassing, video vans, helicopters, obtaining vehicle permits, and distributing pamphlets.

MISCELLANEOUS

Nazool Land

About Nazool Land	This land is owned by the government but not directly administered as state property . It is typically leased to entities for fixed periods ranging from 15 to 99 years .
How Nazool Land Originated	During the British era, these lands were seized from local kings who revolted against English rule . After Independence, the lands remained unclaimed due to poor documentation, leading to their categorization as Nazool land owned by state governments.
Use of Nazool Lands	Typically utilized for public purposes such as constructing schools, hospitals, Gram Panchayat buildings, etc. Some are also leased for housing societies .
Governing Rules	The Nazool Lands (Transfer) Rules, 1956 , primarily govern the adjudication of Nazool land.
Lease Renewal	The government has the authority to renew or cancel leases . Lease renewal involves contacting the Revenue Department of the local development authority in the concerned district.

More Information: Waqf Land

- Governed by the Waqf Act of 1995, Waqf lands are permanently dedicated to religious, charitable, or pious purposes according to Muslim law.

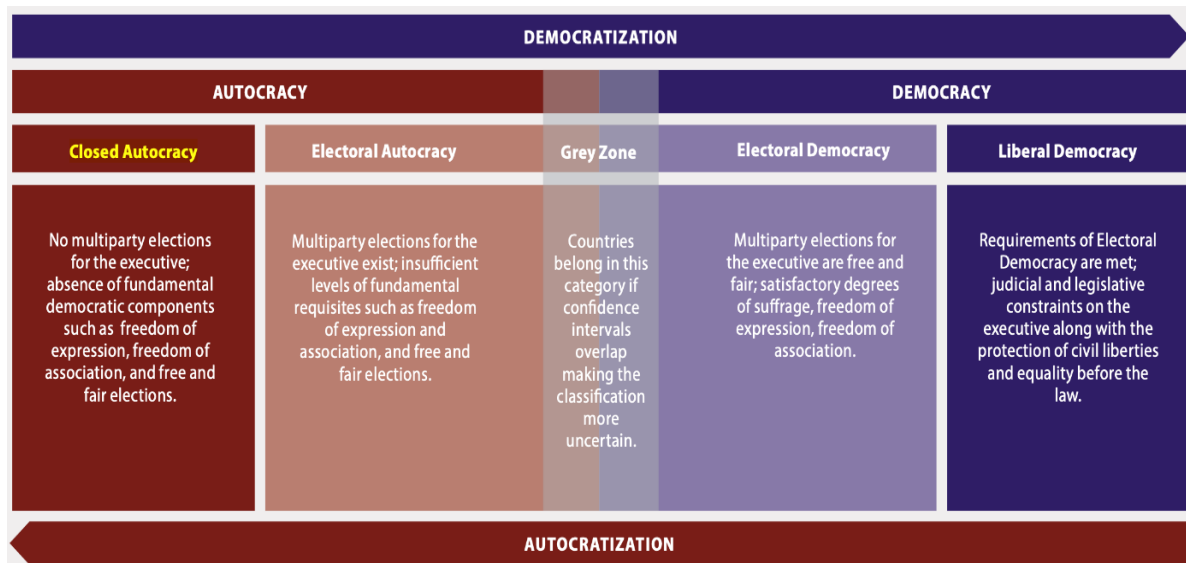
- They serve a crucial role in supporting mosques, educational institutions, and welfare initiatives within the Muslim community.

About the Waqf Act, 1995

- Initially introduced in 1954, the Waqf Act was later repealed and reintroduced in 1995, with subsequent amendments in 2013.
- The Act **establishes bodies like the Central Waqf Council**, advising the Central Government, and **State Waqf Boards**, defining the powers and duties of trustees (mutawallis).
- The **Central Waqf Council includes four members of national eminence**, with two women, representing administration or management, financial management, engineering or architecture, and medicine.
- It **facilitates dispute resolution through Waqf Tribunals appointed by the state government**.
- Each tribunal comprises **three members**: a **Chairman from the State Judicial Service** not below the rank of District, Sessions, or Civil Judge; an **officer from the State Civil Services** equivalent to the Additional District Magistrate; and a **person with expertise in Muslim law and jurisprudence**.

Democracy Report 2024

- The Democracy Report 2024, **issued by the Gothenburg-based Varieties of Democracy (V-Dem) Institute, downgraded India's status from an "electoral autocracy" to "one of the worst autocratisers."**
- The Democracy Report published annually in March, describes the state of democracy in the world, with a focus on democratization and autogravitation.
 - V-Dem measures democracy based on core principles such as electoral, liberal, majoritarian, consensual, participatory, deliberative, and egalitarian.
- **Theme of 2024 Report:** Democracy Winning and Losing at the Ballot
- The report categorizes countries into following categories:



Moh Juj

- The Gauhati High Court recently accepted a petition filed by People for the Ethical Treatment of Animals (PETA), challenging the Assam Government's initiative to revive traditional practices such as bulbul fighting (songbird) and buffalo fighting, commonly known as Moh Juj.
- **Moh Juj is an ancient tradition deeply rooted in the folk culture associated with Magh Bihu** (Bhogali Bihu or Maghor Bihu), the winter harvest festival of Assam celebrated in January, alongside other harvest festivals like Makar Sankranti, Pongal, and Lohri.

- Introduced nearly 200 years ago by the 30th Ahom king Swargadeo Rudra Singha, Moh Juj involves buffalo and bulbul fights.
- Participants rear birds for approximately two weeks before Bihu, after which they engage in fights until one emerges as the victor.

Animal Welfare Board of India (AWBI)	
About	A statutory advisory body on Animal Welfare established in 1962 under the stewardship of Late Smt. Rukmini Devi Arundale,
Headquarters	Faridabad, Haryana
Act	Prevention of Cruelty to Animals Act, 1960
Membership	The Board consists of 28 Members including 6 Members of Parliament (2 Members from Rajya Sabha and 4 Members from Lok Sabha), appointed for a period of 3 years.
Functions	Ensure diligent adherence to animal welfare laws. Provide grants to Animal Welfare Organizations. Advise the Central Government on animal welfare issues.

PB-SHABD

- Prasar Bharti recently launched PB-SHABD (Prasar Bharti - Shared Audio Visuals for Broadcast and Dissemination), a news sharing service.
- PB-SHABD is a news service initiated by Prasar Bharati to deliver daily news feeds in various formats such as video, audio, text, and photos to registered news media organizations.
- It utilizes Prasar Bharati's extensive network of reporters, correspondents, and stringers.

Key Features and Benefits

- **Single-Point News Source:** PB-SHABD serves as a centralized news source, aggregating content from all corners of the country. It specifically supports smaller news organizations lacking extensive networks or content gathering capabilities.
- **Curated Content:** Offers news stories in all major Indian languages across fifty categories.
- **Content Sharing:** Registered users can freely distribute the content with their organization's logo and signature until September 2024, saving them resources, time, and money.
- **Customized Storytelling:** Allows for tailored storytelling across different platforms, benefiting smaller newspapers, TV channels, and digital portals.
- **Archiving:** Users can archive accessed content indefinitely. However, reused content after 7 days must prominently display the copyright label.
- **Copyright Protection:** Users found infringing copyright may face termination of their SHABD content access, ensuring the protection of copyright holders' rights.



About Prasar Bharati	
Establishment	Founded in 1997 under the Prasar Bharati Act as a statutory autonomous body headquartered in New Delhi.
Scope	Oversees the operations of All India Radio (AIR), Doordarshan (DD), Prasar Bharati News Services, and digital platforms.
Objective	Upholds citizens' right to freely access balanced information from diverse fields, catering to all sections of society.
Management	Governed by the Prasar Bharati Board, consisting of a Chairman, Chief Executive Officer, Member (Finance), Member (Personnel), six Part-time Members, and other officials.
Chairmanship Tenure	The Chairman, a Part-time Member, serves a tenure of three years, with an age limit of 70 years.

Appointment Process	The President appoints the Chairman based on the recommendation of a 3-member Selection Committee.
Selection Committee	Headed by the Vice President, with the Chairperson of the Press Council of India (PCI) and a nominee of the President.
Ex-officio Members	Includes the Directors General of All India Radio (AIR) and Doordarshan (DD).

Community Radio Stations (CRS)

- New policy guidelines were issued by the Ministry of Information and Broadcasting on **World Radio Day, observed annually on February 13th**, for the establishment of Community Radio Stations (CRS).
- **CRS are small-scale radio stations operated by local communities**, broadcasting programs tailored to local interests within a **coverage radius of approximately 10-15 kilometers**.
- They constitute the **third tier of radio broadcasting**, distinct from Public Service Radio Broadcasting (e.g., Aakash Vani) and Commercial Radio Stations (e.g., Red FM).
- All programs on CRS are subject to monitoring by an advisory and content committee established by the organization operating the CRS.
- The advisory and content committee includes members from the local community, with at least half being women.

Eligibility for CRS Establishment

- **Only 'not-for-profit' organizations with a documented history of at least three years** serving the local community are eligible to establish CRSs.
- This includes Self Help Groups (SHGs), not-for-profit Farmer Producer Organizations (FPOs), State Agriculture Universities (SAUs), ICAR institutions, Krishi Vigyan Kendras (KVKs), IITs, IIMs, CSOs, Voluntary Organizations, Registered Societies, and Public Charitable Trusts.
- **Individuals, Political Parties** and their affiliates, **profit-driven organizations, banned organizations, and religious bodies are not permitted to operate CRSs.**

Evolution of CRS	
2002	Government approved a policy allowing well-established educational institutions, including IITs/IIMs, to set up CRSs.
2004	Anna FM, India's first campus community radio, inaugurated at Anna University in Chennai.
2006	Policy Guidelines amended to permit community-based organizations, including ICAR institutes, Krishi Vigyan Kendras, Registered Societies, and Public Charitable Trusts, to establish and operate CRSs.
Current	481 operational CRSs.

Tableau Selection for Republic Day Parade

- The Centre and Opposition-ruled states are at loggerheads over the rejection of their states' tableaux for the Republic Day Parade.

About the Republic Day Tableaux:

- Various tableaux from different states and Union Ministries showcasing the unique cultural, social, and technological facets and achievements participate in the Republic Day parade each year.
- **Participants:** State Governments, Union Territory Administrations, Central Ministries and Departments.
- **Theme:** They are usually based on an overarching theme decided by the **Ministry of Defense (MoD)**.
- This year's theme is **"Viksit Bharat"** (Developed India) and **"Bharat: Lok Tantra ki Matrika"** (India: the mother of Democracy).
- **Selection Process:**
 - Each year, a selected number of participants send their tableaux to the Republic Day parade by submitting a concept note, along with design blueprints to the **MoD**.
 - The selection of States/UTs tableaux for Republic Day parade has been made on zonal basis, categorizing States/UTs into **six zones**,

- **Normally**, approximately **15 tableaux** from States/UTs are selected for Republic Day parade, based on proportionate ratio of each zone.
- A State can pitch **multiple proposals** to the committee, **but only one** is chosen for the final parade.
- A **committee of experts appointed by the MoD**, comprising prominent persons in the field of art, culture, painting, sculpture, music, architecture, choreography, etc. evaluates the received proposals in **two stages**.
- The selected models are then moved into the **custody of the MoD** at a “safe location”.
- **Basis of Selection:** It depends upon a combination of factors including but not limited to visual appeal, impact on the masses, idea/theme of the tableaux, degree of detailing involved in the tableaux, music accompanying the tableaux, local artists used etc.

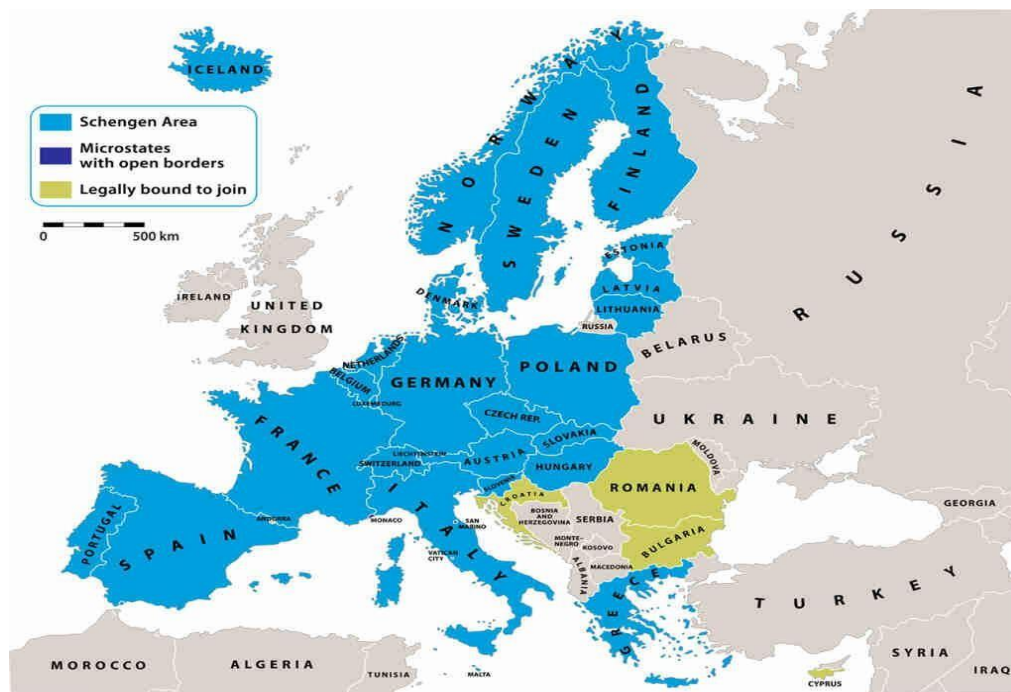
INTERNATIONAL RELATIONS

Schengen Zone

- **Kosovo, the last Western Balkan non-EU nation, has gained visa-free entry to the Schengen zone**, the world's largest free movement area. Kosovar citizens can now visit Schengen countries as tourists for up to 90 days within a 180-day period.

Schengen Zone

- The Schengen Zone was **named after the Schengen village of Luxembourg** where the agreement was signed in 1985 by five of the six EU founding members (excluding Italy). Functioning as a unified jurisdiction, it **operates under a common visa policy for international travel purposes**.
- It **comprises 27 European countries** that have abolished border controls at their mutual borders.
- Croatia, having become an EU member in 2013, joined the Schengen Area in 2023, while Romania and Bulgaria, EU members since 2007, are set to gain partial entry into Schengen from March 31, 2024.



Members

- **Admission to the Schengen Area is not mandatory for EU members. Presently, 23 of the 27 EU states are part of the passport-free zone**, with Cyprus, Romania, Bulgaria, and Ireland remaining outside.
- Additionally, the Schengen area includes **four non-EU members: Iceland, Liechtenstein, Switzerland, and Norway**.

Genocide Case Against Israel at ICJ

- South Africa has brought a case to the International Court of Justice (ICJ) accusing Israel of committing genocide in its military response to the 7 October Hamas attack that killed hundreds of Israeli civilians.

International Court of Justice (ICJ)	
About	<ul style="list-style-type: none"> • ICJ is the principal judicial organ of the United Nations (UN). • It was established in June 1945 by the Charter of the United Nations. • The seat of the Court is at the Peace Palace in The Hague (Netherlands). • It is the only principal organs of the UN that is not located in New York City. • English and French are the ICJ's official languages.
Role	<ul style="list-style-type: none"> • To settle, in accordance with international law, legal disputes submitted to it by States.

	<ul style="list-style-type: none"> To give advisory opinions on legal questions referred to it by authorized United Nations organs and specialized agencies.
Judges	<ul style="list-style-type: none"> The ICJ has 15 judges who are elected to nine-year terms by the UN General Assembly and Security Council, which vote simultaneously but separately. To be elected, a candidate must receive a majority of the votes in both bodies, a requirement that sometimes necessitates multiple rounds of voting. A third of the court is elected every three years and elections are held at the UNHQ in New York during the annual UNGA meeting. The president and vice-president of the court are elected for three-year terms by secret ballot. Judges are eligible for re-election.
Members and Jurisdiction	<ul style="list-style-type: none"> All members of the UN are automatically parties to the ICJ statute. However, this does not automatically give the ICJ jurisdiction over disputes involving them. ICJ gets jurisdiction only if both parties consent to it. The judgment of the ICJ is final and technically binding on the parties to a case. There is no provision of appeal. It can at the most, be subject to interpretation or, upon the discovery of a new fact, revision. The ICJ has no way to ensure compliance of its orders, and its authority is derived from the willingness of countries to abide by them.
Indian Judges at ICJ	<ul style="list-style-type: none"> Four Indians have been members of the ICJ so far <ul style="list-style-type: none"> Justice Dalveer Bhandari (Serving since 2012) B. N. Rau (1952–1953) Sri Nagendra Singh (1985 to 1988) R. S. Pathak (1989–1991)

Visit of French President to India

- French President Emmanuel Macron** was on a two-day State visit to India. He was also the **Chief Guest for India's Republic Day**.
- In **2024**, we are celebrating the 25th anniversary of the **India-France Strategic Partnership**. **PM Modi** was the **Guest of Honour** at the **Bastille Day Parade** held on 14 July 2023 in Paris.

India-France Relations:

- Since the establishment of **diplomatic ties in 1948**, India and France have enjoyed 75 years of close and friendly relations.
- In **1998**, India and France elevated their diplomatic relationship to **Strategic Partnership** which completed 25 years in January, 2023.
- France** was the **first country** to sign the **civil nuclear deal in 2008** following the waiver given by the Nuclear Suppliers' Group.

Key Outcomes of The Visit:

- Roadmap for **India-France Defence Industrial Partnership** to find areas to work together on making military equipment.
- The two sides also signed a **new agreement for a defence-space partnership** that will see them collaborate on space situational awareness.
- Tata** and **Airbus Helicopters** have entered into an industrial partnership **for the production of H125 helicopters**.
- An **MoU** was sealed between **New Space India Ltd** and **France's Arianespace**.
- Introduction of the **Young Professional Scheme**. The scheme facilitates:
 - The exchange of individuals between 18-35 years of age, and

- Extension of visa validity to five years for Schengen visas for Indian students pursuing master's degrees in France.

Key Announcements Made During the Visit:

- Year **2026** as the **India France Year of Innovation**.
- Operationalization of **UPI** at **Eiffel Tower**.
- Setting up of a **Solar Academy in Senegal** under the **STAR-C program** of International Solar Alliance (ISA).
- Establishment of India's Consulate in Marseille and French Bureau de France in Hyderabad

STAR-C Program

- STAR-C programme aims to boost solar power ecosystems in the poorest countries.
- The initiative is run by ISA in partnership with the United Nations Industrial Development Organisation (UNIDO).

Indian Navy Thwarts Hijacking Attempt in Arabian Sea

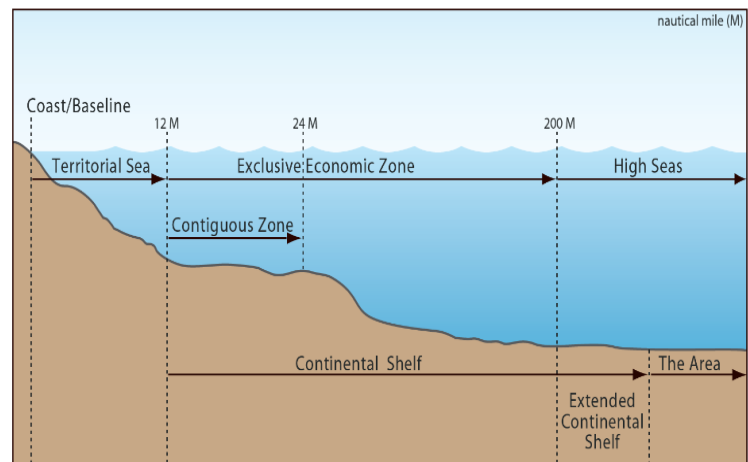
- Indian warship **INS Chennai** and its marine commandos thwarted the attempted hijack of a Liberia-flagged merchant vessel named **Lila Norfolk**.

United Nations Convention on the Law of the Sea (UNCLOS):

- The UNCLOS established in 1982, is a global treaty outlining regulations for marine and maritime operations. It is considered the **"constitution of the oceans"**
- It is commonly referred to as the **Law of the Sea** and categorizes marine regions into five primary zones: **Internal Waters, Territorial Sea, Contiguous Zone, Exclusive Economic Zone (EEZ), and the High Seas**.
- It is the only international convention outlining the framework for state jurisdiction in maritime areas.
- The **UNCLOS was opened for signature in 1982**. It entered into force on 14 November 1994 and is presently binding for 154 States, as well as the European Community.
- India **signed the treaty in 1982 and ratified it in 1995**.

Maritime Piracy

As per the Article 101 of the UN Convention on the Law of the Sea (UNCLOS), maritime piracy is when people on a private boat or ship commit crimes like kidnapping, violence, or robbery for personal gain.



Iran-Pakistan Strikes

- Iran bombed two bases of militant group **Jaish al-Adl** in Pakistan's Balochistan province with missiles and drones.
- In retaliation Pakistan's army carried out precision strikes in Iran (in Sistan-Balochistan province) using killer drones and rockets in operation **"Marg Bar Sarmachar"**.

Jaish al-Adl

- It is a **Sunni Salafist militant group**, based in Pakistan's Balochistan province, active in the mountainous border regions of Pakistan and Iran.
- This group claims to be fighting for the independence of the **Sistan and Baluchestan** (known as **Asli Balouchestan**)



province in the southeastern corner of Iran, bordering Pakistan's Balochistan province and the Indian Ocean.

About Sistan-Balochistan Province:

- Iran's Baluch minority, which numbers between one to four million is based mainly in the southeastern region of Sistan-Baluchestan. The region is made up of rugged, mountainous terrain.
- Economically poor and underdeveloped, it has become a haven for heroin and opium-smuggling from across the border with neighbouring Pakistan and Afghanistan.
- The Baluchs who live there are mostly Sunni Muslims and identify themselves as part of an ancient tradition separate from that of Iran's Persian ethnicity. The majority of Iran's population are Shia.

Taiwan Elections 2024

- Taiwan's ruling Democratic Progressive Party pulled off a historic third consecutive presidential victory. Lai Ching-te, Taiwan's current vice president, was declared the new President of Taiwan.

About Taiwan's Location:

- Taiwan is located **north of the Philippines and the South China Sea.**
- It is about 180 km off the south-eastern coast of China.
- It is separated from the mainland by the **Taiwan Strait.**



India- Taiwan:

- **India does not have formal diplomatic ties with Taiwan.** Like most countries, it maintains commercial ties with Taiwan.
- **In 1995,** New Delhi set up the **India-Taipei Association (ITA) in Taipei** to promote interactions between the two sides.
- In the same year, **Taiwan too established the Taipei Economic and Cultural Centre** in Delhi.
- Globally, only **15 countries** recognise Republic of China (Taiwan).

Northern Ireland

- Irish nationalist Michelle O'Neill made history by becoming Northern Ireland's first minister after a two-year boycott by unionists.
- Under the terms of the 1998 **Good Friday peace accord**, power is shared equally between Northern Ireland's two main communities: British unionists and Irish nationalists.

Northern Ireland Protocol

- After the UK's exit from the European Union, Northern Ireland remained its only constituent sharing a land border with an EU member, the Republic of Ireland.
 - Great Britain (GB), comprising England, Scotland, and Wales, along with Northern Ireland (NI), constitutes the United Kingdom.
- Due to differing product standards between the EU and the UK, border checks became necessary for goods moving from Northern Ireland to Ireland.
- However, **maintaining an open border was a crucial aspect of the 1998 Good Friday Agreement.** Consequently, the **Northern Ireland Protocol was negotiated in 2020 between the UK and the EU.**

Windsor Framework

- The Windsor Framework, introduced in February 2023, aimed at resolving the issue. It **proposed a green lane and red lane system for goods, differentiated based on destination (Northern Ireland or the EU).**
- The "**Stormont Brake**" empowered Northern Ireland lawmakers and London to veto EU regulations affecting the region adversely.

- **Goods meant for Northern Ireland would utilize the green lane, undergoing minimal paperwork and checks, while those destined for Ireland or the EU would go through the red lane with customary checks.**

UPI Launched in Sri Lanka And Mauritius

- India launched its **Unified Payments Interface (UPI)** system in **Sri Lanka and Mauritius**. RuPay card services were also introduced in Mauritius as part of this strategic initiative.
- It will **facilitate usage of RuPay Card for settlements both in India and Mauritius**.
- The **Indian Government has been pushing to export its UPI system along with the RuPay network to a number of countries**.
- Earlier in February 2024, **NPCI International Payments**, in partnership with **Lyra, a French e-commerce and payments firm**, had announced the **acceptance of UPI in France** starting with tickets to the Eiffel Tower.
- **Singapore, Bhutan, and the UAE**, among others, also accept UPI.

Raisina Dialogue

- It is an **annual conference on geopolitics and geo-economics, which aims to address the most challenging issues faced by the world**.
- The conference takes place in **New Delhi** and is attended by people from political, business, media, and civil society backgrounds.
- **Institutions involved:** Delhi-based think tank **Observer Research Foundation**, in partnership with the **Ministry of External Affairs**
- **Theme of the 2024 edition: "Chaturanga: Conflict, Contest, Cooperate, Create"**.
- PM of Greece Mitsotakis was the Chief Guest and Keynote Speaker at the 9th Raisina Dialogue, 2024 in New Delhi.

Inter-Governmental Negotiations (IGN)

- Inter-Governmental Negotiations (IGN) is a **series of discussions and negotiations among United Nations member states aimed at reforming the structure and operations of the UNSC**.
- It was initiated to address the need for expanding the Security Council's membership to better reflect current geopolitical realities and improve its legitimacy and effectiveness.
- **IGN was officially recognized by the United Nations General Assembly (UNGA) in 2008**. However, diplomatic deadlock persists due to disagreements among member states.
- **Composition:**
 - The African Union
 - The G4 nations (India, Brazil, Japan, and Germany) advocating for permanent seats in the reformed UNSC
 - The Uniting for Consensus Group (UfC), also known as the "Coffee Club"
 - The L.69 Group of Developing Countries
 - The Arab League
 - The Caribbean Community (CARICOM)
- **Features:**
 - Each group represents distinct perspectives on UNSC reform.
 - Discussions are informal, lacking a single text, thus exempt from UNGA rules of procedure.
 - In 2015, a framework document was agreed upon as a basis for future talks on reform.



India-Myanmar Border to Be Fenced Soon

- Union Home Minister announced that the Centre has decided to fence the entire length of the currently porous India-Myanmar.
- **India and Myanmar** share a **1,643-km border** along the Northeastern states of **Manipur, Mizoram, Nagaland and Arunachal Pradesh**, a porous border of which only **10 km is fenced in Manipur**.
- He also said that the Centre will consider ending its **free movement regime (FMR)** agreement with Myanmar.



India, Saudi Arabia Ink Haj Agreement

- India and Saudi Arabia signed a bilateral agreement under which New Delhi has been allocated a **quota of 1,75,025 pilgrims** for the annual Haj pilgrimage in **2024**.
- Out of a total quota of **1,75,025 pilgrims** from India, 1,40,020 seats will be reserved for pilgrims to proceed **through Haj Committee of India**.
- The **rest 35,005 pilgrims** would be permitted to proceed **through private operators**.

Pakistan carried out airstrikes in Afghanistan

- Pakistani fighters carried out airstrikes inside the Afghan provinces of Paktika and Khost, leading to fighting along the border.
- As per Pakistan, the Tehrik-i-Taliban Pakistan (TTP) and other splinter groups were the prime target of the intelligence-based anti-terrorist operations.

Afghanistan – Pakistan Border	
About	<ul style="list-style-type: none"> • The Durand Line is the 2,640-kilometer border between Afghanistan and Pakistan. • It was established in 1893 as the border between British India and the Emirate of Afghanistan. • The line is named after Sir Henry Mortimer Durand, the foreign secretary of the colonial Government of India
Dispute	<ul style="list-style-type: none"> • The Durand Line has been a point of contention between Pakistan and Afghanistan since 1947, as it divides Pashtun-dominated tribal areas, seen as an artificial division by the Pashtuns. • Origins of the dispute include the fall of the Durrani dynasty, British control, and Anglo-Afghan wars, influenced by fears of Russian advancement.
Tensions	<ul style="list-style-type: none"> • Afghan governments dispute the Line, claiming Pashtun territories in Pakistan, leading to tensions and occasional conflict between Pakistan and the Taliban. • The Taliban's refusal to accept the Durand Line as a permanent border escalated tensions after their 2021 takeover in Afghanistan.
Role of TTP	<div style="border: 1px solid black; padding: 5px; background-color: #e0e0e0;">Tehreek-e-Taliban Pakistan (TTP)</div> <ul style="list-style-type: none"> • Also called as Pakistani Taliban • An umbrella organization for various Islamist armed militant groups that operate along the Afghan–Pakistani border.
Terror Attacks	<ul style="list-style-type: none"> • The surge in TTP activity led to increased terror attacks, particularly in Khyber Pakhtunkhwa and Balochistan provinces, prompting Pakistan to urge the Afghan Taliban to control the TTP.



Response	<ul style="list-style-type: none"> • Pakistan requested the Afghan Taliban to rein in the TTP, but continued attacks have strained relations and created distrust between Pakistan and the Taliban.
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Hong Kong Legislature unanimously passes National security bill

- The Hong Kong legislature has passed a new national security law, known as the 'Safeguarding National Security Bill,' unanimously.
 - This law grants the government increased power to suppress dissent, following a crackdown sparked by the 2019 pro-democracy protests.
 - These protests, **one of the largest since the Umbrella Revolution in 2014**, were triggered by proposed legislation that would allow suspects accused of serious crimes to be extradited to mainland China for trial.

Political System of Hong Kong

- Hong Kong is a special administrative region of China located on the Delta of eastern Pearl River in South China.
- It has its own currency, political system and cultural identity but it belongs to China.

Background

- The city was a colony of United Kingdom, until the British handed it back over to China in 1997.
- Qing dynasty leaders ceded Hong Kong Island to the British Crown in 1842 after China's defeat in the First Opium War.
- At the time of handover, the Chinese Communist leadership had agreed to a unique arrangement – “One Country, Two Systems”.
- This was agreed upon to maintain Hong Kong's prosperity, and its legal system and culture.

One Country, Two Systems

- Under this policy, Hong Kong maintains a de-facto constitution, known as the Hong Kong Basic Law.
- It guarantees freedoms that are unavailable to Chinese mainlanders, such as the right to protest, the right to a free press and freedom of speech.
- But in recent years, Beijing has repeatedly reinterpreted the Basic Law and now it says it has "complete jurisdiction" over Hong Kong.



US Primary Elections

- Every four years, the United States holds a presidential election. Candidates from various political parties compete for the presidency.
- The process begins with primary elections and caucuses held by the Democratic and Republican parties in each state. These events determine the parties' nominees for president.

Super Tuesday is the United States presidential primary election day in February or March when the greatest number of U.S. states hold primary elections and caucuses.

Primaries and Caucuses

- American voters usually have a strong affiliation with either of the two major political parties.
- As part of the Presidential elections, they first vote in the primary and caucus polls, or in a third setup that is a combination of the two.
- In some of these, only registered Democrats or Republicans can vote, instead of general voters.

In Primaries

- Voters go to polling stations and check the box against the name of their favoured candidate.
- For example, Republican voters will have Donald Trump and Nikki Haley as their options, since other candidates have dropped out of the race.

In Caucuses

- Caucuses are lengthier. Voters attend meetings at public places such as school gymnasiums, churches, and community centres, debate candidate preferences and openly raise their hands for their choice of vote.

National Conventions of Each Party

- After the primaries and caucuses are over, a National convention is held in which a party's nomination for president is formally announced to the public.
- During the convention, the elected delegates cast their vote for a party candidate and the candidate with the most delegates gets the party's nomination.

Moscow Concert Hall Attack

- Multiple gunmen went on a shooting rampage in Moscow's famous Crocus City Hall. The Islamic State Khorasan (ISIS-K) claimed responsibility for the attack.

About Islamic State Khorasan (ISIS-K)

- Islamic State Khorasan (ISIS-K), emerged in eastern Afghanistan in late 2014, and is currently one of the most active ISIS-affiliates.
- Khorasan refers to an ancient caliphate in the region that today encompasses parts of Afghanistan, Iran, Pakistan and Turkmenistan.
- The group comprises breakaway fighters of the Tehreek-e-Taliban (TTP), and others pledging allegiance to the late ISIS leader Abu Bakr al-Baghdadi.
- It has established a reputation for extreme brutality.

Paris Club

- Sri Lanka is close to finalising a debt treatment plan with India and the Paris Club. Experts are pointing to a likely moratorium of upto six years and a reduced interest rate during the repayment period.

About Paris Club

- It is a **group of 22 official creditor countries** that work together to provide sustainable solutions to debtor countries' payment difficulties. The club was established in 1956 in Paris.
- All 22 are **members of the Organisation for Economic Co-operation and Development (OECD)**.
- **India is not a member of the Paris Club**. However, India is an **observer**, along with IMF, World Bank, OECD, and other organizations.
- Club offers credit facilities to eligible countries and provides solutions to indebted countries, including debt rescheduling and/or debt reduction.
- The solutions include reforms that the debtor countries can implement to improve their financial situation.

Visit of PM Modi to Bhutan

PM Modi had a State visit to Bhutan. The visit was in line with the Govt's Neighbourhood First Policy.

Key Highlights of the Visit

- **Order of the Druk Gyalpo: PM Modi was honored with Bhutan's highest civilian award**, the Order of the Druk Gyalpo, by King Jigme Khesar Namgyel Wangchuck.
- **MOUs Signed:** Agreements were made on various fronts, including the general supply of Petroleum, Oil, Lubricants (POL), Energy Efficiency, Sports and Youth cooperation, and a Joint Plan of Action (JPOA) for Space

Cooperation. Additionally, plans were outlined for establishing **rail links between** India and Bhutan, namely the **Kokrajhar-Gelephu and Banarhat-Samtse routes**.

- **Cooperation Discussions:** Talks centered on Bhutan's 13th Five Year Plan (FYP 2024-2029) and its development projects, including the "**Gelephu Mindfulness City**" initiative. India is Bhutan's top trading partner.

Citizenship Amendment Rules 2024

- The Centre notified Rules for The Citizenship Amendment Act (CAA), paving the way for the implementation of the law more than four years after it was passed by Parliament in December 2019.

About the Citizenship Amendment Act (CAA), 2019:

- It amends the **Citizenship Act, 1955** to provide citizenship to individuals belonging to **Hindu, Sikh, Buddhist, Jain, Parsi or Christian communities** from **Bangladesh, Pakistan, and Afghanistan** who entered India seeking refuge due to religious persecution. These people are currently living in India illegally or on long-term visas (LTV).
- **Eligibility:** Citizenship will be granted to the individuals who have entered India on or before **December 31, 2014**.
- **Exceptions:** It excludes the tribal areas of **Assam, Meghalaya, Mizoram, and Tripura**, as included in the **Sixth Schedule** of the Constitution and the states regulated by the "Inner Line" permit (ILP).
- **Overseas Citizen of India (OCI):** It also amends provisions related to OCI cardholders and provides for cancellation of OCI registration if a cardholder violates any law notified by the central government.
- **Citizenship:** As per the 1955 act, citizenship could be acquired in India **under five categories:** by birth, by descent, through registration, by naturalization (extended residence in India), and by incorporation of territory into India.

Islamophobia

- **India abstained** from voting on a UN General Assembly resolution on Islamophobia, calling out the **prevalence of religiophobia" against Hinduism, Buddhism, Sikhism, and other faiths**.
- The resolution was introduced on the **International Day to Combat Islamophobia by Pakistan and co-sponsored by China**.
- In 2022, the UN General Assembly adopted a Pakistan-sponsored resolution to declare **March 15** as International Day to Combat Islamophobia.
- The resolution, **introduced by Pakistan** on behalf of the Organization of Islamic Cooperation (OIC), was adopted by consensus.
- It was **backed by 57 members of OIC** and eight other countries, including China and Russia.
- The resolution was adopted in the wake **attacks on two mosques in Christchurch, New Zealand in 2019**, that left 51 people dead.

India-United Kingdom (UK) Relations

- The inaugural India-UK 2+2 Foreign and Defence Dialogue recently took place in New Delhi.

Trade and Investment Relations	<ul style="list-style-type: none"> • Bilateral trade was £36.3 billion during FY 2022-23 • The India-UK Infrastructure Finance Bridge was introduced to utilise expertise and investment to bolster India's National Infrastructure Pipeline (NIP).
Strategic & Defence Relations	<ul style="list-style-type: none"> • Conclusion of a Comprehensive Strategic Partnership in 2021. • They are planning to hold the first Strategic Tech Dialogue, a ministerial-level summit on emerging technologies. • Establishment of India-UK electric propulsion capability partnership in February 2023.

	<ul style="list-style-type: none"> Jointly conducted military drills include- Ajeya Warrior (Army), Konkan exercises (Navy), and Cobra Warrior (multi-national air exercise).
Climate & Environment	<ul style="list-style-type: none"> The India-UK Green Growth Equity Fund aims to attract institutional investments in renewable energy, electric mobility, and other sectors in India. Both the countries are members of International Solar Alliance (ISA) and Coalition for Disaster Resilient Infrastructure (CDRI) The two countries host Ministerial Energy Dialogue and Joint Working Groups on Climate, Power and Renewables.
Health & Education Cooperation	<ul style="list-style-type: none"> Both countries signed Science and Technology Agreement in 1996. UK-India Education and Research Initiative (UKIERI) started in April 2006 with the aim of enhancing educational linkages between India and the UK. The successful partnership between Oxford University, AstraZeneca and Serum Institute of India on Covid19 vaccine highlights the cooperation on health.
Cultural & People- People Ties	<ul style="list-style-type: none"> Indian diaspora forms 3.1% of the total population of UK. The Queen of England hosted the official launch of the UK India Year of Culture in 2017. Both have signed a Migration and Mobility Partnership (MMP) agreement to facilitate easy movement of working professionals.

India-US 2+2 Ministerial Dialogue

- The Fifth India- US 2+2 Ministerial Dialogue recently concluded in New Delhi.

Key Outcomes:

Strengthening the Major Defence Partnership

- Both sides appreciated the commencement of negotiations for a commercial agreement to manufacture **GE F-414 jet engines** in India.
- Both looked forward to the finalisation of a **Security of Supply Arrangement (SOSA)**, which will further integrate the defence industrial ecosystems of both countries while strengthening supply chain resilience.
- Both commended the breadth of partnerships under the **India-U.S. Defence Acceleration Ecosystem (INDUS-X)**.
- The USA welcomed India's full membership of the multinational **Combined Maritime Forces (CMF)**, headquartered in Bahrain.

Bolstering Counter-terrorism and Law Enforcement Cooperation

- Both the groups decided to convene the 20th Meeting of the India-U.S. Joint Working Group on Counter Terrorism and the 5th Designations Dialogue at a mutually convenient date next year.
- Both sides are looking forward to the next edition of the Homeland Security Dialogue in 2024.

Building Science and Technology Partnerships

- The Ministers welcomed the progress made under the **India-U.S. Initiative on Critical and Emerging Technology (iCET)** and looked forward to hosting the second iteration of iCET in New Delhi in early 2024.
- They also welcomed adding 'Planetary Defence' as a topic under the India-U.S. Civil Space Joint Working Group.

Strengthening People-to-People Ties

- India appreciated the U.S' launch of a pilot program in 2023 to adjudicate domestic renewals of certain petition-based temporary work visas, including for Indian nationals.

Multilateral Diplomacy and Connectivity

- The Ministers look forward to India hosting the next in-person Quad leaders' Summit in 2024.
- The USA extended welcome to India's candidature for the UNSC non-permanent seat in 2028.

UN Commission for Social Development (UN CSocD)

- Ruchira Kamboj, India's permanent representative to the United Nations (UN), chaired member-state briefing in preparation for the 62nd UN CoSD which will be held in February 2024.

About UN CSocD

- Formerly known as the Social Commission, UN CSocD is a functional commission of the Economic and Social Council (ECOSOC) of the United Nations.
- It has been in existence since the inception of the United Nations, advising ECOSOC and governments on a wide range of social policy issues and from the social perspective of development.

Purpose:

- To advance social development and formulate policies and recommendations to address global social issues. It focuses on topics such as poverty eradication, social inclusion, and the promotion of equitable and sustainable development.

Key Facts about the Economic and Social Council (ECOSOC)



- ▶ It is one of the six principal organs of the UN, which was established by the UN Charter (1945).
- ▶ It is responsible for the direction and coordination of the economic, social, humanitarian, and cultural activities carried out by the UN.
- ▶ Decisions are taken by a simple majority vote. The presidency of ECOSOC changes annually.

Members

- ▶ It has 54 members, which are elected for three-year terms by the General Assembly.
- ▶ Four of the five permanent members of the Security Council have been continuously re-elected.

- Since the 1995 World Summit for Social Development in Copenhagen, the CSocD has been the key UN body in charge of the follow-up and implementation of the Copenhagen Declaration and Programme of Action.

Membership:

- Originally 18, membership has increased over time and now stands at 46.
- Members are elected by ECOSOC based on equitable geographical distribution for four-year terms.

Meetings:

- CSocD meets annually at the UN Headquarters in New York, usually in February. Member states, international organizations, and civil society representatives convene to discuss and address social development issues.

Project PRAYAS

- Recently, the **International Organisation for Migration (IOM)** launched Project PRAYAS to help Indian workers and students migrate in a secure, orderly, and regular manner.
- **Promoting Regular Assisted Migration for Youth and Skilled Professionals (PRAYAS)** is launched in partnership with the Ministry of External Affairs (MEA). It is one of the first attempts to consolidate all the state-level initiatives for safe, orderly, and well-managed international migration.
- **Goal:** To facilitate safe, orderly, and regular migration for aspiring Indian migrant workers and students through policy recommendations in collaboration with the MEA and state governments, thus strengthening international migration governance.

About International Organisation for Migration (IOM)

- Established in 1951, IOM is a United Nations (UN) agency dedicated to promoting humane and orderly migration.
- The IOM defines the term migrant as: “a person who moves away from his or her place of usual residence, whether within a country or across an international border, temporarily or permanently, and for a variety of reasons.”
- It offers, at the request of States, its support to migrants but also to internally displaced persons, refugees and other uprooted people in the four broad areas of migration and development, facilitating migration, regulating migration and addressing forced migration.

- **Member countries:** It currently has 172-member states (**including India**) and 8 states holding observer status.
- **Headquarters:** Geneva, Switzerland.

75th Anniversary of UDHR

- December 10, 2023 marked the 75th anniversary of the Universal Declaration of Human Rights (UDHR), which is the landmark document enshrining human rights and fundamental freedoms for all individuals.

About UDHR:

- On 10 December 1948, the UN General Assembly approved the Universal Declaration of Human Rights at a meeting in Paris.
- It was a response to the atrocities of World War II and an effort to establish a common understanding of the basic rights and freedoms to which all people are entitled.
- the declaration consists of a preamble and 30 articles setting out fundamental rights and freedoms. These 30 articles articulate a broad range of civil, political, economic, social, and cultural rights.
- the declaration consists of a preamble and 30 articles setting out fundamental rights and freedoms. These 30 articles articulate a broad range of civil, political, economic, social, and cultural rights.
- These rights are considered universal, meaning they apply to all people regardless of nationality, ethnicity, gender, religion, or any other status. But it is not a legally bounding document.
- Some examples of rights outlined in the UDHR include:
 - the right to life, liberty, and security of person;
 - the right to freedom of religion; of expression and assembly;
 - the right to work and education; and
 - the right to an adequate standard of living.

Global Cooperation and Training Framework (GCTF)

- Officials from the **United States, India, and Taiwan** gathered for a cybersecurity workshop on December 11-12 under the Global Cooperation and Training Framework (GCTF).
- This was the first Global Cooperation and Training Framework (GCTF) program was **held in person in India**.

About GCTF:

- The GCTF was established in **2015** as a joint initiative between the **United States and Taiwan**.
- It aims to leverage Taiwan's strengths and expertise to tackle mutual global concerns and to assist Indo-Pacific countries in capacity-building through training programs for officials and experts.
- **Focus Areas:** Public health, law enforcement cooperation, women's empowerment, energy efficiency, e-commerce, cybersecurity, humanitarian assistance, disaster relief, and media literacy.
- **Members:** Full partners are Taiwan, the United States, Japan (2019), and Australia (2021). India has not yet formally joined the grouping as a full member.

20 Years of UN Convention Against Corruption (UNCAC)

- The year 2023 marks the 20th anniversary of the United Nations Convention against Corruption (UNCAC).

About UNCAC:

- The United Nations Convention against Corruption is the **only legally binding** universal anti-corruption instrument. It was **signed on December 9, 2003** in Mexico and **entered into force in 2005**.
- The Convention **covers five main areas:**
 - Preventive measures,
 - Criminalization and law enforcement
 - International cooperation,
 - Asset recovery
 - Technical assistance and
 - Information exchange.

- The Convention covers many different forms of corruption, such as bribery, trading in influence, abuse of functions, and various acts of corruption in the private sector.
- **Parties:** 190 countries including India.
- The United Nations Office on Drugs and Crime (UNODC) serves as the custodian of the Convention and as the Secretariat of its Conference of States Parties.

India-Nepal Seventh Joint Commission Meeting

- Recently, the **7th meeting** of the **India-Nepal Joint Commission** was held in **Kathmandu, Nepal**. It was attended by the Indian External Affairs Minister and his Nepali counterpart.
- India-Nepal Joint Commission was **established in 1987** as a platform for the Foreign Ministers of both countries to review all aspects of the bilateral partnership.

Key Outcomes of The Meeting:

- Nepal and India signed a long-term agreement for the export of **10,000 MW** of power to India for the next 10 years.
- Three **cross-border transmission lines** completed with India's assistance, were inaugurated. These are-132 kV Raxaul-Parwanipur, 132 kV Kushaha-Kataiya, and New Nautanwa-Mainahiya lines.
- India pledged **10 billion rupees** to Nepal for the reconstruction of earthquake-hit areas in Jajarkot and Rukum West.
- Formalisation of an **agreement for the launch of Nepali satellites** between the Nepal Academy of Science and Technology and New Space India Limited under ISRO.

India-Nepal Hydropower Cooperation

- **900 MW Arun III project** on the Arun River in Sankhuwasabha District of Nepal
- **750MW West Seti Hydroelectric Project** on the Seti River in far-western Nepal
- **Sapta Koshi High Dam** (a multipurpose project) to be constructed on the Saptakoshi River of Nepal (Known as Kosi River in India).
- The 900 MW Upper Karnali run-of-the-river Hydropower Project is a proposed plant on the Karnali river in Nepal.
- **480 MW Phukot Karnali Hydro Electric Project** on Karnali River in Kalikot district, Karnali Province of Nepal.
- **Pancheshwar Multipurpose Project** on Mahakali River under integrated Mahakali Treaty.

United Nations Statistical Commission (UNSC)

- Recently, India has been elected to the highest statistical body of the United Nations for a four-year term beginning January 1, 2024.

About UNSC:

- It was established in **1947(HQ: New York)** and is the highest body of the global statistical system. It brings together the Chief Statisticians from member states from around the world.

Functions:

- It is the highest decision-making body for international statistical activities, responsible for setting statistical standards and the development of concepts and methods, including their implementation at the national and international levels.
- The Statistical Commission oversees the work of the United Nations Statistics Division (UNSD), and it is a Functional Commission of the UN Economic and Social Council.

Members:

- The Commission consists of **24 member countries** of the United Nations elected by the United Nations Economic and Social Council based on an equitable geographical distribution according to the following pattern:

- **Five** members from **African States**
- **Four** members from **Asia-Pacific States**
- **Four** members from **Eastern European States**
- **Four** members from **Latin American and Caribbean States**
- **Seven** members from **Western European and other States**
- The term of office of members is **four years**.
- **India was a member** of the Statistical Commission **last in 2004** and the country is returning to the UN agency after a gap of two decades.

India-Italy Migration and Mobility Agreement

- The Union Cabinet has given its approval to ratify the **Migration and Mobility Agreement** between the Government of India and the Government of the Italian Republic. This agreement was signed in November 2023 during the visit of External Affairs Minister to Italy.

Some of the key provisions of the agreement:

- Indian students completing academic or vocational training in Italy can obtain temporary residence for up to 12 months to gain initial professional experience.
- Italy will offer opportunities for Indian students/trainees in professional training, extracurricular and curricular internships to gain experience in Italian skill standards.
- Italy has allocated quotas for seasonal and non-seasonal Indian workers for the years 2023-2025.
- The agreement will remain in force for five years and will be automatically renewed for a successive period unless it's terminated by either signatory.

Bilateral Investment Treaties (BITs)

- India is engaging in negotiations for Bilateral Investment Treaties (BITs) with trade partners to enhance the influx of foreign direct investments (FDI).
- BITs are **reciprocal agreements between two nations aimed at promoting and safeguarding foreign private investments within each other's territories**.
- **Indian Model BIT of 1993:** India had signed BITs with 83 countries, with 74 in force until 2015.
- **India updated its Model BIT in 2016.** Since 2015, it has signed new BITs with only four countries while negotiating with 37 others and terminating older BITs with 77 countries.
- **Features of Model BIT 2016:**
 - **"Enterprise" based definition of investment:** Refers to an enterprise established, organized, and operated in good faith by an investor in accordance with the domestic laws of the country.
 - **Non-discriminatory treatment through due process:** Each Party pledges to provide full protection and security to investments and investors.
 - **National treatment and protections against expropriation:** Neither Party may nationalize or expropriate an investor's investment directly or indirectly through measures equivalent to expropriation.
 - **Investor State Dispute Settlement (ISDS) mechanism:** Foreign investors are required to exhaust local remedies for at least five years before resorting to the ISDS mechanism.

Hague Apostille Convention, 1961

- The Hague Convention **Abolishing the Requirement of Legalisation for Foreign Public Documents**, otherwise known as the **Apostille Convention**, was concluded on Oct. 5, 1961 and entered into force on Jan. 21, 1965.
- It is an international treaty that **simplifies the global circulation of public documents executed by one Contracting Party and have to be produced in another**.
- Such public documents include certificates of birth, marriage, and death, and educational documents etc.

- Countries that are part of the agreement provide an Apostille certificate to verify a document's origin, making it valid for use in other member countries. However, non-member nations may need additional certification from the document's originating country for acceptance.

Henley Passport Index (HPI)

- In the 2024 edition of the Henley Passport Index (HPI), India has fallen to the 85th position.
- The Henley Passport Index **ranks passports based on the number of destinations** their holders can access without prior visa requirements.
- According to data from the International Air Transport Association (IATA), holders of the **Indian passport can visit 99 destinations without needing a visa in advance.**
- The HPI compares visa-free access for holders of 199 different passports to 227 travel destinations worldwide.
 - In the **2024 ranking**, six countries - **France, Germany, Italy, Japan, Singapore, and Spain** - share the **top position.**

Defence Attache (DA)

- India has begun to post military and defence attachés to several new countries in a big move to expand strategic ties with key regions across the globe.
- A **Defence Attache (DA) is a member of the armed forces who serves in an embassy** as a representative of his/her country's defence establishment abroad.
 - **DA is a generic term** that covers personnel from all branches of the armed services, although some larger countries may appoint a DA to represent an individual service branch, such as an air force or naval attaché.
- It is the DAs job **to protect, develop, and promote the defence interests of their country** in the nation they are assigned, as well as in bilateral military and defence relations.
- **Diplomatic Status of the DA:**
 - The **Vienna Convention** on Diplomatic Relations of 18th April, 1961, provides **immunity to persons according to their rank in a diplomatic mission.**
 - It defines the legal status of the DA in Article 7. Under the Convention, **DAs are considered members of the diplomatic staff, enjoying full immunity.**

SUMMITS AND ORGANISATIONS

WTO Dispute Settlement Body: Revival Faces Delays Over Country Differences

- According to an economic think tank GTRI report, restoring a fully functional WTO dispute settlement body may take longer due to significant differences between developed and developing countries on the issue.

WTO Dispute Settlement Body (DSB)

- The General Council convenes as the DSB to deal with disputes between WTO members. Such disputes may arise with respect to any agreement contained in the Final Act of the Uruguay Round.
- **The DSB has authority to -**
 - Establish dispute settlement panels,
 - Refer matters to arbitration,
 - Adopt panel, Appellate Body and arbitration reports,
 - Maintain surveillance over the implementation of recommendations and rulings contained in such reports, and
 - Authorise suspension of concessions in the event of non-compliance with those recommendations and rulings.
- Only the DSB has the authority to make these decisions, panels and the Appellate Body can only make recommendations.

World Trade Organisation	
Establishment	WTO replaced the General Agreement on Tariffs and Trade (GATT) on January 1, 1995, which had been operational since 1948.
Membership	164 member countries, representing over 98% of global trade.
Headquarters	Geneva, Switzerland. Operates on a consensus-based decision-making process.
Objective	Promote free and fair trade by eliminating barriers like tariffs and quotas. Ensure transparent and predictable resolution of trade disputes.
Responsibilities	<ul style="list-style-type: none"> • Setting rules of international trade. • Negotiating and implementing trade agreements. • Providing a forum for trade negotiations. • Monitoring national trade policies.
Collaboration	Works closely with other international organizations such as the World Bank and the International Monetary Fund for global economic development and poverty reduction.
Organizational Structure	<ul style="list-style-type: none"> • Highest authority: the Ministerial Conference which has to meet at least once every two years. • Second level: Day-to-day work in between the ministerial conferences is handled by three bodies- The General Council; The Dispute Settlement Body; The Trade Policy Review Body. • Third level: councils for each broad area of trade, and more.

Africa Club

- The Africa Club was **launched at the 37th African Union Summit** in Addis Ababa, Ethiopia.
 - The African Union is an intergovernmental organization consisting of the 55-member states that make up the countries of the African Continent.
- **Africa Club is the Alliance of African Multilateral Financial Institutions** (which are African owned and controlled).

- **Members of the Africa Club include prominent institutions** like: **African Export-Import Bank**; Trade and Development Bank; Africa Finance Corporation; African Reinsurance Corporation; African Trade and Investment Development Insurance, etc

World Governments Summit 2024

- Prime Minister Modi participated in the World Governments Summit in Dubai as Guest of Honour.
- The World Government Summit is a global **platform dedicated to shaping the future of government worldwide**.
- It is an **annual event held in Dubai, United Arab Emirates**.
- **World Governments Summit Organization is a global, neutral, non-profit organization** dedicated to shaping the future of governments.
- **Headquarter: Dubai, United Arab Emirates**

Indian Ocean Conference

- The 7th edition of the Indian Ocean Conference was held in Perth, Australia.
- It is being held in **association with the Department of Foreign Affairs and Trade, Government of Australia**, along with S. Rajaratnam School of International Studies, Singapore and Perth-US Asia Centre in Australia.
- Theme of the conference is **"Towards a Stable and Sustainable Indian Ocean"**.

IOC is an annual international conference that focuses on the geopolitical, economic, and strategic importance of the Indian Ocean region.

The first edition of the Conference was held in Singapore in 2016. The sixth edition of IOC was organised in 2023 in Dhaka, Bangladesh.

Indian Ocean Conference (IOC)

The conference brings together policymakers, scholars, business leaders, and civil society representatives to discuss issues related to security, trade, and cooperation in the Indian Ocean region.

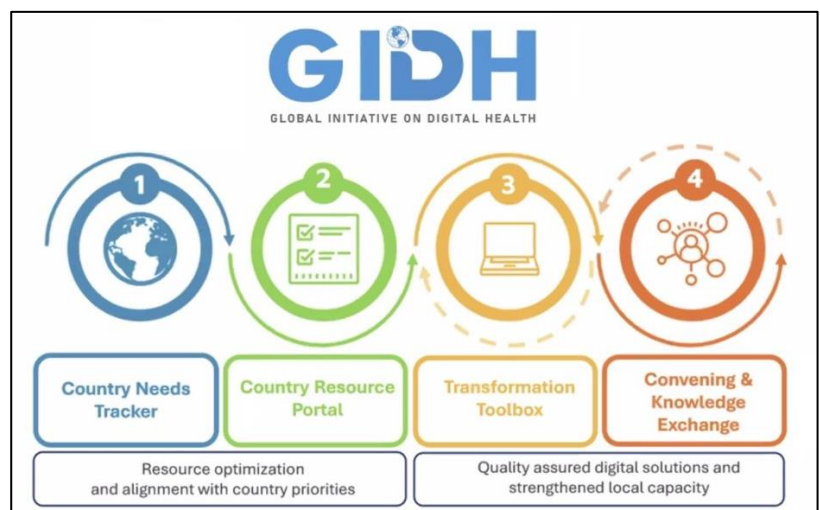
Organised by - India Foundation in partnership with other organizations in the region.

Global Initiative on Digital Health (GIDH)

- The World Health Organization (WHO) launched the Global Initiative on Digital Health (GIDH) via a virtual platform.

Global Initiative on Digital Health (GIDH)

- GIDH is one of the key **deliverables of India's G-20 Presidency**.
- It will **consolidate the evidence and amplify recent and past gains in global digital health** while strengthening mutual accountability to enhance the impact of future investments.
- GIDH will be a **WHO Managed Network ("Network of Networks")** that will promote equitable access to digital health by sharing digital goods and knowledge.



CLEA - Commonwealth Attorneys and Solicitors General Conference (CASGC) 2024

- Prime Minister Modi inaugurated the Commonwealth Legal Education Association (CLEA) - Commonwealth Attorneys and Solicitors General Conference (CASGC) 2024 at Vigyan Bhawan, New Delhi, with the theme "Cross-Border Challenges in Justice Delivery."

Commonwealth

- The Commonwealth is a **voluntary association of 56 independent countries**, with **Gabon** and **Togo** being the latest additions in 2022.
- The **London Declaration of 1949** paved the way for republics and other nations to join the Commonwealth, giving rise to the modern Commonwealth of Nations.
- Member governments have agreed upon shared goals such as development, democracy, and peace.
- The Commonwealth's roots go back to the British Empire. But today any country can join it.

Commonwealth Legal Education Association (CLEA)

- The Commonwealth Legal Education Association (CLEA), founded in 1971, **promotes high standards of legal education across the Commonwealth**.
- It **operates as a Commonwealth-wide body** with regional chapters and committees in Asia, Southern Africa, West Africa, the Caribbean, and Europe.
- CLEA **aims to enhance legal education's social relevance and professional utility** by developing law curricula, teaching methodologies, and supporting continuing legal education and distance learning programs to meet the demands of the profession amidst global challenges.

Nordic-Baltic Cooperation - the NB8

- In Raisina Dialogue in New Delhi, the eight Nordic-Baltic countries participated together as representatives of the Nordic-Baltic cooperation, the NB8.
- NB8 (Nordic - Baltic Eight) is an **informal regional co-operation format** that includes **Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, and Sweden**.
 - In **1992**, the **regional cooperation format** had brought together five Nordic countries and three Baltic countries in order to discuss important regional and international issues in an informal atmosphere.
 - In 2000, it was decided that the Nordic-Baltic cooperation format would be called Nordic-Baltic Eight (NB8).
- **Nordic countries are members of the European Union (except Iceland and Norway which are members of EFTA).**

India to set up International Big Cat Alliance

- The Union Cabinet approved the establishment of International Big Cat Alliance (IBCA).
- Framework of Agreement of IBCA has been drafted largely on the pattern of International Solar Alliance (ISA).

International Big Cat Alliance (IBCA)

- PM Modi urged global leaders to unite against poaching during the Global Tiger Day in 2019.
- The launch was announced during India's Project Tiger 50th anniversary on April 9, 2023.
- **Aim:** To protect and **conserve the seven major big cats: tiger, lion, leopard, snow leopard, puma, jaguar, and cheetah.**
- **HQ:** India
- **Membership:** Open to 96 range countries containing natural habitats of big cats.
 - Also open to other countries, conservation organizations, scientific bodies, businesses, and corporates interested in big cat conservation.
 - 16 countries and 9 international organizations have given consent to join.

- **Governance Structure:**
 - **General Assembly:** All member countries.
 - **Council:** Comprising 7 to 15 member countries elected by the General Assembly for a 5-year term.
 - **Secretary General:** Appointed by the General Assembly upon Council's recommendation.
 - **Secretariat:** Administrative body.
- **Funding:** Initial 5 years (2023-24 to 2027-28) supported by India's grant assistance of Rs.150 crore. Future sustainability through membership fees, contributions from institutions, and private sector.
- **Activities:**
 - Knowledge sharing platform for member nations,
 - Support to recovery efforts in potential habitats.
 - Advocacy, partnership, knowledge e-portal, capacity building, eco-tourism, and finance tapping.

Is India Home to All Seven Big Cats?

○ Out of 7 big cats, **India is home to 5:** Tiger, Lion, Leopard, Snow Leopard and Cheetah

○ **Royal Bengal Tiger:** India has 3682 tigers, home to 75 per cent of global numbers according to "Status of Tigers 2022"

○ **Asiatic Lion:** Gir National Park in Gujarat is the last abode for the surviving population of the Asiatic Lions in the world.

- Since the late 1960s, population of Asiatic Lions has increased from less than 200 to **674** (Census 2020).

○ Leopard: It is estimated that **12,000-14,000** leopards occur in India, and the population is the most genetically diverse/outbred out of all the subspecies in Asia.

○ **Snow Leopard** is native to the mountain ranges of Central and South Asia.

- In India, their geographical range encompasses a large part of the **western Himalayas** including the territories of Jammu and Kashmir, Ladakh, Himachal Pradesh, Uttarakhand and Sikkim and Arunachal Pradesh in the eastern Himalayas.
- In 2021, **there are about 7,500 snow leopards left in the world, out of which 500 are in India.**

○ **Cheetah** had become extinct in India since 1952.

- In September 2022, Cheetahs have been reintroduced in the wild in India as 8 Cheetahs were imported from **Namibia**.
- Twelve cheetahs from South Africa arrived in February, 2023
- They were released into the **Kuno National Park in Madhya Pradesh**.



Davos Meeting 2024

This year's edition of the World Economic Forum (WEF) annual meeting with the overarching theme of '**Rebuilding Trust**' was held from **January 15 to January 19**.

India Specific Observation at The Meet:

- An assessment of Davos 2024 by consulting firm McKinsey and Company said that India is transforming rapidly as one of the fastest growing large economies in the world.
- The summit announced the launch of a **Global Good Alliance for Gender Equity and Equality** with the support and **endorsement by WEF and Government of India**.
- **The idea** of this alliance **emerged** from the **G20 Leaders' Declaration**.
- **The objective** of this Alliance is to bring together global best practices, knowledge sharing and investments in the identified areas of women's health, education, and enterprise
- **Supported by the Bill and Melinda Gates Foundation**, the alliance will be housed and anchored by the CII Centre for Women Leadership.
- The **World Economic Forum** has come on board as a '**Network Partner**' and **Invest India** as an '**Institutional Partner**'.

Report on Missing Migrants Project

- The International Organization for Migration (IOM) has published the alarming death toll in a report on its Missing Migrants Project.
- The project has been investigating the disappearances of people fleeing conflict, persecution and poverty since 2014.
- As per the report, a total of 8,565 migrants died on land and sea routes worldwide in 2023.

About International Organization for Migration (IOM)

- IOM is an intergovernmental organization that provides services and advice concerning migration to governments and migrants alike.
- Established in 1951, it operates globally, with a mandate that includes migration management, humanitarian assistance, and promoting understanding of migration issues.
- IOM joined the United Nations in September 2016 as the UN Migration Agency.
- In 2018 the Secretary-General established the United Nations network on migration, which IOM coordinates.

United Nations Commission on International Trade Law (UNCITRAL)

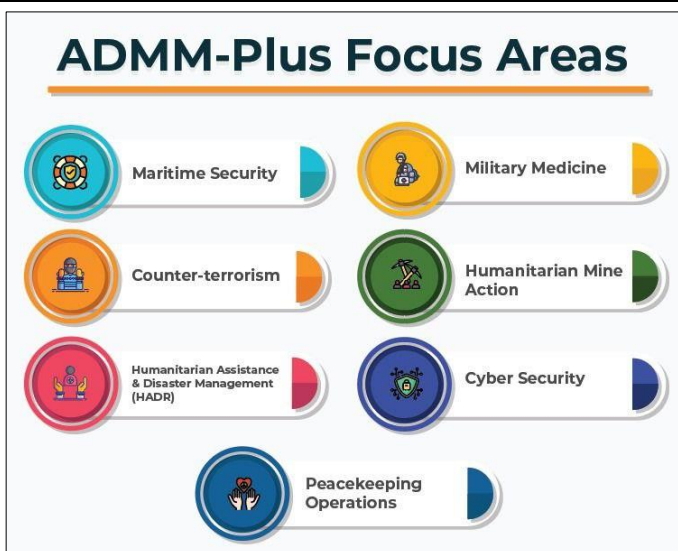
The Hague court rejected an Indian government's plea against compensation for Devas investors, who were awarded \$111 million by the UNCITRAL tribunal for a failed 2005 deal with Antrix Corp.

An award made under UNCITRAL Arbitration Rules is binding on all parties to the proceeding.

United Nations Commission on International Trade Law (UNCITRAL)	
Establishment	Established in 1966 by UN General Assembly resolution.
About	UNCITRAL operates under the United Nations and focuses on international trade law, progressively working to remove legal obstacles, modernize, and harmonize trade laws globally.
Membership	70-member states representing different geographical regions. Members are elected by the General Assembly for terms of six years. India is a member with membership expiring in 2028.
Headquarters	Vienna, Austria
Mandate	<ul style="list-style-type: none">• to remove legal barriers to international trade while modernizing and harmonizing trade laws globally.• to foster fair and efficient trade practices worldwide.

ASEAN Defence Ministers' Meeting – Plus (ADMM-Plus)

- 10th ASEAN Defence Ministers' Meeting - Plus (ADMM-Plus) was held in Jakarta, Indonesia.
- ADMM-Plus was established in 2010. It is a platform for ASEAN (Association of Southeast Asian Nations) and its eight Dialogue Partners (also known as Plus Countries). These "Plus" countries include Australia, China, India, Japan, New Zealand, South Korea, Russia and USA.
- **Objective:** To strengthen security and defence cooperation for peace and stability.
- India's proposal to co-chair the Expert Working Group on Counter-Terrorism received endorsement from ADMM-Plus.
- India has also pledged to engage in result-oriented collaboration with ADMM-Plus to bolster maritime security in the region.



13th Ministerial Conference of WTO

- The World Trade Organization (WTO) held its 13th Ministerial Conference (MC13) at Abu Dhabi in the UAE between February 26 and March 2.
- The Conference was **chaired by H.E. Dr Thani bin Ahmed Al Zeyoudi**, UAE's Minister of State for Foreign Trade.

Ministerial Conferences of WTO

- The topmost decision-making body of the WTO is the Ministerial Conference, which usually **meets every two years**.
- It brings together **all members of the WTO**, all of which are countries or customs unions.
- The Ministerial Conference can take decisions on all matters under any of the multilateral trade agreements.

South Asia Subregional Economic Cooperation (SASEC)

- PM laid the foundation stone for multiple projects in Assam, worth over Rs 3400 crore, as part of the SASEC corridor connectivity. These projects will upgrade 43 roads and 38 bridges, as well as four lane projects, enhancing connectivity to Itanagar and boosting regional economic development.

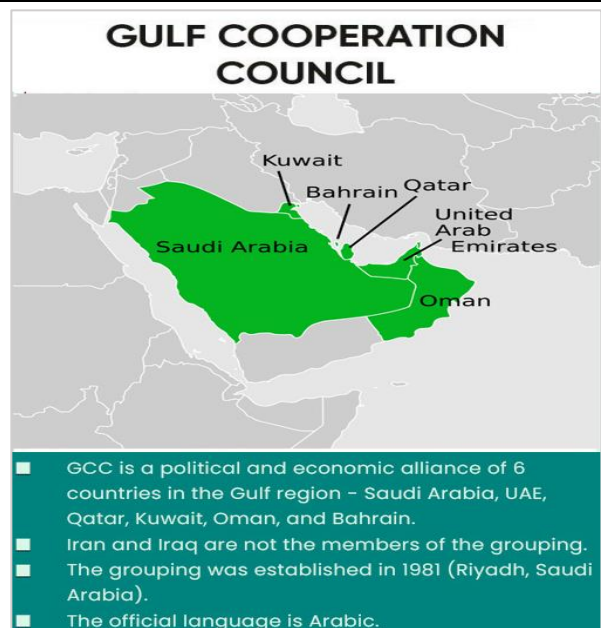
South Asia Subregional Economic Cooperation (SASEC)	
Established	In 2001, at the request of Bangladesh, Bhutan, India, and Nepal to the Asian Development Bank (ADB), which serves as its secretariat.
Headquarters	Manila, Philippines
Purpose	Project-based partnership to promote regional prosperity, improve economic opportunities, and build a better quality of life.
Objectives	Boost intraregional trade and cooperation in South Asia, develop connectivity and trade with Southeast Asia through Myanmar, extend to the People's Republic of China and the global market.
Vision	Develop connectivity and trade with Southeast Asia through Myanmar, to the People's Republic of China, and the global market.
Members	Bangladesh, Bhutan, India , Maldives, Myanmar, Nepal.
Pillars of SASEC	<ul style="list-style-type: none"> • Transport Sector Strategy: Develop multimodal transport networks and logistics facilities. • Trade Facilitation: Implement the SASEC Trade Facilitation Strategic Framework to modernize customs and improve cross-border facilities. • Energy Sector Strategy: Enhance cross-border electricity transmission connectivity to promote power trade. • Economic Corridor Development Strategy: Introduced in 2016, prioritize the construction of economic corridors with potential cross-border linkages

India-GCC Relations

- Recently the Parliamentary Standing Committee on External Affairs has suggested to provide legal aid to Indian nationals detained in Gulf Cooperation Council (GCC) countries.

India-GCC Ties:

- **Geostrategic Importance:** India's strategic interests in GCC countries stem from their proximity to vital maritime trade routes and their role in combating terrorism and extremism.
- **Diaspora Influence:** The Gulf region hosts approximately 88 lakh Indian diaspora. The region is also a significant contributor to India's remittance inflow.
- **Economic Ties:** Bilateral trade between India and the GCC was US\$154.73 billion in FY 2021-22. India's exports to the GCC were US\$44 billion in FY 2021-22. Among individual



countries, the UAE holds the position of India's third-largest trade partner, while Saudi Arabia ranks fourth.

- **Energy Security:** GCC nations play a crucial role in India's energy security, contributing nearly 35% of its oil imports and 70% of its gas imports
- **Defence Cooperation:** India has defence pacts with Qatar and intelligence-sharing arrangements with UAE, Saudi Arabia, and Oman.
- **Support in International Forums:** Countries like UAE, Oman, and Bahrain have expressed backing for India's pursuit of a permanent seat on a reformed UN Security Council
- **Space Collaboration:** India's Polar Satellite Launch Vehicle (PSLV) successfully deployed the UAE's inaugural nano-satellite, Nayif-I, to collect environmental data from space.

Non-Aligned Movement (NAM)

- Recently, the 19th Non-Aligned Movement (NAM) summit was held in **Kampala**, the capital of **Uganda** on 19 and 20 January.
- **Theme:** 'Deepening Cooperation for Shared Global Affluence.'
- **Key discussions at the summit:**
 - Israel-Hamas war
 - India's "Vishwaa Mitra" initiative
 - A call for multipolar world
- South Sudan became the new member(121st) of NAM.
- The Kampala Declaration was adopted at the summit, where member countries agreed to:
 - Strengthen the UN as the primary multilateral organization.
 - Make joint efforts to achieve the **2030 Agenda for Sustainable Development** and the **Addis Ababa Action Agenda (AAAA)**.
 - The AAAA is a global framework that seeks to align financing flows and policies with economic, social, and environmental priorities.

Key principles of NAM



Respect for UN Charter and international law



Promotion of multilateralism and cooperation through dialogue



Respect for self-defense rights under UN Charter



Non-interference in internal affairs of states



Sovereignty, equality, and territorial integrity of all states



Peaceful resolution of international conflicts per UN Charter

About NAM:

- The Non-Aligned Movement (NAM) is an alliance of developing nations that refuses to identify with any major superpower.
- It was established in 1961 at the height of the Cold War. Whereas it started with the **Bandung Conference** held in Indonesia in **1955**.
- NAM's first conference was held in the Belgrade (The Belgrade Conference) in 1961.
- **Current members:** 121 countries. Out of which **54 are from Africa, 39 are from Asia**, 26 are from Latin America and the Caribbean and **two from Europe**.
- It also includes the non-UN member state of Palestine, 17 other observer countries, and 10 observer organizations. India is one of the founding members.
- After the United Nations, NAM is the second-largest grouping of nations.
- NAM **does not have a permanent secretariat** or a formal founding charter, act, or treaty
- The summit usually takes place **every three years**.

Indo-Pacific Regional Dialogue (IPRD-2023)

- The 2023 edition of the Indian Navy's Indian Ocean Region Defence (IPRD) concluded in New Delhi. IPRD is an annual apex-level regional strategic dialogue.
- **Theme:** "Geopolitical Impacts upon Indo-Pacific Maritime Trade and Connectivity."

- **Organized by:** National Maritime Foundation, New Delhi, in collaboration with the Indian Navy as its knowledge partner.
- **Objective:** IPRD aims to review various maritime trends, regional opportunities, and challenges within the Indo-Pacific region. It also aims to foster solution-oriented dialogue among key stakeholders.

UAE-India CEPA Council (UICC)

- UAE-India Comprehensive Economic Partnership Agreement (CEPA) Council (UICC) was launched at India-United Arab Emirates (UAE) Business Summit.
- **The UICC** aims to foster strong partnerships and practical collaboration between the business communities of the UAE and India.
- It focuses on supporting startups, women entrepreneurs, micro, small, and medium-sized enterprises (MSMEs), as well as the services sectors.

About India-UAE Comprehensive Economic Partnership Agreement (CEPA):

- The India-UAE CEPA, signed on February 18, 2022, and effective since May 1, 2022, aims to boost bilateral trade to US\$ 100 billion within five years.
- It includes trade in goods and services, rules of origin, customs cooperation, and dispute settlement.
- The bilateral trade has risen by about 15% since the CEPA came into force.

IBSA Fund

- India has donated \$1 million to the **Poverty and Hunger Alleviation Fund**, a component of the **India, Brazil, and South Africa (IBSA) Fund**, underscoring its commitment to fostering collaboration and progress among Global South nations.

IBSA Fund	Established in 2004 and operational since 2006 , the IBSA Fund executes projects in developing countries aimed at mitigating poverty and hunger, aligning with internationally recognized development objectives.
IBSA	The India-Brazil-South Africa Dialogue Forum (IBSA) is a trilateral platform fostering international cooperation among India, Brazil, and South Africa. Established in June 2003 , IBSA aims to contribute to the establishment of a new global order.

Weimar Triangle

- The Weimar Triangle, consisting of the **Foreign Ministers of Germany, Poland, and France**, has recently reconvened.
- Established in 1991, the **Weimar Triangle serves as a regional group aimed at cultivating a shared vision for Europe** and fostering stronger connections between the societies of these three countries.
 - The group derives its name from the city of **Weimar, Germany**, where its first meeting was held.
- Initially, the Triangle played a pivotal role in **facilitating German-Polish reconciliation after World War II**.

International Narcotics Control Board (INCB)

- India's Jagjit Pavadia was re-elected for a third term for five years from March 2025-2030 to the International Narcotics Control Board.

About International Narcotics Control Board (INCB)	
Establishment	Established in 1968, INCB serves as an independent and quasi-judicial monitoring body for the implementation of the United Nations international drug control conventions.
History	Formed by merging the Permanent Central Narcotics Board and the Drug Supervisory Body , established respectively by the 1925 International Opium Convention and the 1931 Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs.
Members	<ul style="list-style-type: none"> • Comprised of 13 members elected by the Economic and Social Council

	<ul style="list-style-type: none"> • Three members with medical, pharmacological, or pharmaceutical expertise are nominated by the World Health Organization (WHO) • Remaining 10 are nominated by governments.
Mandate	<ul style="list-style-type: none"> • INCB collaborates with governments to ensure adequate drug supplies for medical and scientific purposes and prevent the diversion of drugs from licit to illicit channels. • It also monitors governments' control over chemicals used in illicit drug manufacture and aids in preventing their diversion into illicit trafficking.

WTO Peace Clause

- India has invoked the peace clause at the World Trade Organization (WTO) for the fifth consecutive time due to breaching the prescribed subsidy limit for rice offered to its farmers.
- Under the Peace Clause, **WTO members refrain from challenging any breach in the prescribed subsidy ceiling given by a developing nation at the dispute settlement forum of the WTO.**
- **Subsidy ceiling:** Under the trade norms, a WTO member's food subsidy bill should not breach the limit of **10 percent** of the value of production based on the **reference price of 1986-88.**
- Subsidies over and above the prescribed ceiling are seen as trade-distorting.
- India has been seeking amendments to the formula for calculating this food subsidy cap.
- At the **Bali ministerial meeting in December 2013**, WTO members introduced an interim measure known as the Peace Clause, with a commitment to negotiate a permanent solution to the food stockpiling issue.
- This clause will be there till a permanent solution is found to the food stockpiling issue.
- Under the Peace Clause, developing countries are permitted to exceed the 10% ceiling on agricultural subsidies without facing legal repercussions from other members.

ECONOMY

MONEY AND BANKING

Business Payment Solution Provider (BPSP) Shutdown

- The Reserve Bank of India (RBI) has directed card networks Visa & Mastercard to cease their Business Payment Solution Provider (BPSP) operations in commercial and business payments via corporate credit cards.

Business Payment Solution Provider (BPSP)

- **BPSPs facilitate business-to-business payment services using credit cards.**
- Launched in 2017, BPSPs aimed to enable small businesses to accept card payments without requiring a card terminal.
- Previously, corporate payments to smaller suppliers were made through debit transactions via RTGS and NEFT. BPSP allowed credit payments in such cases.
 - For example, **businesses could pay smaller suppliers via BPSP even if the suppliers lacked credit payment infrastructure.**
- Under this setup, intermediaries accepted card payments from corporates and transferred the funds to non-card accepting recipients via IMPS/RTGS/NEFT.

RBI's Directive

- RBI deemed this arrangement as a payment system requiring authorization under the Payment and Settlement Systems (PSS) Act, 2007.
- As BPSP did not obtain this authorization under Section 4 of the PSS Act, its operation lacked legal sanction. RBI also expressed concerns regarding non-compliance with Know Your Customer (KYC) norms in such transactions.

Card Networks

- ✓ Card networks operate in the background every time a customer uses her card to make a payment.
- ✓ Card networks connect banks, merchants, and customers (card users) to one another so that transactions can be carried out smoothly and securely.
- ✓ There are five authorised card networks in India: Visa, Mastercard, RuPay, Diners Club, and American Express.

MoU Between IEPFA and DBS

- The **Ministry of Corporate Affairs (MCA)** facilitated the signing of a **memorandum of understanding (MoU)** between the **Investor Education and Protection Fund Authority (IEPFA)** and **DBS Bank**.
- According to the MoU, DBS Bank will extend support to IEPFA's initiatives aimed at investor awareness and protection.
- Previously, IEPFA has entered into similar agreements with Bank of Baroda and ICICI Bank for comparable activities.

IEPFA

Established in 2016 under the **MCA's jurisdiction**, IEPFA manages the Investor Education and Protection Fund, which **facilitates refunds for shares, unclaimed dividends, and matured deposits/debentures to investors.**

RBI Guidelines for Inoperative Accounts and Unclaimed Deposits

- RBI has revised guidelines for classifying accounts and deposits as inoperative accounts and unclaimed deposits by banks.

Unclaimed Deposits:

- Balances in savings / current accounts which are **not operated for 10 years**, or term deposits not claimed within 10 years from date of maturity are classified as unclaimed deposits.

- The government recently informed the Parliament that unclaimed deposits of Rs 42,270 crore are lying with the banks as of March 2023.

Inoperative Accounts:

- A savings or current account is treated as inoperative, if there are **no customer induced transactions** in the account **for a period of over two years**.
- A customer induced transaction can be a financial transaction initiated by or done at the request of the account holder by the bank or third party, or a non-financial transaction or a KYC (know your customer) updation.

Accounts That Cannot Be Classified as Inoperative Accounts:

- Zero balance accounts for beneficiaries of Central/State government schemes and for students who receive scholarships.

Initiative to boost Fintech Education

- The **Union government and the Asian Development Bank (ADB)** has signed a \$23 million loan agreement to enhance access to quality fintech education, research, and innovation at the **Gujarat International Finance Tec-City (GIFT-City)**.

International Fintech Institute (IFI)

- The project will establish an **International Fintech Institute (IFI)** to strengthen fintech education, boost start-up success rates, and drive fintech research & innovation (in climate fintech, regulatory technology, social inclusion, and gender equality in finance).
- IFI will offer industry-aligned fintech training programmes that meet international standards.
- It will strengthen entrepreneurship by supporting startups, especially women-led, through incubation and acceleration services.
- It will also collaborate with industry and venture capital funds to support the growth of fintech startups.
- The project will also help establish a **State Fintech Readiness Index**.

GIFT City

- GIFT City is an initiative of the Union Government and the State Government of Gujarat to facilitate India's financial services and fintech ecosystem.
- It is India's first operational *greenfield smart city and international financial services centre (IFSC)*.

National Urban Co-operative Finance and Development Corporation Limited (NUCFDC)

- The Ministry of Cooperation has launched National Urban Co-operative Finance and Development Corporation Limited (NUCFDC), **the umbrella organization for the Urban Cooperative Banks (UCB)**.
- The initiative aims to **modernize and strengthen the Urban Cooperative Banking Sector** in India, ultimately benefiting both the banks and their customers.
- The NUCFDC has **received Certificate of Registration (CoR) from RBI** to operate as a **Non-Banking Finance Company (NBFC)** and serve as the umbrella organization for the urban cooperative banking sector.

URBAN COOPERATIVE BANKS (UCBS)



- UCBs, though not formally defined, refers to primary cooperative banks located in urban and semi-urban areas.
- These member-owned and run entities cater to banking requirements of small businesses, individuals, and communities, who find it difficult to access services of the mainstream banking segment.
- At present, there are over 1,500 scheduled and non-scheduled UCBs in India with a total number of branches exceeding 11,000.
- The banks have a deposit size of over Rs 5.33 lakh crore, and total lending of Rs 3.5 lakh crore.

REGULATION

- UCBs are primarily **registered as cooperative societies** under the provisions of either the State Cooperative Societies Act of the State concerned or the Multi State Cooperative Societies Act, 2002 if the area of operation extends beyond the boundaries of one state.
- Banking laws were made applicable to cooperative societies in **1966** through an amendment to the **Banking Regulation Act, 1949**.
- Since then, **banking related functions** are regulated by the RBI and **management related functions** are regulated by respective State Governments/Central Government.
- Powers have also been delegated to National Bank for Agricultural and Rural Development (**NABARD**) to **conduct inspection** of State and Central Cooperative Banks.

- NUCFDC will be allowed to operate as a **Self-Regulatory Organization (SRO)** for the sector.

Significance

- The establishment of NUCFDC will provide **specialized services to cooperative banks** and enhance communication between banks and regulators.
- It addresses **challenges like technology constraints and service range issues** for UCBs.
- With a capital base target of Rs.300 crores, NUCFDC **aims to offer liquidity, capital support, and a shared technology platform for UCBs**, facilitating service expansion at reduced costs.
- Additionally, it can provide **fund management and consultancy services**.

Payment Aggregator

- RBI recently gave two fintech startups Juspay and Decentro the license to operate as payment aggregators.
- **A payment aggregator is a third-party service provider that enables customers to make and businesses to accept payments online.**
- Payment aggregators enable their clients to accept various payment methods such as debit cards, credit cards, cardless EMIs, UPI, bank transfers, e-wallets, and e-mandates.
- Payment aggregators facilitate payments to various stakeholders, including partners, employees, suppliers, and authorities. To facilitate payment methods, businesses need to partner with banks and NBFCs.
- In India, there are 34 nationalized banks and 9,680 NBFCs, making it challenging for businesses to partner with such a large number. Payment aggregators act as a middleman between businesses and financial institutions.

Functions of Payment Aggregator

- **Merchant Onboarding:** Enabling merchants to offer payment options to customers, including cards, UPI, wallets, etc.
- **Transaction Processing:** Collecting payment information from merchants and forwarding it to acquiring banks for transaction processing.
- **Settlements:** Handling settlements for merchants, including collecting payments from partner entities and depositing them into merchant accounts within specified timelines.
- **Refunds & Chargebacks:** Managing refunds and coordinating with acquiring banks to resolve chargebacks or disputes.
- **Support:** Providing integration and operational support to merchants for smooth payment processes.
- **Compliance:** Ensuring adherence to security standards and regulatory compliances directed by relevant authorities.
- **Dashboard:** Offering merchants a dashboard for tracking payment-related activities, and sometimes providing data analytics for deeper insights.

Domestic Systemically Important Banks (D-SIBS)

- The Reserve Bank of India (RBI) released 2023 list of **Domestic Systemically Important Banks (D-SIBS)**.
- A bank is classified as a **D-SIB if its failure could significantly disrupt the financial system** due to factors such as its size, cross-border activities, complexity, lack of substitutability, and interconnectedness.
- The Reserve Bank of India (RBI) introduced the D-SIB framework in 2014, mandating the disclosure of D-SIBs' names and their categorization into different buckets based on their Systemic Importance Scores (SISs).
- Depending on their bucket placement, **D-SIBs are subject to an additional Common Equity Tier 1 (CET1)** requirement, which is a crucial measure of a bank's financial strength according to regulators.
 - This requirement **necessitates D-SIBs to allocate extra capital** and provisions to protect their operations and enhance financial stability.
- The RBI has designated **State Bank of India (SBI), ICICI Bank, and HDFC Bank** as D-SIBs under this framework.

- Likewise, the **Financial Stability Board (FSB)**, based in Basel, Switzerland, in collaboration with the Basel Committee on Banking Supervision (BCBS), has identified a list of Global Systemically Important Banks (G-SIBs).
 - Currently, there are **30 G-SIBs globally, none of which are Indian banks.** Examples include JP Morgan, Citibank, HSBC, Bank of America, Bank of China, Barclays, BNP Paribas, etc.

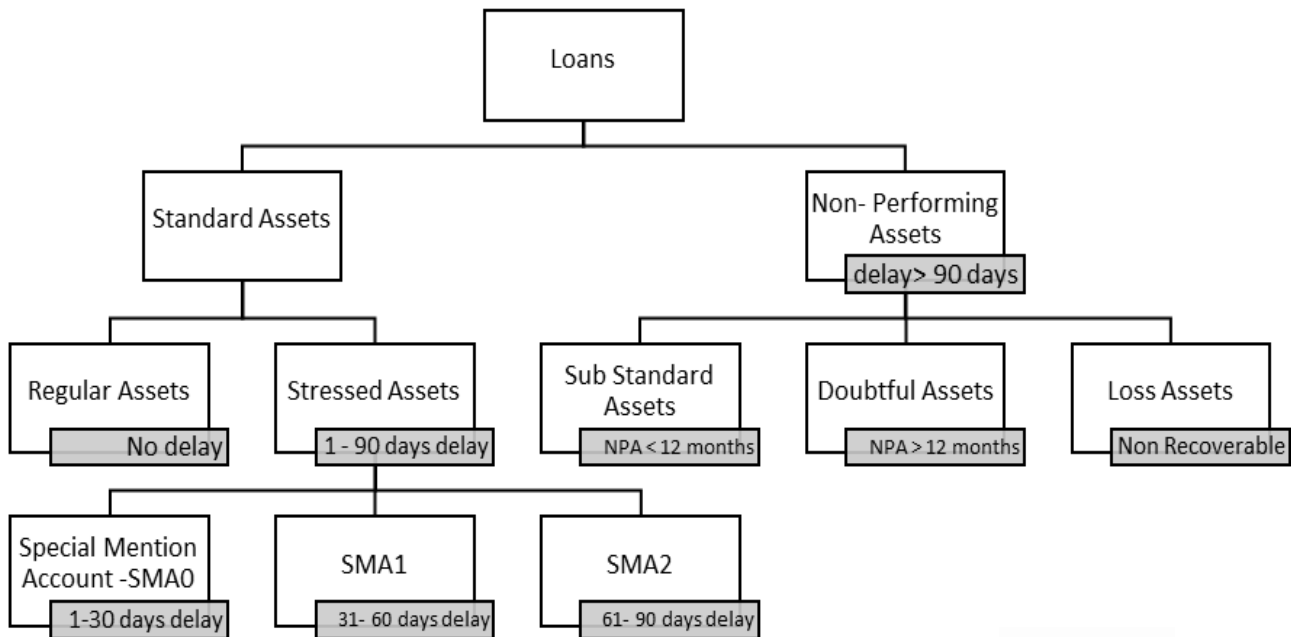
RBI's D-SIB Selection Process

- Initial Selection:** Initially, a sample of banks is chosen for assessment based on their size relative to GDP. **Only banks with a size exceeding 2% of GDP are considered.**
- Composite Score:** Using various indicators, each bank in the sample is assigned a composite score reflecting its systemic importance.
- Bucket Segregation:** Based on their systemic importance scores, D-SIBs are categorized into different buckets. Lower-bucket D-SIBs face a lower capital charge, while higher-bucket D-SIBs face a higher capital charge.

Non- Performing Assets

- RBI's 2022-23 Trend and Progress of Banking in India report revealed a decrease in the gross non-performing assets ratio to 3.9%.
- NPA refers to that a loan or an advance where
 - Interest and/ or instalment of remain overdue for a period of > 90 day in respect of a term loan or a bill, or OD/CC,**
 - Principal or interest remains overdue for two crop seasons for short duration crops, and one crop season for long duration crop loans.

Year	NPA % of Advances
2018	11.2%
2023	3.9%



Steps Taken to Reduce NPA	
Debt Recovery Tribunals	Established under the Recovery of Debts and Bankruptcy Act, 1993. Provides for the establishment of Tribunals for expeditious adjudication and recovery of debts.
SARFAESI Act, 2002	Allows secured creditors to take possession of collateral upon default in repayment.

Insolvency and Bankruptcy Code (IBC), 2016	Facilitates reorganization and insolvency resolution of corporate persons, partnership firms, and individuals within a time-bound manner (180 days, extendable by 90 days).
National Asset Reconstruction Company (NARCL)	Aims to reduce NPAs of banks, improving financial system stability and efficiency.
Mission Indradhanush	Envisages infusion of capital in Public Sector Banks (PSBs) to revamp and strengthen them.
4R Strategy	recognition of NPAs, resolution and recovery of value from stressed accounts, recapitalising of PSBs, and reforms in PSBs

Modern Monetary Theory (MMT)

- MMT challenges traditional views on government spending and debt that spending should be matched by revenues through taxes and other sources, or borrowing should be limited and repaid responsibly.

Core Ideas of MMT

- **Government Spending Power:** MMT argues that governments with fiat currencies, like the Indian Rupee, can create new money to fund spending without being limited by tax revenue or borrowing.
- **Debt as a Tool:** MMT diminishes concerns about government debt, suggesting that sovereign governments can always print more money to pay off debt denominated in their own currency. However, excessive money creation can lead to inflation.
- **Focus on Full Employment:** MMT prioritizes achieving full employment and price stability. It advocates for using government spending to manage these goals, especially during periods of high unemployment.
- **Inflation as the Real Constraint:** MMT sees inflation as the main limitation on government spending. It argues that increased spending won't cause inflation as long as there are unemployed people and underutilized resources. However, once full employment is reached, additional spending can lead to inflation.
- The monetization of fiscal deficit aligns with the theory of MMT and India stopped this practice in 1996 via an MOU between the RBI and the government.

Payments Infrastructure Development Fund

- RBI extended Payments Infrastructure Development Fund (PIDF) Scheme till 2025.

Payments Infrastructure Development Fund (PIDF) Scheme	
Launch	In January 2021 for Duration of 3 years, <i>now till 2025</i>
Objective	Increase the number of payment acceptance devices multifold in the country
Fund Source	Fund set up by the RBI in consultation with major authorized card networks
Target Regions	Tier-3 to tier-6 cities, north-eastern states of India, Union Territories of Jammu and Kashmir and Ladakh
Expansion	Beneficiaries of the PM SVANidhi Scheme in Tier-1 and 2 cities Beneficiaries of PM Vishwakarma Scheme in all centres
Funding Sources	RBI and major authorized card networks in India
Beneficiaries	Banks and non-bank financial companies (NBFCs) for deployment of PoS terminals and other payment acceptance infrastructure
Acceptance Devices	Physical PoS, mPoS (mobile PoS), GPRS (General Packet Radio Service), PSTN (Public Switched Telephone Network), Sound Box, Aadhaar-enabled biometric devices
Governance	<ul style="list-style-type: none"> • Managed and administered by RBI • Governed by an Advisory Council

- Implementation monitored by RBI with assistance from card networks, Indian Banks' Association (IBA), and Payments Council of India (PCI)

Model Based Lending

- Reserve Bank of India Governor recently cautioned financial institutions, including banks and Non-Banking Financial Companies (NBFCs), about excessive reliance on algorithms and model-based lending practices.
- Model-based lending refers the **use of sophisticated mathematical models and algorithms to evaluate creditworthiness, assess lending risk, and make decisions regarding loan approvals**. These methodologies leverage extensive datasets to forecast the likelihood of borrowers repaying their loans.
- Algorithm and model-based lending offers **efficiency, accuracy, and consistency** by processing large data volumes quickly.
- However, challenges include **data quality, interpretability, fairness, and bias**.

National Financial Reporting Authority (NFRA)

- The National Financial Reporting Authority (NFRA) has identified deficiencies in the audit quality of the top four audit firms.

National Financial Reporting Authority	
Established on	2018 as a Statutory Body
Act	Under Sub Section (1) of section 132 of the Companies Act, 2013.
Nodal Ministry	Ministry of Corporate Affairs
Objectives	<ul style="list-style-type: none"> • To ensure high quality financial reporting • To protect investor interests • To promote investor confidence • To strengthen the auditing profession
Functions	<ul style="list-style-type: none"> • Recommend accounting and auditing standards • Monitor and enforce compliance with standards • Oversee the quality of audit services • Investigate and discipline erring auditors and audit firms

Unified Payments Interface

- Unified Payments Interface (UPI) is a digital payment system developed by the National Payments Corporation of India (NPCI) and regulated by the Reserve Bank of India (RBI).
- Launched on April 11, 2016, UPI enables peer-to-peer inter-bank transfers through a two-click factor authentication process.
- It simplifies transfers using the recipient's UPI ID, eliminating the need to enter bank details or other sensitive information. A consistent UPI transaction PIN across apps enhances cross-operability, enabling 24/7 transactions.
- UPI operates as a digital public infrastructure, allowing seamless interactions for merchants and customers without transaction costs. It uses technologies like the Immediate Payment Service (IMPS) and the Aadhaar-Enabled

New Features of UPI	
Credit Line on UPI	Enables pre-sanctioned credit lines from banks via UPI. Previously, only the deposited amount could be transacted through the UPI System.
UPI Lite X	Users can both send and receive money offline through any compatible device that supports Near Field Communication (NFC).
UPI Tap & Pay	Allows NFC-enabled QR codes at merchants to complete payments with a single tap without entering the PIN.
Hello! UPI	Users can give voice commands to transfer funds and input a UPI PIN to complete the transaction.
BillPay Connect	Customers can fetch and pay their bills by sending a simple 'Hi' message or by giving a missed call.
UPI 123PAY	Instant payment system for feature phone users who can use UPI payment service in a safe and secure manner.
UPI in Foreign Markets	UPI payments are accepted in Sri Lanka, Mauritius, France, UAE, Singapore, Bhutan, and Nepal.

Payment System (AEPS) to ensure smooth transactions between accounts.

- UPI facilitates push and pull transactions, as well as multiple recurring payments like utility bills and school fees.

New UPI Rules

- The RBI has announced new rules and regulations to improve the scope of UPI payments.
- The NPCI has **increased the transaction limit** for UPI payments made to **hospitals and educational institutions to Rs 5 lakh** from Rs 1 lakh.
 - **Transaction limits are capped at Rs 1 lakh**, except in certain categories like Capital Markets, Collections, and Insurance.
- Additionally, **e-mandates** for recurring online transactions have been **increased** from Rs 15,000 to **Rs 1 lakh** for credit card bill payments, mutual fund subscriptions, and insurance premiums.

National Payments Corporation of India (NPCI)	
About	An umbrella organization for retail payments and settlement systems in India. It is an initiative of the RBI and the Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007, aimed at creating a robust Payment & Settlement Infrastructure in India.
Promoter Banks	Punjab National Bank - State Bank of India - Canara Bank - Union Bank of India - Bank of Baroda - ICICI Bank Limited - Bank of India - HSBC - Citibank - HDFC Bank Limited
Legal Status	Incorporated as a Not-for-Profit Company
Objective	Provides infrastructure to the entire banking system in India for physical as well as electronic payment and settlement systems. Focused on bringing innovations to retail payment systems through the use of technology to achieve greater efficiency in operations and widen the reach of payments.
Regulatory Board	Headquartered in Mumbai. Includes nominees from the RBI and ten core promoter banks.
Products	Aadhaar Enabled Payment System, Bharat Bill Payment System, BHIM, Cheque Truncation System, Digital Rupee, Immediate Payment Service (IMPS), National Automated Clearing House, National Common Mobility Card, National Financial Switch, RuPay, Unified Payments Interface, BharatQR

Self Help Group Bank Linkages and NABARD

- The SHG Bank Linkages Project is a 1992 NABARD microfinance program which enables banks to create savings accounts for Self-Help Groups (SHGs), so that SHGs can access credit at subsidised rate of interest.
- SHG Bank Linkage Project has its 3 different phases:
 - Phase 1 (1990-2005)
 - Phase 2 (2006-2012)
 - Phase 3 (2012- Till Date)
- SHGs are registered or unregistered entities involving people, particularly from low-income households, who pool their savings and utilize them to give loans to needy members at reduced interest rates. They usually have a membership of 15-20 members.

About National Bank for Agriculture and Rural Development (NABARD)	
Establishment	Established on the recommendations of Sivaraman Committee in 1982 under the National Bank for Agriculture and Rural Development Act, 1981 in Mumbai
Aim	Fostering rural prosperity and promoting sustainable and equitable agriculture and rural development
Composition	Chairman + 3 directors (experts in rural development) + 3 directors from RBI + 3 directors from the Central Government + 4 Directors from state governments

Functions and Responsibilities	<ul style="list-style-type: none"> • Providing short- and long-term finance to financial institutions supporting rural development • Assisting in policy formulation for RBI, Central and State governments, focusing on matters related to agricultural credit and rural development • Conducting inspections of cooperatives and Regional Rural Banks (RRBs) to ensure compliance and effectiveness in rural development initiatives.
Schemes Implemented by NABARD	<ul style="list-style-type: none"> • Stand-Up India • Special Credit Linked Capital Subsidy Scheme (SCLCSS) • Interest Subvention Scheme • Integrated Tribal Development Programme • Agricultural Marketing Infrastructure (AMI) sub-scheme of ISAM • Agri Clinic and Agribusiness Centres Scheme

RBI Retail Direct Scheme

- The Reserve Bank of India (RBI) plans to introduce a mobile application to facilitate seamless investment in government securities for retail investors as part of the RBI Retail Direct Scheme.

About RBI Retail Direct Scheme	
About	Initially launched in November 2021, the scheme offers individual investors access to maintain gilt accounts with the RBI and invest in government securities.
Features	<ul style="list-style-type: none"> • Allows investors to purchase securities in primary auctions and trade securities through the Negotiated Dealing System Order Matching system (NDS-OM) platform. • NDS-OM is RBI's electronic order matching system for trading in government securities in the secondary market. • Provides facilities such as opening and maintaining a 'Retail Direct Gilt (RDG) Account', access to primary issuance of government securities, and access to NDS-OM to retail investors.
Eligibility Criteria	Retail investors can register under the scheme and maintain an RDG account if they possess: <ul style="list-style-type: none"> • A rupee savings bank account maintained in India. • PAN and any officially valid document for KYC purposes. • A valid email address and registered mobile number.
Payment Methods	Transactions can be conveniently executed using a savings bank account through internet banking or Unified Payments Interface (UPI).
Investor Services	<ul style="list-style-type: none"> • Services include access to transaction and balance statements, nomination facilities, pledge or lien of securities, and gift transactions. • No fees are charged for the facilities provided under the scheme.

INDUSTRY AND INFRASTRUCTURE

Pradhan Mantri Suryodaya Yojana

- PM Modi announced the 'Pradhan Mantri Suryodaya Yojana', a government scheme under which one crore households will get rooftop solar power systems. Scheme is a new attempt to help reach the target of 40 GW rooftop solar capacity.
- The name of the scheme has been changed to "PM Surya Ghar Muft Bijli Yojna"

About Pradhan Mantri Suryodaya Yojana Scheme:

- It will involve installing solar power systems at rooftops for residential consumers.
- A consumer can avail of benefits of the scheme through DISCOM tendered projects or through a dedicated National Portal.
- The DISCOMs role is limited to issuing of technical feasibility approval, installation of net-meter and inspect the system.

- Surplus solar power units generated from the rooftop solar plant can be exported to the grid. The consumer can receive monetary benefits for the same.
- Initially designed to fully subsidize the **installation of 1-3 Kilowatt (KW) solar systems in 1 crore households**, the scheme now **covers up to 60% of the costs**, with households responsible for the remaining amount, facilitated by accessible loans.
- It **aimed to provide up to 300 units of free electricity monthly**, resulting in annual benefits of **₹15,000-18,000 for households**.

Previous Schemes to Promote Rooftop Solar System:

- In 2014, the government launched the **Rooftop Solar Programme** with the aim to achieve a cumulative installed capacity of gigawatts (GW) by 2022.
- However, this target could not be achieved. By the end of 2023, rooftop solar energy generation was just 11 GW.

India's Current Solar Capacity:

- According to the Ministry of New and Renewable Energy, solar power installed capacity in India has reached around 73.31 GW as of December 2023.
- The rooftop solar installed capacity is around 11.08 GW as of December 2023.
- In terms of total solar capacity, Rajasthan is at the top with 18.7 GW. Gujarat is at the second position with 10.5 GW.
- When it comes to rooftop solar capacity, Gujarat tops the list with 2.8 GW, followed by Maharashtra by 1.7 GW.

India's Toy Industry

- According to a case study on **"Success Story of Made in India Toys"** released by the DPIIT, the Indian Toy industry witnessed **a rise of 239% in exports** (and **decline in imports by 52%**) in 2022-23 as compared to 2014-15.

The Growth Story:

- In 2015-16, the Indian toy industry had about **15,000 enterprises** in both organised and unorganised sectors, producing **toys worth ₹1,688 crore** and **employing 35,000 workers**.
- The industry witnessed **negative productivity growth between 2014-19**. As a result, **imports rose by nearly 3 times** as much as exports and accounted for up to 80% of domestic sales.
- The **Indian PM** (during his Mann ki Baat address in August 2020) expressed his desire to establish India as a global Toy manufacturing hub.
- Between **2018-19 and 2021-22**, toy **exports increased from ₹812 crore to ₹1,237 crore** and **imports declined from ₹2,593 crore to ₹819 crore**.
- It helped in the reduction in **dependence on imported inputs from 33 to 12%** and **increase in gross sales value by a CAGR of 10%**, and overall rise in labour productivity.

Initiatives Taken:

- **Make in India initiative (2014)** to create and encourage companies to develop, manufacture and assemble products made in India.
- **National Action Plan for Toys (NAPT)** to promote the designing of toys, using toys as a learning resource, monitoring the quality of toys and promoting indigenous toy clusters.
- **Basic Custom Duty** increased **from 20% to 60%** in 2020, and to **70% in March 2023**.
- **The Directorate General of Foreign Trade (DGFT)** has mandated sample testing of each import consignment to curb the import of sub-standards toys.
- **A Quality Control Order (QCO)** for toys was issued in 2020.

- The **Ministry of MSME** is supporting **19 Toy clusters under the Scheme of Funds for the Regeneration of Traditional Industries (SFURTI)**.
- The **Ministry of Textiles** is providing designing support to 13 Toy clusters.
- Several promotional initiatives like the **Indian Toy Fair 2021, Toycathon, etc.** were organised.

Kochi-Lakshadweep Islands Submarine Optical Fibre Connection (KLI-SOFC)

- The PM recently inaugurated the Kochi-Lakshadweep Islands Submarine Optical Fibre Connection (KLI-SOFC) among various developmental projects worth more than Rs. 1,150 crores.
- Earlier, the only means of communication with the Islands was through Satellite medium, which had limited bandwidth capacity and was not able to meet the growing bandwidth demand.

About KLI-SOFC:

- It is the **submarine cable connectivity project from Mainland (Kochi)** to eleven Lakshadweep Islands namely, Kavaratti, Agatti, Amini, Kadmat, Chetlet, Kalpeni, Minicoy, Androth, Kiltan, Bangaram and Bitra has been extended.
- The project is **funded by Universal Services Obligation Fund (USOF)**, Department of Telecommunication.
- **Bharat Sanchar Nigam Limited (BSNL) was the Project Executing Agency** and the work was awarded to M/s NEC Corporation India Pvt Ltd through Global Open Tendering process.
- With the completion of this, Lakshadweep will be connected through Submarine Optic Fibre Cable, for the first time.

Open Acreage Licensing Policy (OALP)

- The Ministry of Petroleum and Natural Gas (MoPNG) recently launched the ninth round of bids under the Open Acreage Licensing Policy (OALP).

Background:

- India is the 3rd largest consumer of crude oil and petroleum products and is dependent on imports for around 80% of its crude demand.
- In order to give a fillip to the hydrocarbon exploration, India launched **New Exploration Licensing Policy (NELP) of 1997-1998**.
- Later in 2016, **Hydrocarbon Exploration and Licensing Policy (HELP)** was launched replacing NELP.
- HELP had **2 key drivers**; both were launched in 2017:
 - The Open Acreage Licensing Programme (OALP)
 - The National Data Repository (NDR)

Open Acreage Licensing Programme (OALP)	National Data Repository (NDR)
<ul style="list-style-type: none"> • OALP gives investors the freedom to carve out blocks of their choice after assessing Exploration & Production data available at National Data Repository and submit an Expression of Interest (Eoi). • Eoi can be submitted thrice a year without waiting for a formal bid round from the government. • These blocks are later offered through a biannual (twice a year) formal bidding process. The entity offering the maximum share of oil and gas to the government is awarded the block. 	<ul style="list-style-type: none"> • It is a government-sponsored E&P data bank with advanced facilities and infrastructure for preserving and maintaining hydrocarbon data. • Its purpose is to enable systematic use of the data for future exploration and development. Its operational since 28th July 2017. • NDR comes within the ambit of Directorate General of Hydrocarbons, Ministry of Petroleum and Natural Gas.

Other Provisions Under HELP:

- **Single License:** This covers exploration and production of all types of hydrocarbons viz. conventional & unconventional resources e.g. oil and gas, coal-bed methane, shale oil, gas hydrates, etc.

- **Revenue Sharing Model:** The NELP was profit sharing model whereas, HELP provides for revenue sharing model. As per it, the government will receive a share of the gross revenue from the sale of oil and gas, etc. and will not be concerned with the cost incurred.

Director General of Civil Aviation (DGCA)

- IndiGo flight pilot was assaulted by a passenger during delays announcement, airline declared unruly, and further action will be guided by Civil Aviation Requirements from DGCA.

Directorate General of Civil Aviation (DGCA)	
Role	Regulatory body for civil aviation, focusing on safety issues.
Affiliation	Attached office of the Ministry of Civil Aviation.
Responsibilities	<ul style="list-style-type: none"> • Regulates air transport services to/from/within India. • Enforces civil air regulations, air safety, and airworthiness standards. • Coordinates regulatory functions with the International Civil Aviation Organization (ICAO).
Headquarters	New Delhi
Functions and Responsibilities	<ul style="list-style-type: none"> • Ensuring safety of passengers and crew on all flights operating in India. • Conducting regular safety inspections of airlines and aircraft. • Investigating incidents or accidents in Indian airspace and taking preventive actions. • Promoting growth and development of the Indian aviation industry. • Developing and modernizing airports. • Regulating air traffic in collaboration with the Airports Authority of India. • Developing new air traffic control systems and technologies. • Issuing licenses and certificates to aviation personnel such as pilots and aircraft maintenance engineers.

Centre for the Fourth Industrial Revolution

- **Telangana** and the **World Economic Forum (WEF)** have signed an agreement to set up a Centre for the Fourth Industrial Revolution (C4IR Telangana) in **Hyderabad**.
- C4IR is a global initiative of the WEF to collaborate with governments, businesses, academia, and civil society to address the challenges and opportunities associated with the Fourth Industrial Revolution (4IR).
- **C4IR Telangana** will be the **19th centre** of WEF's Fourth Industrial Revolution Network (4IR) and second centre in India. **The first C4IR in India** was set up in **Maharashtra**.
- The proposed centre will also be the **world's first centre** with a focus on health tech and life sciences and will act as a 'Life Sciences' Hot Spot' in the entire Asia.
- The **not-for-profit, autonomous centre** is expected to take lead in formulation of policies pertaining to healthcare and their implementation.

About Industrial Revolutions

The Industrial Revolution took place between the 18th and 19th centuries. It transformed societies in Europe and America from mainly agricultural and rural to more industrial and urban.

1st (1800s)	It used water and steam power to mechanise production. E.g. Steam engine.
2nd (early 1900s)	It used electric power to create mass production. E.g. Electricity.
3rd (late 1900s)	It used electronics & IT to automate production. E.g. Computer and Internet

Fourth Industrial Revolution or Industry 4.0:

- **Klaus Schwab**, founder and executive chairman of the Geneva-based WEF, published a book in 2016 titled "The Fourth Industrial Revolution" and coined the term at the Davos meeting that year.

- The Fourth Industrial Revolution refers to how technologies like artificial intelligence, autonomous vehicles and the internet of things are merging with humans' physical lives. Examples: Voice-activated assistants, facial ID recognition or digital health-care sensors.

States' Startup Ranking 2022

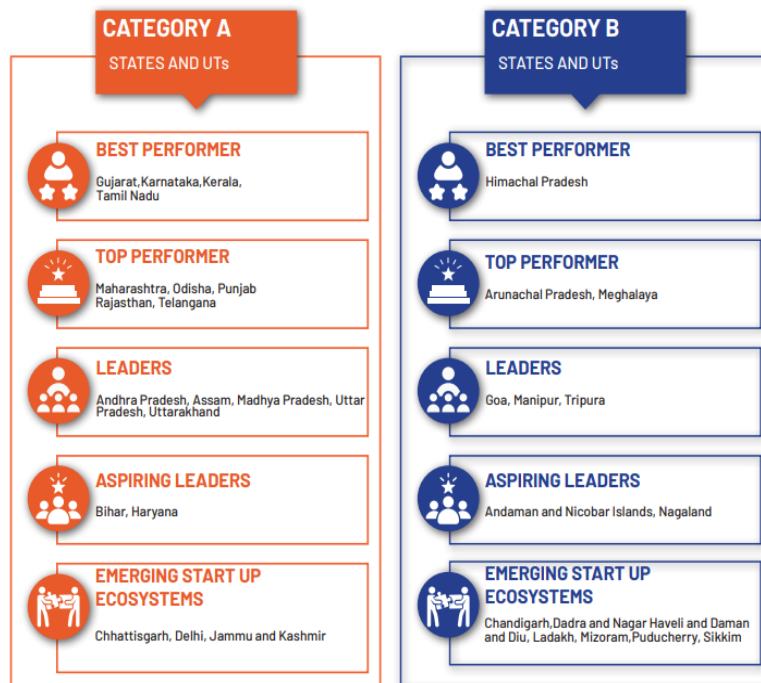
- The **Department for Promotion of Industry and Internal Trade (DPIIT)** released the States' Startup Ranking 2022. This was the fourth edition of the exercise which began in 2018.

- Objective:**

- To encourage mutual learning among all states.
- Provide support in policy formulation and implementation in the start-up field.
- Evaluate the Indian startup landscape through the eyes of state / UT policy intervention.

- About 4th Edition:**

- This edition saw the maximum participation across all editions, of 33 States and Union Territories.
- The states and union territories were divided into **Category-A (Population more than 1 crore)** and **Category-B (Population less than 1 crore)** to establish uniformity and ensure standardization in the ranking process.



1st National Highway Steel Slag Road

- India's first National Highway (NH) steel slag road section on **NH- 66 Mumbai-Goa** was recently inaugurated.
- The steel slag road technology is **developed by Council of Scientific and Industrial Research-Central Road Research Institute (CSIR-CRRI)**.
- JSW Steel**, under the CSIR-CRRI technological guidance, has constructed above mentioned 1 km long four lane steel slag road section.
- The bituminous steel slag road on NH-66 is built with **28% less thickness** in comparison to conventional bituminous road on NH-66.
- Border Roads Organization (BRO)** has also constructed a steel slag road in Arunachal Pradesh.

Parvatmala Pariyojana

- Recently, **The Ministry of Road Transport and Highways** announced that more than 200 ropeway projects at a cost of Rs 1.25 lakh crore have been identified in coming five years under **National Ropeways Development Programme (NRDP), "Parvatmala Pariyojana"**.

National Ropeway Development Programme (Parvatmala)	
Launch Year	2022-23
Aim	To decongest mountainous areas with limited road and train connectivity.
Phase-I	Construction of 30 priority points or stretches.
Funding Model	Public Private Partnership (PPP)
Nodal Ministry	Ministry of Road Transport and Highways

Responsibilities	Overseeing ropeway construction, research, and policy-making.
Implementing Agency	<ul style="list-style-type: none"> National Highways Logistics Management Limited (NHLML) 100% owned Special Purpose Vehicle (SPV) of the National Highways Authority of India (NHA).

C-CARES Portal

- Recently, a new web portal named 'C-CARES' was launched for **Coal Mines Provident Fund Organization (CMPFO)** to address its long-standing issue of digitizing its records and work processes.
- It will facilitate:
 - Coal Mines Provident Fund (CMPF) **subscribers to digitally access and review their personal information and subscription status.**
 - Coal **companies to electronically submit contribution details**, subscriber particulars, and claims for online settlement and payment through the portal.
- The portal has been **developed by** the Centre for Development of Advanced Computing (**C-DAC**).

About CMPFO

- It is an **autonomous organization established in 1948 under the Ministry of Coal for providing social security to coal sector workers** by administering the following schemes: (a) Coal Mines Provident Fund Scheme, (b) Coal Mines Family Pension Scheme (merged with Pension Scheme in 1998), (c) Coal Mines Pension Scheme, (d) Coal Mines Deposit Linked Insurance Scheme.

Inland Waterways Development Council

- The first meeting of the Inland Waterways Development Council took place in Kolkata recently, **organized by the Inland Waterways Authority of India (IWAI)**, under the **Ministry of Ports, Shipping & Waterways**.
- During the meeting, a substantial investment of ₹45,000 crore was pledged for the development of river cruise tourism in India.
- Additionally, an investment of ₹15,200 crore was decided upon at the Global Maritime India Summit (GMIS) held in October 2023, aimed at expanding inland waterways for cargo trade.

Reviewing PLI Schemes

- The central government has disbursed incentive amount of Rs 4,415 crore under its flagship Production-Linked Incentive (PLI) schemes till October 2023.
- The Production Linked Incentive Scheme was **started by the Government of India in March 2020 to boost Indian manufacturing.**
- It offers **incentives to eligible firms on incremental sales for five years** as part of the Make in India initiative.
- The scheme aims to boost India's manufacturing & production, increase employment in labour-intensive sectors, bring foreign investments in cutting-edge technology, boosts exports and integrate it into the global supply chain.
- The scheme initially targeted three industries- **Mobile and allied Component Manufacturing, Electrical Component Manufacturing and Medical Devices**. But now, it has been extended to **14 sectors**.

Inland Waterways Development Council

► It was established in October 2023. Its **objective** is comprehensive development of inland waterways and the associated *Inland Water Transport (IWT)* ecosystem for improved cargo efficiency, passenger movement, and river cruise tourism.

» Maritime Amrit Kaal Vision 2047 represents the true development potential inherent in India's coastline of 7500 km, in its vital network of inland waterways, and in the coastal districts

Inland Waterways Authority of India (IWAI)

► IWAI is an autonomous body constituted in 1986, under the **Inland Waterways Authority of India Act, 1985**.

► It is primarily responsible for regulation, development & maintenance of National Waterways.

Coal Controller Organisation

- In order to align the organization with the current scenario in the coal sector reforms, Ministry of Coal has formed a four-member Committee under the Chairmanship of A.N. Sahay to review the functions of CCO.

About Coal Controller Organisation:

- CCO is a **subordinate office** of **Ministry of Coal**, having its offices at Kolkata, Delhi and field Offices at Dhanbad, Ranchi, Bilaspur, Nagpur, Sambalpur and Kothagudem.
- CCO is the nodal office for collection, compilation and dissemination of coal statistics in Government of India.
- It performs various functions under different statutes/rules to ensure fair production and commercial transactions of coal including quality surveillance.

Resource Classification Code: Industry Awaits Shift to JORC from UNFC

- The representatives of Vedanta group recently asked the Ministry of Mines to consider the adoption of Joint Ore Reserve Committee (JORC) classification, as opposed to the currently used United Nations Framework Classification (UNFC).
- JORC classification and the United Nations Framework Classification (UNFC) are both systems for classifying mineral resources, but they serve different purposes and have varying levels of detail.

Feature	JORC Classification	UNFC Classification
Description	Professional code for reporting exploration results, mineral resources, and ore reserves	International scheme for classifying, managing, and reporting energy, mineral, and raw material resources
Purpose	Minimum standards for public reporting	Harmonize reporting standards
Responsible Body	Developed by mining experts in Australia	Managed by the UN Economic Commission for Europe's Expert Group on Resource Management (UNECE EGRM)
Focus	Geological confidence & economic viability	Geological confidence
Scope	Focuses on mineral exploration, resources, and reserves	Encompasses energy resources (e.g., oil, gas, renewables), minerals, CO2 storage, groundwater, and more
Implementation	Professional societies & industry recommendation	Reference framework for countries

- Experts point out that India's mining industry has already developed and recommended the **Indian Mineral Industry Code (IMIC)** in 2019, which is **based on the same template as the JORC**.
 - However, the ministry is yet to formulate rules in line with the IMIC despite informal assurances.
- Both the IMIC and the JORC classification are aligned with the Committee for Mineral Reserves International Reporting Standards (CRIRSCO).

CRIRSCO

- Globally, CRIRSCO consists of 15 members including the USA, Australia, Brazil, Canada, Chile, South Africa, and the European Union.
- Membership to CRIRSCO requires countries to produce reporting codes that comply with the CRIRSCO template.
- **India was admitted to CRIRSCO in 2019** following the recognition of the IMIC as a CRIRSCO-compliant code.

Annual Survey of Industries

- The **Ministry of Statistics and Programme Implementation (MoSPI)** has recently published the findings for ASI 2020-21 and ASI 2021-22.
- The primary **objective of ASI is to offer insights into the dynamics of change within various manufacturing industries**, including aspects such as output, value added, employment, capital formation, and other relevant parameters.
- These findings serve as crucial **inputs for National Accounts Statistics** at both the national and state levels, with results compiled at the state and major industry levels.

ASI Coverage

- **Factories** registered under Sections 2m(i) and 2m(ii) of the Factories Act, 1948.
- **Bidi and cigar manufacturing establishments** registered under the Bidi & Cigar Workers (Conditions of Employment) Act, 1966.
- **Electricity undertakings** engaged in the generation, transmission, and distribution of electricity, not registered with the Central Electricity Authority (CEA).
- **Units with 100 or more employees registered in the Business Register of Establishments (BRE)** prepared and maintained by the State Governments.

Data Collection

- Data for ASI is **collected from the selected factories under the Collection of Statistics Act 2008** (as amended in 2017) and rules framed in 2011.
- The entire survey is **conducted through a dedicated web portal without any paper schedule**.

Key Highlights from ASI 2021-22

- The **GVA increased significantly** by 26.6% in 2021-22 over 2020-21 due to high growth in the industrial output which grew by more than 35% in value terms during this period.
- Among the major states, **in terms of GVA, Gujarat remained at the top in 2020-21** and in the second position in 2021-22 while **Maharashtra ranked first in 2021-22** & second in 2020-21.

Gross Value Added (GVA)

- ☞ It gives an overview of the economy from the supply side.
- ☞ It is the measure of the value of goods and services produced in an area, industry or sector of an economy.
- ☞ It **tracks the value-added by different sectors of the economy** such as agriculture, industry and services. In other words, GVA provides an idea of the income earned by people involved in the various sectors.
- ☞ GVA is an important measure used to determine GDP.
- ☞ $GVA = GDP + \text{subsidies on products} - \text{taxes on products}$



Leniency Plus Regime

The Ministry of Corporate Affairs (MCA) has announced the implementation of the 'Leniency plus' regime, a concept already established in jurisdictions such as the UK, US, Singapore, and Brazil.

What is Leniency Plus

- Leniency plus constitutes a **proactive strategy for antitrust enforcement**, designed to incentivize companies already under investigation for one cartel to **disclose additional cartels unknown to the competition regulator**.
- The advantage of such disclosure lies in a **reduced penalty for the first cartel for the informant**, without prejudicing the company's potential for a lower penalty regarding the newly revealed cartel.
- While the Competition (Amendment) Act of 2023 establishes a framework for the CCI to handle leniency or lesser penalty applications, it has only recently acknowledged the concept of leniency plus.

CARTELISATION

- According to the CCI, cartelisation is a practice in which a group of competitors (manufacturers, sellers, distributors, etc.) form an agreement to limit competition.
- **Cartels vs monopoly:** A monopolist completely dominates a particular market (since there is no rival), whereas cartels are formed (with the goal of limiting competition) to dominate the market.

First Underwater Metro

- Prime Minister recently inaugurated **India's first underwater metro section** in Kolkata.
- The Kolkata Metro's Howrah Maidan-Esplanade section is the country's first underwater transportation tunnel.
- It also has the **deepest metro station in India, the Howrah metro station** at 30 metres.
- Out of the total 16.6 km length of the East-West Metro, the underground corridor constitutes 10.8 km, with the 1.2 km underwater tunnel under the Hooghly River.

Hooghly River

Also known as Kati-Ganga, it is a 260 km long distributary of the Ganges. The main course of the Ganges then flows into Bangladesh as the Padma River.

A man-made canal built at Farakka, connects the Ganges to the Hooghly, and brings abundant water to the Hooghly.

The river flows through the Rarh region, comprising the lower deltaic districts of West Bengal, to meet the Bay of Bengal.

The upper riparian zone of the river is called the Bhagirathi while the lower riparian zone is called the Hooghly.

UNNATI 2024

- The Union Cabinet recently approved the **Uttar Poorva Transformative Industrialization Scheme, 2024 (UNNATI – 2024)**.
- UNNATI is **Central Sector Scheme for the development of industries in the states of North East Region**.
- The scheme's main **objective is to generate gainful employment**, which will lead to the area's overall socio-economic development.
- **Department for Promotion of Industry and Internal Trade (DPIIT) will implement the scheme** in collaboration with the states.
- The scheme **duration is for a period of 10 years** from the date of notification.
- All eligible industrial units will have to commence their production or operation within 4 years from the grant of registration.
- The scheme is proposed to be divided into two parts:
 - Part A caters to the incentives to the eligible units (Rs. 9737 crores), and
 - 60% of the outlay of Part A has been earmarked to 8 NE states and 40% on First-In-First-Out (FIFO) basis.
 - Part B, is for implementation & institutional arrangements (Rs. 300 Crore).
- Maximum benefit to one unit from all components of the scheme is 250 crores
- Districts have also been categorized in two zones: Zone A (Industrially Advanced Districts) and Zone B (Industrially Backward Districts)

International IP Index

- The **US Chamber of Commerce** has released the 12th edition of its **International IP (Intellectual Property) Index**.
- **Published annually**, the Index evaluates the IP frameworks of the world's top 55 economies using 50 unique criteria.
- The data shows economies how to improve IP-driven innovation and creativity and reveals trends in global IP protection.
- It demonstrates the benefits that economies can receive when they adopt robust and enforceable IP standards.

Indian scenario

- **India ranks 42nd** out of 55 countries evaluated. India's overall score remained unchanged at 38.64%.

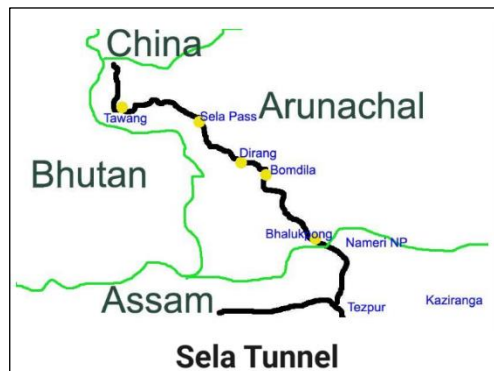
HIGHLIGHTS OF THE REPORT

- The index found that **20 economies** are significantly improving. While the United States is once again the world leader, there were notable advancements led by Saudi Arabia, Brazil, and Nigeria.
- The top five economies are **United States, UK, France, Germany and Sweden**.

- As per the index, policymakers in India are recognizing the critical link between IP rights and economic activity, which will highlight India's global competitiveness.

Sela Tunnel

- The Prime Minister recently inaugurated the strategically significant Sela Tunnel project in **Arunachal Pradesh**.
- Built at a cost of Rs 825 crore by the **Border Roads Organisation (BRO)**, the tunnel project is constructed at an **altitude of 13,700 feet** in West Kameng district, connecting **Tezpur to Tawang**.
- The project is **world's longest twin-lane tunnel**.
- It is aimed at providing all-weather connectivity to the Tawang region, the part long contested by China.
- It consists of two tunnels and a link road. While Tunnel 1 will be 980-metre long single-tube, Tunnel 2 will be 1,555-metre with one bi-lane tube for traffic and one emergency services. The link road between the two tunnels will be 1,200 meters long.



Atal Setu

- India's longest sea bridge** (and **world's 12th longest** sea bridge), Atal Setu, was inaugurated by the PM in Mumbai.
- The Mumbai Trans Harbour Link (MTHL), officially **Atal Setu Nhava Sheva Sea Link**, is a **22-km-long** bridge over the Thane Creek in the Arabian Sea, connecting Sewri in Mumbai to Chirle near Nhava Sheva in Navi Mumbai.
- Constructed by the Mumbai Metropolitan Region Development Authority (MMRDA), it is a **six-lane bridge** comprising a **16.5 km stretch over the sea** and an additional **5.5 km on the land**.

Atal Tunnel

- Atal Tunnel, formerly known as **Rohtang Tunnel**, is the **world's longest high-altitude tunnel**, situated at an elevation of approximately 3,100 meters (10,171 feet) above sea level.
- It is **located in the Pir Panjal Range** of the Himalayas, in Himachal Pradesh. It **passes through Rohtang pass**.
- It stretches 9.02 km, connecting Manali to Lahaul and Spiti Valley throughout the year, previously cut off for about six months each year due to heavy snowfall.
- The south portal of Atal Tunnel is located near **Manali** at an altitude of 3,060 metres, while the north portal of the tunnel is located near village **Teling, Sissu, in Lahaul Valley** at an altitude of 3,071 metres.
- The tunnel is a **horseshoe-shaped, single tube, double lane tunnel** with a roadway of 8 meters, has an overhead clearance of 5.525 meters.
- The tunnel features a **semi-transverse ventilation system**, emergency exits every 500 meters, evacuation lighting, broadcasting systems, and fire hydrants for safety.

Patent (Amendment) Rules, 2024

- The government recently notified the Patent (Amendment) Rules, 2024. These rules introduce several provisions aimed at simplifying the process of obtaining and managing patents, thereby facilitating a conducive environment for inventors and creators.

About Patents	
Definition and Purpose	A patent grants exclusive rights over an invention , preventing unauthorized use or sale, in exchange for disclosing the invention publicly.
Eligibility and Duration	Patents protect new inventions with an inventive step and industrial application, lasting 20 years from the filing date in India.

Legal Framework	India's patent system is governed by the Patents Act of 1970 , with regular updates to accommodate changes in legislation.
Territorial Nature	Patent rights are limited to the territory of the country where the patent is granted, offering protection only within its borders.
International Protection	To safeguard inventions beyond national borders, patents must be obtained in each country where protection is desired, ensuring rights are respected and enforced globally.

Key Features of the Revamped Rules

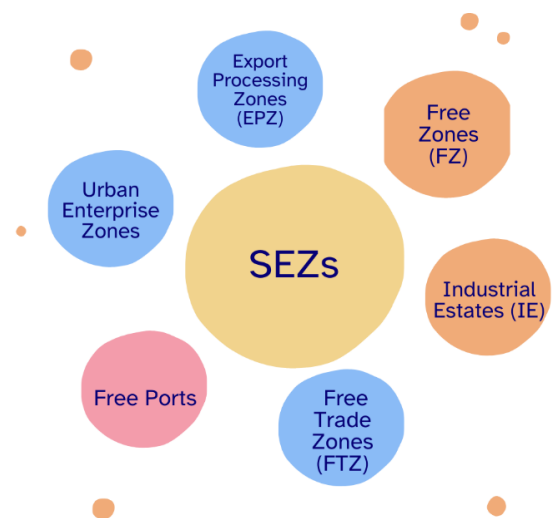
Certificate of Inventorship	Introduces a new 'Certificate of Inventorship' to acknowledge the contribution of inventors in patented inventions.
Filing Details Time Limit Change	Time limit for furnishing foreign application filing details from six months from application filing to three months from the issuance of the first examination report .
Examination Request Time Limit Reduction	From 48 months to 31 months from the priority date/ application filing date, whichever is earlier.
Extension of Time Limit Simplification	Simplifies and clarifies the provision for extending time limits, allowing multiple extensions up to six months upon request.

Special Economic Zone

- The Central Government has issued the Special Economic Zones (Fifth Amendment) Rules, 2023, to amend the existing rules, aiming to promote economic growth and efficiency. These amendments specifically address non-processing areas within Information Technology (IT) or Information Technology Enabled Services (ITES) Special Economic Zones (SEZs).
 - The processing area in an SEZ is for the manufacture of goods or rendering of services. The non-processing area is for supporting infrastructure.

Key Amendments:

- **Demarcation of Non-Processing Areas:** Upon developer request, the board of approval may designate a portion of the built-up area as non-processing. Non-processing areas can host IT and ITES businesses, subject to specified terms.
- **Restrictions on Non-Processing Area Businesses:** Non-processing businesses have no entitlement to SEZ unit rights or infrastructure benefits. They must also adhere to Central Acts, rules, and orders applicable to domestic tariff areas.
- **Access Control Mechanism:** SEZ units and non-processing businesses must establish access control for personnel and goods.
- **Repayment of Tax Benefits:** Developers must repay tax benefits for non-processing areas before demarcation.



About Special Economic Zone (SEZ)

- A Special Economic Zone (SEZ) is a designated duty-free area that is considered foreign territory for trade operations, duties, and tariffs.
- The SEZ Act of 2005 was followed by the implementation of SEZ Rules in 2006, establishing the fundamental framework for SEZs in India, aiming at simplifying procedures and providing single-window clearance for both central and state government matters.

- Currently, India hosts 276 operational SEZs, contributing significantly to the economy with total exports reaching \$155.8 billion in the fiscal year 2022-23, comprising \$61.6 billion of goods and \$94.2 billion of service exports.

Incentives and Facilities offered to the units in SEZs

- Duty free import/domestic procurement of goods for development, operation and maintenance of SEZ
- Other levies, if exempted by the respective State Governments.
- Single window clearance for Central and State level approvals.
- Supplies to SEZ are zero rated under IGST Act, 2017.

Aspect	Special Economic Zones	Export Oriented Units (EOUs)
Location	Specially demarcated enclave	Anywhere in the country
Customs Jurisdiction	Outside customs jurisdiction, foreign territory	Within customs jurisdiction of India
Sales to DTA	Considered exports	Regarded as deemed exports
Movement Control	Substantial control over goods movement	Limited control over goods movement
Taxation	Not required to pay tax	Required to pay tax, refundable later
Minimum Investment Requirement	No specific limit	Rs. 1 crore for plant, machinery, and building (Before commencement of production)

Revenue-based financing (RBF)

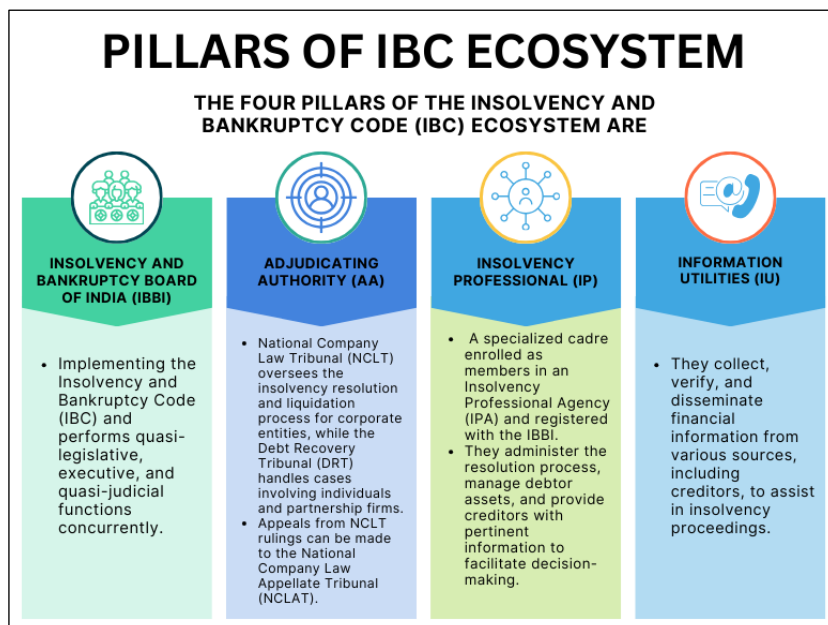
- Revenue-based financing (RBF) is gaining traction among startups and digital Small and Medium-sized Enterprises (SMEs) as an alternative financing option. Unlike traditional debt financing, **RBF offers a unique repayment structure based on a company's revenue.**
- Under it companies can raise capital in exchange for a percentage of their gross revenue as a monthly repayment, in addition to a fixed fee between 8-10% of the principal amount.
- It generally has an average tenure of 12-18 months and a percentage of gross revenue varying between 5-20%.

Aspect	Revenue-Based Financing (RBF)	Traditional Debt Financing
Repayment Structure	Repayment based on a percentage of gross revenue, along with a fixed fee	Fixed periodic payments of principal and interest
Collateral Requirement	Typically non-collateralized	Often requires collateral, such as assets or personal guarantees
Risk Profile	Suited for companies with stable revenue streams and short-term capital needs	Suitable for companies with strong credit profiles and long-term financing needs
Flexibility	Offers flexibility in repayment based on revenue fluctuations	Generally less flexible, with fixed repayment schedules
Risk and Reward Sharing	Aligns repayment with company revenue, sharing both risk and reward	Lender bears minimal risk beyond loan repayment, with limited upside potential

Insolvency and Bankruptcy Code

- The Insolvency and Bankruptcy Board of India (IBBI) has proposed reforms to make the Insolvency and Bankruptcy Code (IBC) process more transparent.

- Key reforms include:
 1. Reviewing the **Corporate Insolvency Resolution Process** by the **Committee of Creditors (CoC)**
 2. Mandating **Resolution Professionals (RP)** to **conduct monthly CoC meetings**
 3. Standardizing valuation methodologies and adopting a two-part structure for resolution plans. Part A will deal with inflow and payment, while Part B will address distribution to stakeholders



4. Clarify minimum entitlement to dissenting financial creditors.

Insolvency and Bankruptcy Code (IBC)

- In 2016, at a time when India's Non-Performing Assets and debt defaults were piling up, the Insolvency and Bankruptcy Code (IBC) code was introduced through an act of the Parliament.
- It was introduced to overhaul the corporate distress resolution regime in India and consolidate previously available laws to create a comprehensive time-bound mechanism.
- Timeframe:** Companies have to complete the entire insolvency exercise within 180 days under the IBC. The deadline may be extended if the creditors do not raise objections on the extension. For smaller companies including startups with an annual turnover of Rs 1 crore, the whole exercise of insolvency must be completed within 90 days.
- Regulation of the IBC Proceedings:** Insolvency and Bankruptcy Board of India (IBBI) has been appointed as a regulator and it can oversee these proceedings. IBBI has 10 members; from Finance Ministry, Law Ministry and the Reserve Bank of India.

Key Terms related to IBC 2016	
Insolvency	It is a financial state where an individual or organization cannot meet their obligations due to debts, resulting in inability to fully repay their creditors.
Bankruptcy	It is a legal process where individuals or businesses declare their inability to repay their debts, recognizing insolvency and offering various options for resolution.
Haircut	It is a financial reduction in the value of an investment or loan, often resulting from debt restructuring, loan modification, or investment losses.
Liquidation	It refers to the process of selling the assets of a corporate debtor and distributing the proceeds to the creditors.
Moratorium	A temporary stay on the enforcement of creditors' rights against a corporate debtor during the CIRP.
CIRP	Corporate Insolvency Resolution Process is a legal framework established under IBC for resolving corporate debtors' insolvencies and bankruptcy.
PPIRP	Pre-packaged insolvency resolution process is a quasi-formal procedure that allows a company to work on a resolution plan with its creditors before starting formal insolvency proceedings.
Waterfall Mechanism	The waterfall mechanism under the IBC determines the order of creditors' payments after a corporate debtor's liquidation, starting with insolvency and liquidation costs.

Anarcho-Capitalism

- Anarcho-capitalism is a **political philosophy and economic theory that advocates for the abolition of centralized states**. The term was coined by influential American libertarian leader Murray Rothbard in the 1950s.
- Anarcho-capitalists believe that **private companies can provide policing and legal services better than the state in terms of quality and price**. They argue that private companies are more accountable because dissatisfied customers can switch to competing service.
- In an anarcho-capitalist society, individuals pay private police and courts for protection and dispute resolution.

LEAP AHEAD Initiative

- The LEAP AHEAD initiative, a collaboration between **Software Technology Parks of India (STPI) and The Indus Entrepreneurs (TiE) Delhi-NCR**, aims to **empower tech startups in India by providing them with essential resources for growth and success**.
- Launched by Ministry of Electronics and IT at the LEAP AHEAD summit, this initiative promises to be a game-changer for startups at various stages of development.
- **STPI** is a Ministry of Electronics and Information Technology organization, **promotes software exports, nurtures the tech startup ecosystem, and fosters the IT/ITES Industry**. It strengthens the startup ecosystem in India through its **Next Generation Incubation Scheme (NGIS)** and 22 domain-specific Centers of Entrepreneurship innovation.

National Industrial Corridor Programme (NICP)

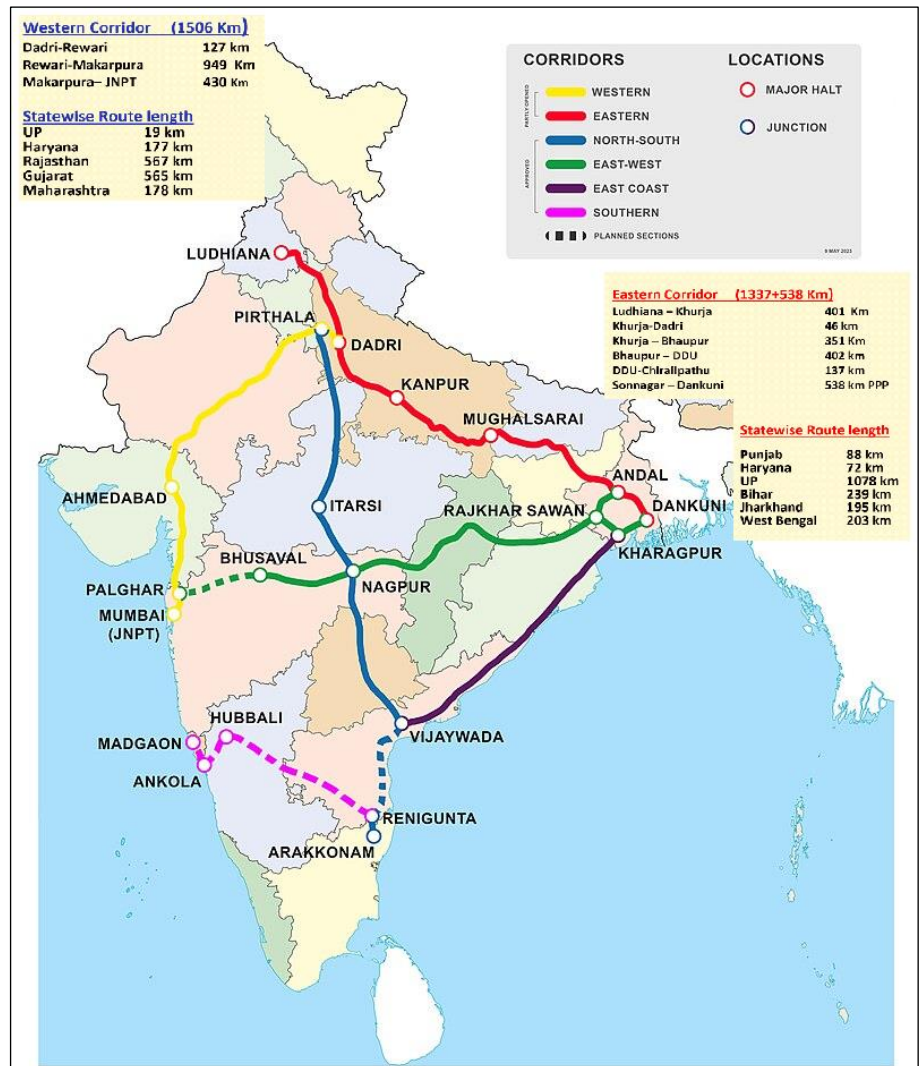
- The Government of India is developing various Industrial Corridor Projects as part of the National Industrial Corridor Programme.
- The National Innovation Corridor Programme aims to create futuristic industrial cities that can compete with global manufacturing and investment destinations.
- The government has approved the development of **11 Industrial Corridors**, including Delhi- Mumbai, Chennai-Bengaluru, and Amritsar- Kolkata, with 32 projects in four phases.
- These corridors aim to stimulate manufacturing and service sector development, generate employment, and boost economic growth.
- **Nodal Ministry:** Under the administrative control of the **Department of Promotion of Industry and Internal Trade (DPIIT)**, Ministry of Commerce and Industry.
- **Implementing Agency:** **National Industrial Corridor Development and Implementation Trust (NICDIT)**. It originated in 2007 as the Delhi Mumbai Industrial Corridor Project Implementation Trust Fund (DMIC-PITF) and was expanded and re-designated as the NICDIT in 2016

Amplifi 2.0

- The **Ministry of Housing and Urban Affairs** has launched Amplifi 2.0 (**Assessment and Monitoring Platform for Liveable, Inclusive, and Future-Ready Urban India**).
- The platform **provides raw data from Indian cities for academics, researchers, and stakeholders to aid in data-driven policymaking**.
- With 225 urban local bodies onboarded and 150 cities' data available, the initiative **aims to create new urban development frameworks**.
- It provides data on a range of information for several cities, including, for example, the total diesel consumption and the number of samples tested for water quality.

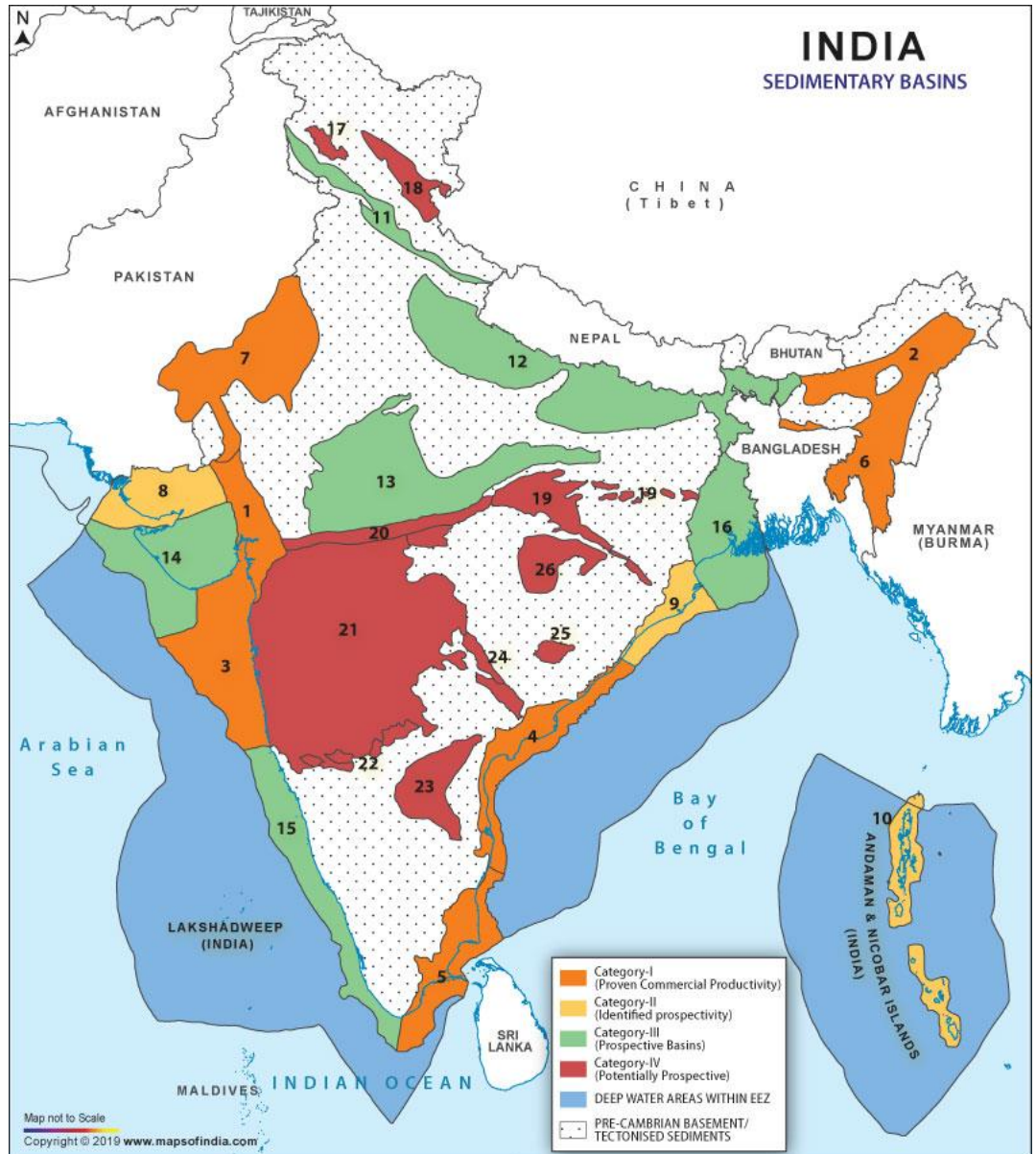
Dedicated Freight Corridors (DFC)

- The Eastern Dedicated Freight Corridor (EDFC), a railways corridor is 1,337 km long. It has been completed fully by the Dedicated Freight Corridor Corporation of India (DFCCIL) in October 2023.
- Dedicated Freight Corridor (DFC) project was conceived in 2005 and two DFCs, namely Eastern DFC (EDFC) and Western DFC (WDFC) were approved by Cabinet in 2008.
- Dedicated Freight Corridors is being developed along the Golden Quadrilateral (GQ), a national highway network, which links the four metropolitan cities of Delhi, Mumbai, Chennai, and Kolkata, and the two diagonals of the quadrilateral they form (Delhi-Chennai and Mumbai-Kolkata).
- Presently, the GQ accounts for about 16% of total route length but carries over 58% of its freight traffic and 52% of its passenger traffic. This causes excessive traffic congestion.
- To address these issues, the western and eastern DFCs are being developed to
 - increase the rail share in the freight segment by providing customized logistics services
 - creating additional rail infrastructure to cater to high levels of transport demand
 - segregation of freight infrastructure for a focused approach on both the passenger and freight businesses
 - introducing time tabled freight trains and guaranteed transit times thereby reducing the cost of transportation by speeding up freight train operations and by boosting productivity
- The total estimated investment required for the project is **Rs. 1,240 billion**. The Eastern and Western DFC projects are being respectively funded by the World Bank and the Japan International Cooperation Agency.
- Dedicated Freight Corridor Corporation of India Limited (DFCCIL) is a **Special Purpose Vehicle** set up under the **administrative control of Ministry of Railways** to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the Dedicated Freight Corridors.



Petroleum Exploration & Production

- Oil and Natural Gas Corporation (ONGC) has initiated crude oil production from its KG-DWN-98/2 deep-sea project in the Krishna-Godavari basin off India's east coast.
 - ONGC, India's largest oil and gas producer, contributes 72% of the country's hydrocarbon production.
- India has 26 sedimentary basins covering 3.4 million sq. km, with 49% on land, 12% in shallow water, and 39% in deep-water up to EEZ.
 - Exclusive Economic Zone (EEZ) extends 200 nautical miles from the coastline, giving coastal states the right to manage, explore, exploit, and conserve resources.



Steps Taken for Enhancing Petroleum Exploration & Production (E&P)

HELP (Hydrocarbon Exploration and Licensing Policy)

- Introduced in 2016, replacing New Exploration Licensing Policy (NELP).
- Provides a single license for E&P for all types of hydrocarbons (conventional oil and gas, CBM, shale oil, gas hydrates, etc.).
- Shifted from the profit-sharing model to a Revenue Sharing Contract model.
- Open Acreage Licensing Policy introduced to enable investors to select blocks of their choice by evaluating data in the National Data Repository (NDR) and expressing interest.
- Reduced royalty rates, marketing and pricing freedom, round-the-year bidding, etc.

Directorate General of Hydrocarbons (DGH)

Formed to promote sound management of oil and natural gas resources.

National Data Repository (NDR)

Launched in 2017, serving as a government data bank promoting E&P activities.

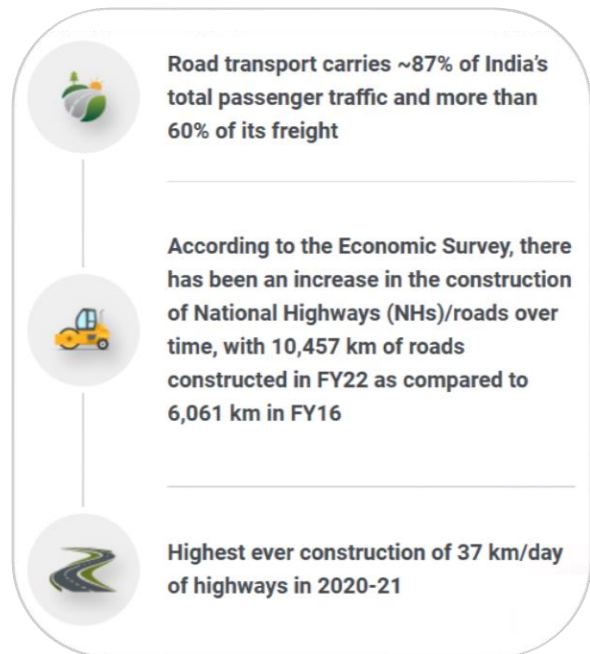
India Hydrocarbon Vision 2025	Lays broad contours/targets for the development of Hydrocarbons.
100% Automatic FDI Route	For exploration activities of oil and natural gas fields, infrastructure related to marketing of petroleum products and natural gas, etc.

Road Infrastructure in India

- The Parliamentary Standing Committee on Transport, Tourism, and Culture recently presented a report in Parliament highlighting concerns regarding delays in road projects.
- India has the **second largest road network in the world**, spanning about **66.71 Lakh kilometres**, which includes national highways, state highways, district roads, and rural roads.
- **National Highways (NH)** play a very important role in the economic and social development of the country by enabling efficient movement of freight and passengers and improving access to market. They **account for 2% of the total road network and carry over 40% of total traffic**.

Government Initiatives for the Road Sector in India:

- **Bharatmala Pariyojana:** Launched in 2017, it aims to develop 34,800 km of National Highways at a cost of INR 5.35 lakh crore.
- **Pradhan Mantri Gram Sadak Yojana (PMGSY):** Initiated in 2000, it connects rural areas with all-weather roads, benefiting around 1,25,000 habitations.
- **Gati Shakti program:** Prioritizes road infrastructure projects for faster approval through a digital portal, including major expressways like Delhi-Mumbai and Amritsar-Jamnagar.
- **Road Asset Management System (RAMS):** Launched in 2020, RAMS enhances road maintenance efficiency and resource utilization through a web-based platform.
- **Road Safety:** Government initiatives include higher penalties for traffic violations, installation of speed and red-light cameras, and awareness campaigns under the Motor Vehicles (Amendment) Act, 2019.



National Geoscience Data Repository Portal

- The Ministry of Mines has launched the National Geoscience Data Repository Portal (NGDRP), a **digital platform created as part of the National Mineral Exploration Policy (NEMP) in 2016**.
- It will make available all **geological, geochemical, geophysical, and mineral exploration data in the public domain**, including baseline geoscience data and information from central and state government agencies.
- NMEP, 2016 aims to boost private sector participation in the country's exploration activities.
- The Geological Survey of India (GSI) had the responsibility to establish it.

Geological Survey of India	
HQ	Kolkata
Foundation	Founded in 1851, second oldest survey in India after the Survey of India (1767)
Ministry	Ministry of Mines
Function	Creation and national updation of geoscientific data. Conducts mineral resource assessment. Undertakes air-borne and marine surveys.

Central Electricity Authority (CEA)

Establishment	Central Electricity Authority (CEA) was originally constituted under Electricity (Supply) Act, 1948, since substituted by Electricity Act, 2003. It was established as a part-time body in 1951 and made a full-time body in 1975.
Composition	Maximum of 14 Members, including its chairperson, with up to 8 Full-time Members appointed by the Central Government.
Functions	Planning, Monitoring Performance, Regulation Assistance to the Central Electricity Regulatory Commission (CERC), coordination among stakeholders, and provision of technical advisory services on power sector matters.
Nodal Ministry	Ministry of Power

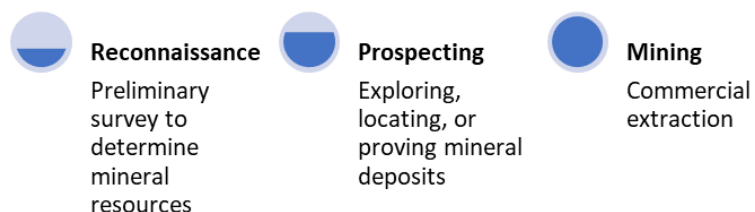
Logistics Ease Across Different States (LEADS) Report

- The **Ministry of Commerce and Industry** launched the LEADS in 2018. It is based on the World Bank's Logistical Performance Index (LPI) which is a perception survey. India ranks 38th out of 139 countries in WB- LPI 2023.
- LEAD ranks states and UTs on their logistics ecosystem efficiency and incorporates both perception and objectivity.
- The index measures logistics performance through **objective assessment, policy and process improvement support, physical infrastructure enablers, perception assessment, logistics infrastructure, services, and operating and regulatory environment.**
- 11 States and two UTs have been named as 'Achievers' in the LEADS 2023 report.

Rules Exploration License for Mining

- The Ministry of Mines has enacted four rules to enforce the **Exploration License (EL) system**, in accordance with the **Mines and Minerals (Development and Regulation) (MMDR) Act of 1957.**
- An **exploration license (EL) is a permit or right to conduct exploration activities** within an operating area. It allows the licensee to undertake **reconnaissance and prospecting operations for critical and deep-seated minerals.**
 - It was introduced via the **MMDR Amendment Act of 2023** and pertains to **29 minerals** specified in the **Seventh Schedule of the MMDR Act**, including Cobalt, Lithium, Nickel, Gold, etc.
 - ELs are **allocated by state governments** through competitive bidding and have a tenure of **5 years** from the date of execution.
 - The **central government holds the authority**, through regulations, to specify details such as auction procedures and bidding parameters.
- The **MMDR Act of 1957** serves as the primary legislation governing the mines and mineral sector in India.

Mining Related Activities According to MMDR Act 1957



Bharatmala Pariyojana

- Recently, Bharatmala Phase 1 deadline was extended by Six years to 2027-28. It was approved in 2017.

Bharatmala Pariyojana

Description	An umbrella program for the highways sector aimed at bridging critical infrastructure gaps and developing 34,800 km of National Highways by 2022.
Implementing Authority	Ministry of Road Transport & Highways

Project Completion	As of November 2023, approximately 42% of the project has been completed.
Objectives	<ul style="list-style-type: none"> • Optimize efficiency of freight and passenger movement across the country. • Improve connectivity in the North East. • Enhance efficiency of existing corridors.
Features	<ul style="list-style-type: none"> • Satellite mapping of corridors for upgrade identification. • Technology-based automated traffic surveys at over 1,500 points. • Origin-Destination study of freight movement across 600 districts.
Components	<ul style="list-style-type: none"> • Economic Corridors: 9000 km of roads to be constructed to connect important cities which are engines of the Indian Economy. • Feeder Route or Inter Corridor: 6000 km of roads to be constructed in this category. • National Corridor Efficiency Improvement: 5000 km of roads for improving the connection between the roads. • Border Road and International Connectivity: 2000 km of roads to connect remote border towns and the cities. • Port Connectivity and Coastal Road: 2000 km to connect port cities. • Green Field Expressway: Construction and development of Green Field Expressway for better management of traffic and freight. • Balance NHDP Works: Construction and Maintenance of about 10,000kms new roads.

FDI in Space Sector

- The government has recently eased regulations to permit 100% foreign direct investment (FDI) in the space sector.
- Previously, FDI was only allowed in the establishment and operation of satellites through the government approval route.
 - The amended FDI policy now permits 100% FDI in the space sector, aligning with the vision and strategy outlined in the Indian Space Policy 2023.
 - These relaxed entry routes aim to attract potential investors to invest in Indian companies operating in the space sector.

FDI Limits for Satellite sector	
Up to 100% (Automatic route)	Manufacturing of components and systems/sub-systems for satellites, ground segment, and user segment.
Up to 74% (Automatic route)	Satellites: Manufacturing and Operation, Satellite Data Products, Ground Segment & User Segment
Beyond 74% (Government route)	Activities related to Satellites: Manufacturing and Operation, Satellite Data Products, Ground Segment & User Segment
Up to 49% (Automatic route)	Launch Vehicles and associated systems or subsystems - Creation of Spaceports for launching and receiving Spacecraft
Beyond 49% (Government route)	Activities related to Launch Vehicles and associated systems or subsystems, Creation of Spaceports

India has taken several steps to support the private sector in space:

- **Indian Space Association (ISpA):** Established in 2021, ISpA is a non-profit industry body dedicated to promoting collaboration and development in the Indian space industry.
- **Antrix Corporation Limited:** Functioning as ISRO's marketing arm, Antrix Corporation manages ISRO's commercial deals for satellites and launch vehicles with foreign customers.
- **Indian National Space Promotion and Authorization Centre (IN-SPACe):** IN-SPACe is an autonomous agency aimed at facilitating private sector engagement in space activities.

- **GST Exemption:** Private launch service companies are exempted from paying GST when launching satellites, encouraging private investment in space.
- **India Space Policy 2023:** The policy underscores the importance of the private sector as a crucial stakeholder in the entire space economy value chain.

Bureau of Indian Standards (BIS)

- Bureau of Indian Standards (BIS) recently celebrated its 77th Foundation Day.
- The **Bureau of Indian Standards (BIS) is the National Standards Body of India** under **Department of Consumer affairs**, Ministry of Consumer Affairs, Food & Public Distribution, Government of India.
- It is **established by the Bureau of Indian Standards Act, 2016** which came into effect on 12 October 2017. The organisation was formerly the Indian Standards Institution (ISI) in 1946.
- The **Minister in charge of the Ministry or Department** having administrative control of the BIS is the **ex-officio President of the BIS**.
- In India, 90% of the jewellery that people are buying is hallmarked.

Certification Mark	Description	Authority
ISI Mark	<ul style="list-style-type: none"> • Certification mark for industrial products in India, ensuring conformity to Indian Standards issued by BIS • mandatory for products like electrical appliances, medical equipment, steel products, chemicals, cement, LPG cylinders, batteries, etc. 	Bureau of Indian Standards (BIS)
BIS Hallmark	<ul style="list-style-type: none"> • Marking system certifying purity of gold and silver jewelry according to BIS standards; introduced for gold in 2000 and silver in 2005; assures conformity to BIS standards; BIS stamp on certified gold jewelry. 	Bureau of Indian Standards (BIS)
AGMARK	<ul style="list-style-type: none"> • Certification mark for agricultural products, ensuring adherence to standards • covers products like essential oils, vegetable oils, pulses, cereals, fruits, vegetables, and semi-processed items. 	Directorate of Marketing and Inspection, MoAFW
Ecomark	<ul style="list-style-type: none"> • Mark issued by BIS for products conforming to standards aimed at minimal ecosystem impact. 	Bureau of Indian Standards (BIS)

LNG as a Transportation Fuel

- NITI Aayog has introduced a report on **LNG as a Transportation Fuel for Medium and Heavy Commercial Vehicles (M&HCV)**.
 - This initiative stems from the **collaborative efforts between NITI Aayog and the Embassy of Netherlands** aimed at energy transition and decarbonization.
- **Importance of Promoting LNG for M&HCV:**
 - To achieve the target of Net Zero emissions by 2070 through CO2 reduction.
 - To decrease dependency on oil imports.
 - To cater to India's rapidly expanding trucking market, expected to grow more than fourfold by 2050 compared to 2022.
 - To contribute to a Gas-based economy by aiming for a 15% share of natural gas in the primary energy mix by 2030.

- **Liquefied Natural Gas (LNG)** is primarily methane (CH₄) with some ethane (C₂H₆), liquefied for safe and convenient storage or transport.
- **Process:** Natural gas is cooled to around -162°C (-260°F) to convert it into liquid form at near atmospheric pressure.
- **Characteristics:** Odorless, colorless, non-toxic, and non-corrosive.

- **Challenges in Adopting LNG:**
 - High initial cost compared to traditional diesel trucks.
 - Limited availability of LNG retail outlets.
 - Market hesitancy and other related factors.

Rashtriya Udyamita Vikas Pariyojana (RUVAP)

- Recently, the Union Minister of Education and Skill Development & Entrepreneurship inaugurated the Rashtriya Udyamita Vikas Pariyojana in Sambalpur, Odisha.

Rashtriya Udyamita Vikas Pariyojana (RUVAP)	
Aim	Equip individuals with comprehensive entrepreneurship training (over a period of 22 weeks), fostering job providers instead of job seekers
Focus	Reskilling and upskilling employees to enhance competitiveness and adaptability in disruptive technology era
Target	Beneficiaries of the PM SVANidhi scheme
Duration	22 weeks
More Information	Training will be conducted through offline, online, and hybrid modes, with certificates awarded upon completion. The Government of India has partnered with Flipkart for this initiative, aimed at skilling street vendors and small shopkeepers in 10 major cities, providing stipends along with training to expand their businesses.

StartupShala

- **StartupShala** is the **flagship accelerator program of Startup India**, launched by the **Department for Promotion of Industry and Internal Trade (DPIIT)**.
 - Established in 2016, Startup India aims to bolster the startup ecosystem in India.
- StartupShala is a **sector-specific initiative** designed to **support existing entrepreneurs** by **providing access to essential resources** like knowledge, network, funds, and guidance necessary for scaling up.
- The program spans three months and consists of **two cohorts**: Clean Technology and Deep Technology.
 - Each cohort will select 20 startups to participate in the accelerator program.

Reverse Flip

- Flipping involves transferring full ownership of an Indian company to an overseas entity, often including all intellectual property and data.
- Reverse flipping refers to the **relocation of companies' domiciles back to India after previously flipping them abroad**.
- Reasons for reverse flipping include easier access to capital from private equity and venture capital, alterations in regulations regarding round-tripping, and the increasing maturity of India's capital market.
- The Economic Survey 2022-23 highlights a trend known as 'reverse flipping' among Indian start-up companies.

AGRICULTURE

Ban on Commercial Release of DMH-11

- The Supreme Court has reserved its judgment on PILs challenging the government's decision to allow the commercial release of the GM mustard variant Dhara Mustard Hybrid-11 (DMH-11).
- In October 2022, Genetic Engineering Appraisal Committee (under MoEFCC) cleared the proposal for commercial cultivation of GM mustard – also known as DMH-11.

GM Crops:

- Genetically modified (GM) crops are plants whose genetic material has been altered using genetic engineering techniques. This manipulation allows for the introduction of new traits or characteristics that are not naturally occurring in the species. Ex- Bt Cotton.

Status in India:

- In India, only cotton (Bt Cotton) is commercially grown as a GM crop, while trials for other crops like brinjal, tomato, maize, and chickpea are underway using transgenic technology.
- Bt Cotton occupies 90% of India's total cotton acreage.

Regulation of GM Crops:

- Genetic Engineering Appraisal Committee (GEAC)** is responsible for the overall evaluation of proposals related to the release of GM organisms as well as products into the environment. It works under the Ministry of Environment.
- GM foods are also regulated by the **Food Safety and Standards Authority of India (FSSAI)**, Ministry of Agriculture & Farmers Welfare under the Food Safety and Standards Act, 2006.
- Use of the unapproved GM variant can attract a jail term of 5 years and fine of Rs 1 lakh under the **Environmental Protection Act, 1989**.

Dhara Mustard Hybrid-11 (DMH-11)

- DMH-11 is a hybrid variant of mustard developed by researchers at **The Centre for Genetic Manipulation of Crop Plants, at the University of Delhi**.
- DMH-11 is a result of a cross between two varieties: Varuna and Early Heera-2. Such a cross wouldn't have happened naturally and was done after introducing genes from two soil bacterium called **barnase** and **barstar**.
- DMH-11 has showed approximately 28 per cent more yield than the national check and 37 per cent more than the zonal checks.

Pradhan Mantri Fasal Bima Yojana (PMFBY)

- The insured gross cropped area of non-loanee farmers under PMFBY has reached a new high of 180 lakh hectares during crop year 2022-23. (70 % higher as compared to 106 lakh hectares during 2021-22).

Pradhan Mantri Fasal Bima Yojana (PMFBY)	
Launch Year	2016
Ministry	Ministry of Agriculture & Farmers Welfare
Objective	To provide insurance coverage and financial support to farmers in case of crop failure due to natural calamities, pests, and diseases.
Replaced schemes	National Agricultural Insurance Scheme (NAIS) and Modified NAIS.
Premium Rates	<ul style="list-style-type: none">2% premium for all Kharif crops.1.5% premium for all Rabi crops.5% premium for annual commercial and horticultural crops.Government shares balance premium equally with central and state governments.No Upper Limit to Govt. Subsidy: Government bears balance premium, even if it's 90%.
Area Based Approach	<ul style="list-style-type: none">Implemented on an 'Area Approach basis' with defined areas for each notified crop.Insurance unit at Village/Village Panchayat level for major crops.For other crops, unit may be larger than Village/Village Panchayat.

Use of Technology	<ul style="list-style-type: none"> • Crop Insurance App for easy enrollment and reporting of crop loss within 72 hours. • Utilizes satellite imagery, remote sensing, drones, AI, and ML for crop loss assessment. • PMFBY Portal for integration of land records.
Beneficiaries Covered	<ul style="list-style-type: none"> • All farmers growing notified crops in the notified area. • Scheme voluntary for all farmers from Kharif 2020. • Previously compulsory for farmers with Crop Loan or Kisan Credit Card (KCC) accounts.
Risks Covered	<ul style="list-style-type: none"> • Yield losses due to natural calamities like fire, lightning, storm, hailstorm, cyclone, etc. • Risks due to flood, inundation, landslide, drought, dry spells, pests, diseases, etc. • Post-harvest losses covered up to 14 days from harvesting.

Extension of the Animal Husbandry Infrastructure Development Fund (AHIDF)

- The Union Cabinet, led by the Prime Minister, has approved the extension of the Animal Husbandry Infrastructure Development Fund (AHIDF) under the Infrastructure Development Fund (IDF) for an additional three years until 2025-26.

About Animal Husbandry Infrastructure Development Fund (AHIDF)

- AHIDF is a **Central Sector Scheme (CSS)** launched as part of the Atma Nirbhar Bharat Abhiyan, covering all states and Union Territories. It aims to incentivize investments in various areas including:
 - Dairy processing, meat processing, and value addition infrastructure.
 - Animal feed plants, breed improvement technology, and breed multiplication farms.
 - Animal waste to wealth management (Agri waste management).
 - Setting up veterinary vaccine and drugs manufacturing facilities.
- **Eligible Entities for Support under the Scheme:**
 - Beneficiaries eligible for support include Farmer Producer Organizations (FPOs), private companies, individual entrepreneurs, Section 8 companies, Micro, Small, and Medium Enterprises (MSMEs), and Dairy Cooperatives.
 - **Government entities and cooperatives are not eligible under AHIDF.**
 - Interested beneficiaries looking to invest in dairy and meat processing infrastructure can apply for loans through scheduled banks using the "**Udyami Mitra**" portal of SIDBI.
- **Implemented By:** Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry, and Dairying.
- **Features:**
 - The Central Government will provide 3% interest subvention for 8 years (including a two-year moratorium) from scheduled banks, NCDC, NABARD, and NDDB.
 - Credit guarantee of up to 25% of the credit borrowed will be provided to MSMEs and Dairy Cooperatives.
 - **No upper or lower limit for loan amount.**
 - Lending rates of interest are to be determined by scheduled banks, not exceeding 200 basis points plus the External Benchmark Based Lending Rate (EBLR) for eligible entities within MSME defined ceilings.
 - **Farming loans are not eligible under the Scheme, except for breed improvement technology** and multiplication farms for cattle, buffalo, sheep, goat, pig, and technologically assisted poultry farms.

Nano Liquid Urea

- A two-year field experiment on the efficacy of nano urea by the Punjab Agricultural University (PAU) has found a substantial **decrease in rice and wheat yields (13% & 21% respectively)** when compared to conventional nitrogen (N) fertiliser application.

About Liquid Nano Urea:

- Urea is a chemical nitrogen fertiliser, white in colour, which artificially provides nitrogen, a major nutrient required by plants.
- Liquid nano urea is essentially urea in the form of a nanoparticle.
- The product has been developed at **IFFCO's Nano Biotechnology Research Centre (NBRC) at Kalol.**
- In a 500 ml bottle, it has a nitrogen content of 40,000 mg/L, which is similar to the nitrogen nutrient found in one bag of regular urea.
- Nano Urea (liquid) is recommended for application only as a **foliar spray** meaning it should only be used once leaves arrive on the crop.

Minimum Support Price

- Protesting farmers are demanding the enactment of a law ensuring Minimum Support Price (MSP) for all crops, according to the Dr M S Swaminathan Commission's formula.

Background of MSP

- In 1957, the Nehru administration established the Food-Grain Enquiry Committee, the first attempt to address agricultural earnings, but it proved insignificant.
- In 1964, Lal Bahadur Shastri formed the Food Grain Price Committee under LK Jha to advocate for an MSP regime. Despite rapid acceptance of the report by the Shastri government, the **first MSP announcement was made in 1967.**
- Consequently, the MSP regime was initiated as a policy decision, leading to **the establishment of the Agricultural Prices Commission, later renamed as the Commission for Agricultural Costs and Prices (CACP) in 1985.**

About MSP

- MSP acts as a **form of market intervention** by the government to **protect farmers against sharp falls in farm prices** during bumper production years.
- The **Cabinet Committee on Economic Affairs, chaired by the Prime Minister, announces** MSPs based on **recommendations from the CACP**, considering factors such as demand and supply, production costs, price trends, and implications on consumers.
- MSPs ensure guaranteed prices for farmers' produce, preventing distress sales and facilitating procurement for public distribution.

Calculation of MSP

A2+FL method	C2 method
<ul style="list-style-type: none">• 'A2' covers all paid-out costs directly incurred by the farmer on seeds, fertilisers, pesticides, hired labour, leased land, fuel, irrigation, etc• 'A2+FL' includes A2 plus an imputed value of unpaid family labour	<ul style="list-style-type: none">• 'C2' is a more comprehensive cost that adds rentals and interest forgone on owned land and fixed capital assets, on top of A2+FL

- While the **government uses A2+FL method** to calculate cost of production, **farmers have been demanding to use C2 method** also recommended by MS Swaminathan committee.

Crops Covered

- Government announces **MSPs for 22 mandated crops** and **fair and remunerative price (FRP)** for sugarcane (total 23).

- Crops covered by MSPs include:
 - **7 types of cereals** (paddy, wheat, maize, bajra, jowar, ragi and barley),
 - **5 types of pulses** (chana, arhar/tur, urad, moong and masur),
 - **7 oilseeds** (rapeseed-mustard, groundnut, soyabean, sunflower, sesamum, safflower, nigerseed),
 - **4 commercial crops** (cotton, sugarcane, copra, raw jute).

Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)

- PM-MKSSY is a **Central Sector Sub-scheme** under the **Pradhan Mantri Matsya Sampada Yojana** aimed at **formalizing the fisheries sector and supporting fisheries micro and small enterprises**.
- **Aims and Objectives:**
 - **Formalization of the unorganized fisheries** sector via self-registration on a National Fisheries Sector Digital Platform, enhancing service delivery.
 - **Facilitating access to institutional financing** for micro and small enterprises in the fisheries sector.
 - **Providing one-time incentives** to beneficiaries for purchasing aquaculture insurance.
 - **Incentivizing microenterprises in fisheries and aquaculture** through performance grants to improve value-chain efficiencies and create jobs.
 - **Incentivizing micro and small enterprises to adopt and expand fish and fishery product** safety and quality assurance systems, creating and maintaining jobs.
- **Implementation Period:** Implemented for four years from FY 2023-24 to FY 2026-27 across all States and UTs with an investment of Rs 6,000 crores.

Pradhan Mantri Matsya Sampada Yojana (PMMSY)

- A flagship scheme for the focused and sustainable development of the fisheries sector in India.
- Estimated investment of Rs. 20,050 crores for implementation over five years (FY 2020-21 to FY 2024-25) across all States/Union Territories.
- Aims to increase fish production by an additional 70 lakh tonnes by 2024-25.
- Targets fisheries export earnings of Rs. 1,00,000 crores by 2024-25.
- Seeks to double incomes of fishers and fish farmers while reducing post-harvest losses from 20-25%.
- **Nodal Ministry:** Ministry of Fisheries, Animal Husbandry and Dairying.

Major Components of PM Matsya Kisan Samridhi Sah-Yojana

Component 1-A	Formalization of Fisheries Sector: Creation of a National Fisheries Digital Platform (NFDP) for registry of fish producers, workers, vendors, and processors, with financial incentives for registration and training.
Component 1-B	Facilitate Adoption of Aquaculture Insurance: Offering incentives and one-time incentives for aquaculture insurance, with additional benefits for SC, ST, and women beneficiaries.
Component 2	Support Microenterprises to Improve Fisheries Sector Value Chain Efficiencies: Providing performance grants to improve value chain efficiencies, with higher grants for SC, ST, and women-owned enterprises.
Component 3	Expansion of Fish and Fishery Product Safety and Quality Assurance Systems: Incentivizing fisheries micro and small enterprises to adopt safety and quality assurance systems, aimed at expanding the domestic market for fish and creating jobs, especially for women.
Component 4	Project Management, Monitoring, and Reporting: Establishment of Project Management Units (PMUs) to manage, implement, monitor, and evaluate project activities.

Pigeon Pea Breeding Protocol

- The **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)**, based in **Hyderabad**, has introduced an innovative Pigeon pea breeding technique, unveiling the **world's first Pigeon pea speed breeding protocol**.
- Pigeon pea's protracted growth cycle and its sensitivity to day length have historically hampered breeding endeavors, resulting in only approximately 250 varieties being released globally over six decades.
- **Typically**, the development of a new pigeon pea variety entails a breeding, testing, and release process spanning **around 13 years**. However, **ICRISAT's newly devised protocol** has demonstrated that the breeding cycle can be condensed to **approximately 7 years**, potentially even further reduced to 2 to 4 years.
- Consequently, this innovative protocol **facilitates the creation of climate-resilient, nutritionally enriched, and higher-yielding pigeon pea varieties** at an unprecedented pace.

Pigeon Pea

- Pigeon pea, also called arhar and tur in India, is an important legume crop for the country's nutritional security. **India is the largest producer as well as importer of the grain**. It is primarily consumed as dal (split pulse) in India.
- A staple in tropical and subtropical diets, it is crucial for food security and soil health globally and is **mainly cultivated in semi-arid regions**.
- It can be grown with a **temperature** ranging from 26°C to 30°C in the rainy season (June to October) and 17°C to 22°C in the post rainy (November to March) season.
- It is a six to nine month crop. The longer duration of the crop is a result of its short day nature, photosensitivity and seasonal specificity.
- It is very sensitive to low radiation at pod development, therefore flowering during the monsoon and cloudy weather, leads to poor pod formation.
- It is commonly intercropped with a wide range of crops. In India, it is estimated that 80 - 90 % of the pigeon pea is intercropped.
- It has a **low glycemic index** and is rich in thiamine, riboflavin, niacin, vitamin B-6, folate, vitamin A, calcium, zinc, iron, magnesium and phosphorus.

Glycemic Index (GI)

- GI is a value assigned to foods based on how quickly and how high those foods cause increases in blood glucose levels.
- Foods low on the GI scale tend to release glucose slowly and steadily. Foods that have a high GI release glucose rapidly.

Nano DAP

- The Finance Minister, during the interim budget presentation, unveiled plans to extend the application of Nano DAP to various crops across all agro climatic zones.

Di-ammonium Phosphate (DAP)

- It is the second most commonly used fertiliser in India after urea, **containing both Nitrogen and Phosphorus which primary macronutrients are**. It is manufactured by reacting Ammonia with Phosphoric acid under controlled conditions.
- It is **high in phosphorus (P) that stimulates root establishment and development** — without which plants cannot grow to their normal size or will take too long to mature. It is thus applied just before, or at the time of sowing.
- It is **highly soluble** and thus dissolves quickly in soil to release the macronutrients.

Nano DAP

- Indian Farmers Fertiliser Cooperative's (**IFFCO's**) **Nano DAP, containing 8% Nitrogen and 16% Phosphorus by volume**. Unlike conventional DAP, which comes in granular form, IFFCO's Nano DAP is in liquid form.
- This formulation has an **advantage in terms of surface area to volume**, as its **particle size is less than 100 Nanometre (nm)**.

Benefits of Nano DAP

- **Enhanced Efficiency:** Nano DAP's small particle size facilitates easier entry into seeds and plant openings.
- **Improved Assimilation:** Better absorption leads to higher seed strength, chlorophyll levels, and photosynthetic efficiency.
- **Cost-Effectiveness:** Priced at Rs 600 for a 500 ml bottle, offering a pocket-friendly alternative to conventional DAP.
- **Subsidy Relief:** Nano DAP can alleviate the government's subsidy burden on fertilizers.
- **Convenience:** Bottles are easier to transport, store, and use compared to 50kg bags.

- **Domestic Production:** Produced in Kalol, Gujarat, reducing the need for fertilizer imports.
- **Achieving Self-Sufficiency:** Contributes to India's goal of self-sufficiency in fertilizer production.

Investment Forum for Advancing Climate Resilient Agrifood Systems

- **NITI Aayog, Ministry of Agriculture and Farmers' Welfare (MoA&FW), and Food and Agriculture Organization (FAO)** jointly launched the '**Investment Forum for Advancing Climate Resilient Agri-food Systems in India**'.
- The initiative **aims to develop an investment and partnership strategy to advance climate resilient agri-food systems** among the government, private sectors, and farmers' organizations and financial institutions in India.
- The Forum facilitated discussions and deliberations **on six key areas:**
 - Climate resilient agriculture (experiences and pathways)
 - Digital infrastructure and solutions
 - Financing climate resilient agri-food systems (domestic and global)
 - Climate resilient value chains
 - Production practices and inputs for climate resilience and
 - Gender mainstreaming and social inclusion for climate resilience

Smart Food Grain Storage System (SAFEETY) technology

- The Ministry of Electronics and Information Technology (**MeitY**) has facilitated the transfer of the **Smart Food Grain Storage System (SAFEETY) technology** to Paras Defense and Space Technology Ltd.
- **Developed by the Society for Applied Microwave Electronics Engineering and Research (SAMEER) under MeitY's guidance.** SAFEETY incorporates cutting-edge features.
- These include conveyORIZED loading and unloading of grain bags with RFID for traceability, online weight and moisture measurement, and radio frequency-based removal of moisture from grain.
- This advanced system boasts impressive capabilities such as efficiently handling nearly 28 tons of grains in just 40 minutes.



Innovation, Science and Technology for Viksit Bharat @ 2047

Krishi Integrated Command and Control Centre

- The **Ministry of Agriculture and Farmers' Welfare** inaugurated a Krishi Integrated Command and Control Centre (ICCC) - a big-screen dashboard of all digital innovations in the agriculture sector.
- The **ICCC is a tech-based solution** involving multiple IT applications and platforms, designed to help in making informed decisions.
- **ICCC uses state of the art technologies such as AI, remote sensing, and Geographic Information Systems (GIS)** to collect and process large amounts of granular data and present the macro picture.
- It collects data on temperatures, rainfall, wind speed, crop yields and production estimates and presents it in a graphical format.
- It can also show relevant trends (periodic and non-periodic), outliers, and Key Performance Indicators (KPIs), and share insights, alerts, and feedback on agriculture schemes, programmes, projects, and initiatives.

Applications

Applications	
Farmer's Advisory	<ul style="list-style-type: none"> • ICCC facilitates visualization of GIS-based soil carbon mapping, soil health card data, and IMD weather data for personalized advisories to farmers. • Enables recommendations on suitable crops, water, and fertilizer requirements. • Future apps like Kisan e-mitra may offer individual farmer-level advisories.

Drought Actions	<ul style="list-style-type: none"> • Drought Portal correlates regional yield changes with weather patterns and rainfall data for proactive decision-making. • Utilizes General Crop Estimation Survey data to understand yield fluctuations and implement appropriate measures.
Crop Diversification	<ul style="list-style-type: none"> • Analysis of crop diversification maps aids in identifying areas suitable for diversified cropping. Supports tailored advisory services to farmers for promoting crop diversification and enhancing agricultural resilience.
Farm Data Repository	<ul style="list-style-type: none"> • Krishi Decision Support System (K-DSS) serves as an agriculture data repository, gathering micro-level data and presenting macro-level insights. • Supports evidence-based decision-making and generates customized advisories for farmers based on comprehensive agricultural data.

Integration of Fair Price Shops on ONDC Platform

- The **Department of Food and Public Distribution (DFPD)** has initiated a **pilot project to integrate 11 fair price shops (FPS) in Himachal Pradesh** onto the Open Network Digital Commerce (ONDC) platform.
- This marks the **first instance of Fair Price Shops being incorporated into ONDC.**

Fair Price Shop

- It means a shop which has been **licensed to distribute essential commodities** to ration card holders **under the Targeted Public Distribution System (TPDS).**
- The term is **defined in Section 2(4) of National Food Security Act, 2013.**

Open Network Digital Commerce (ONDC)

- Launched in December 2021, ONDC is an initiative of the **Department for Promotion of Industry and Internal Trade (DPIIT)** under the **Ministry of Commerce and Industry.**
- Its purpose is to create a facilitative model aimed at assisting small retailers in leveraging digital commerce opportunities.
- ONDC is not merely an application, platform, intermediary, or software. Rather, it is a set of specifications meticulously designed to **enable open, unbundled, and interoperable networks.**
- In a recent development, the Chennai Metro Rail became the pioneering metro service to offer ticketing services to passengers through the ONDC platform.

*(Please refer the **Prelims Quick Revision Part 1** for detailed note on ONDC)*



e-Kisan Upaj Nidhi

- The **Ministry of Consumer Affairs, Food & Public Distribution** launched 'e-Kisan Upaj Nidhi', a **digital gateway of Warehousing Development and Regulatory Authority (WDRA).**
- The initiative with its **no collateral, extra security deposit policy** can prevent distress sale by farmers who often have to sell their entire harvest at cheaper rates due to poor post-harvest storage opportunities.
- It will ease the farmers' warehousing logistics and aid the farmers in receiving fair prices for their produce.
- With its simplified digital process, it can ease the procedure of farmers' storage at any registered WDRA warehouse for a period of 6 months at 7% interest per annum.

WDRA was constituted in **2010** under the **Warehousing (Development and Regulation) Act, 2007**. It consists of a Chairperson and two members.

This prevents farmers from distress sale by helping them to store their produce in storage godowns near their farms. **Farmers can also seek loans from banks against their NWR/e-NWR.**

WDRA **regulates negotiability of warehouse receipts** so as to improve the trust of depositors and banks in the newly evolving ecosystem.

WDRA's main objective is to **implement Negotiable Warehouse Receipt (NWR)/electronic-Negotiable Warehouse Receipt (e-NWR) system** in India.

Other functions include: registration of warehouses, promotion of scientific warehousing of goods, enhancing liquidity in rural areas and promoting efficient supply chain.

- Moreover, with the 'e-Kisan Upaj Nidhi' and e-NAM, farmers will be able to utilise the technology of an interconnected market which benefits them above and beyond selling their produce to the Government at Minimum Support Price (MSP).

NWR	e-NWR
<ul style="list-style-type: none"> NWR system was launched in 2011 allowing the transfer of ownership of a commodity stored in a warehouse without delivering it physically. These receipts are issued in negotiable form, making them eligible as collateral. This has been enabled by enabling the financing of warehouse receipts through the Warehouse (Development and Regulation) Act, 2007. 	<ul style="list-style-type: none"> An e-NWR is available only in electronic form. It has a time validity that is co-terminus with the shelf-life of the commodity or withdrawal of the commodity fully from the warehouse, after which it expires. The single source of information for the e-NWR is the repository system where e-NWR is issued by registered warehouses. All e-NWR can be traded through off-market or on-market in Commodity Exchanges platforms. It can also be transferred fully or in part. An e-NWR can be auctioned under certain conditions such as loan not repaid, on expiry and delivery not taken, and on likely damage or spoilage of the commodity in the warehouse. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Benefits of e-NWR system</p> <ul style="list-style-type: none"> ➤ Avoidance of forgery/loss/tamper/mutilation of a physical NWR. ➤ Avoidance of multiple financing against the same NWR. ➤ Reduction of monitoring costs and building credibility amongst market participants. ➤ Market participants have secured accessibility to view and manage their warehouse receipts via online portal. ➤ Easy access to finance by enabling multiple transfers without physical movement of goods. ➤ Splitting of NWRs for partial sale/pledge/withdrawal. </div>

Pledge Financing

- Pledging is a process in which **holder of the eNWR will get a loan from the financial institution using the underlying commodity of eNWR as collateral**.
- When a pledge is marked, the **eNWR balances will remain in the client's account (borrower) only but the control on the balance will be with the financial institution**.
- Thus, the client will not be able to use the eNWR balances until the pledge in favour of the financial institution is active.

Speed Breeding Crop Facility

- The Ministry of Science and Technology inaugurated a National Speed Breeding Crop Facility at the **National Agri-Food Biotechnology Institute (NABI) in Mohali**.
- The biotechnology speedy seeds facility **will cater to all states across India** and will be particularly useful for the North Indian States like Punjab, Himachal Pradesh, Haryana and the UT of J&K
- The facility will be **used to develop new wheat, rice, soybean, pea, tomato varieties** among other by using a precisely controlled environment (light, humidity, temperature) to achieve more than four generations of a crop per year.
- These crop varieties will be able to sustain climate change and contribute to the food and nutritional demand of the population with implementation of speed breeding cropping methods.
- The institute has developed a technology on climate resistant crops. By utilising these technologies, the farmers will not be limited to cultivate a crop in a particular season.

NABI

- NABI is the **first Agri-Food Biotechnology Institute** established in India in 2010.
- The institute aims at catalyzing the transformation of agri-food sector in India.
- Its main research focus is to harness biotechnological tools in the area of agriculture biotechnology, food and nutritional biotechnology.

Lab Grown Fish

- The Indian Council of Agricultural Research-Central Marine Fisheries Research Institute (ICAR-CMFRI) has partnered with a private-sector startup for collaborative research on lab-grown fish meat production.
- Lab-grown fish meat, akin to other cultivated meats, is grown without the need to raise and slaughter animals, representing a sustainable alternative.
- Cultivated fish meat is produced by isolating specific cells from fish and cultivating them in animal-free media in laboratory conditions.
- The end product aims to mimic the flavor, texture, and nutritional profile of traditional fish meat.

Other meats produced in the lab

- The Dutch pharmacologist Mark Post was the first to present a proof of concept for cultured meat in 2013.
- In 2023, the US Department of Agriculture cleared the sale of lab grown chicken meat in the country.
- Israel leads in lab-grown fish meat production, followed by Singapore, the US, and China, with large-scale commercial manufacture still years away.

Central Marine Fisheries Research Institute (CMFRI)

- CMFRI was established in 1947 under the Ministry of Agriculture and Farmers Welfare. Later, in 1967, it joined ICAR family.
- Headquartered in Kochi, Kerala. Initially, the CMFRI worked towards the estimation of marine fisheries landings and effort, taxonomy of marine organisms and the bio-economic characteristics of the exploited stocks of finfish and shellfish.
- One of the major achievements of CMFRI is the development and refinement of a stratified multistage random sampling method for estimation of marine fish landings in the country with a coast line of over 8,000 km and landing centers.

Mushk Budiji rice

- A recent study in **Nature Scientific** Report highlighted the significance of altitude and temperature in shaping the aroma of Mushk Budiji rice.

Mushk Budiji Rice

- **Cultivated in Kashmir**, it is an indigenous rice variety known for **its rich aroma and distinct taste**.
- Primarily grown in areas of **Sagam, Panzgam, and Soaf Shali in Anantnag district**, and the Beerwah belt in Budgam district.
- The variety **faced near extinction** due to factors like rice blast disease, low yield, and lack of profitability. However, a government-led revival program initiated in 2007 has gradually revived the crop.
- The study utilized gas chromatography-mass spectroscopy (GC-MS) and an electronic nose equipped with various sensors and AI components.
 - GC-MS is an analytical method used to detect volatile compounds in organic mixtures extracted from geological, environmental, and biological samples.

Food Processing Industry

- Over the past nine years, there has been a notable surge in India's processed food exports, marking a remarkable 150% growth. Consequently, the overall value of agricultural exports from the country has reached approximately \$53 billion.

- Food processing involves the transformation of raw ingredients into finished or semifinished products.
- The Ministry of Food Processing Industries (MoFPI) defines it as any process that alters the physical properties of agricultural, animal husbandry, or fisheries products, makes them edible, and has commercial value, thus falling under the Food Processing Industry (FPI) domain.



Government Initiatives	
Pradhan Mantri Kisan Sampada Yojana (PMKSY)	<p>Mega Food Parks: Establishing industrial clusters with modern infrastructure to attract food processing units.</p> <p>Backward and Forward Linkages: Supporting the supply chain from farm to market.</p> <p>Food Processing & Preservation Capacities: Promoting new units and modernization of existing ones.</p> <p>Integrated Cold Chain and Value Addition Infrastructure: Reducing wastage and increasing value.</p> <p>Agri-Logistic Infrastructure: Improving farm-to-processor transportation.</p>
Production-Linked Incentive (PLI) Scheme	Offering financial support to boost large-scale food processing investments, aiming to increase exports and capacity
100% FDI (Foreign Direct Investment)	Allows FDI under the automatic route, encouraging foreign investments and technology transfer.
Agricultural and Processed Food Products Export Development Authority (APEDA)	Development of export by providing financial assistance, fixing of standards, improving packaging, etc., under Ministry of Commerce
Marine Products Export Development Authority (MPEDA)	Promotion of export of marine products, under Ministry of Commerce
Indian Institute of Packaging (IIP)	Development of standards for export packaging of fruits & vegetables.
Export Inspection Council (EIC)	Official export certification body ensuring quality and safety of exported products with global acceptance.
Agriculture Export Policy (2018)	Objectives include doubling India's share in world agricultural exports by integrating with global value chains.

Bharatiya Beej Sahakari Samiti Ltd

- The Bharatiya Beej Sahakari Samiti Limited (BBSL) has been established in 2023 to set a global benchmark in seed quality and production.

- It was established as a **seed supply organization** under the **Multi-State Cooperative Societies (MCS) Act of 2002** to ensure the availability of certified and scientifically prepared seeds to all farmers in the country.
- **Goals and Priorities:**
 - Boosting domestic seed production to elevate quality and volume
 - Positioning India as a global leader in certified seed exports
 - Safeguarding traditional Indian seeds for future generations
 - Advancing seed-related research and development
 - Enhancing farmer productivity by offering quality seeds
- **Collaboration Among Key Players:** Indian Farmers Fertilizer Cooperative Ltd (IFFCO), Krishak Bharati Cooperative Ltd (KRIBHCO), National Agricultural Cooperative Marketing Federation of India (NAFED), National Dairy Development Board (NDDB), and National Cooperative Development Corporation (NCDC).

Codex Committee on Spices and Culinary Herbs (CCSCH)

- The 7th session of the Codex Committee on Spices and Culinary Herbs (CCSCH) was held from 29th January 2024 to 2nd February 2024 at Kochi.

Codex Committee on Spices and Culinary Herbs

- It was established as one of the Commodity Committees under the Codex Alimentarius Commission (CAC) in 2013.
- India has hosted this prestigious Committee since the beginning and Spices Board India serves as the secretariat organization which organizes the Committee's sessions.
- In CCSCH 7th session quality standards for 5 spices, namely small cardamom, turmeric, juniper berry, allpice and star anise were finalised.

Codex Alimentarius Commission (CAC)	
Establishment	Jointly established by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO)
Headquarters	Rome, Italy
Members	189 member countries
Membership Criteria	Open to all Member Nations and Associate Members of FAO and WHO interested in international food standards
Meeting Sessions	Regular sessions held once a year, alternating between Geneva and Rome
Funding	Program funded through the regular budgets of WHO and FAO, subject to approval by the governing bodies of the parent organizations
Languages	Works conducted in the six official languages of the United Nations
Function	Contributes to harmonizing food standards globally, facilitates fair global food trade, and enhances food safety to protect global consumer health
Standards Recognition	Standards recognized by the World Trade Organization (WTO) as international reference for resolving trade disputes related to food safety and consumer protection
Nature of Standards	Standards developed by CAC committees, including the CCSCH, are voluntary and serve as reference standards for member countries

Nutrient Based Subsidy (NBS) Policy

- The Ministry of Chemicals and Fertilizers has issued guidelines regarding the reasonableness of Maximum Retail Prices (MRPs) for Phosphatic and Potassic (P&K) fertilizers under the Nutrient Based Subsidy (NBS) policy.
 - These guidelines aim to bring P&K fertilizers under reasonable pricing controls within the NBS support framework.

- Unlike urea, which has its MRP fixed by the government, **NBS fertilizers are technically decontrolled**. Under the NBS scheme, the **MRPs of these fertilizers are meant to be market-determined** and set by the individual companies selling them.

Nutrient Based Subsidy (NBS) Policy	
Objective	Introduced in 2010 to provide fertilizers to farmers at subsidized prices . It has been approved for implementation until FY 2025-26.
Subsidy Mechanism	Subsidy on urea is paid on dispatch , whereas under NBS, it is paid based on quantities sold.
Legal Framework	The NBS policy is framed under the Fertilizer (Control) Order (FCO), 1985 , issued under the Essential Commodities Act, 1955 .
Eligibility	NBS applies to 25 grades of P&K fertilizers , including Di Ammonium Phosphate (DAP), Muriate of Potash (MOP), Mono Ammonium Phosphate (MAP), Triple Super Phosphate (TSP), among others.
Subsidy Announcement	The government announces a fixed rate of subsidy (in Rs. per kg basis) for each primary nutrient (Nitrogen, Phosphate, Potash, Sulphur) of subsidized P&K fertilizers annually.
Subsidy Recommendations	The Inter-Ministerial Committee (IMC) recommends per-nutrient subsidy for 'N', 'P', 'K', and 'S' before the start of the financial year, for decision by the Department of Fertilizers.
Related Terms	
Fertilizer Grade	Fertilizer grade indicates the guaranteed minimum percentage of nitrogen (N), phosphorus (P), and potash (K) contained in fertilizer material.
Example	A label on the fertilizer bag with a grade 28-28-0 indicates that 100 kg of fertiliser material contains 28 kg of N, 28 kg of P and no potash.

Subsidy on Urea

- Urea, the most widely produced, imported, and consumed fertilizer in India, is **subsidized exclusively for agricultural purposes**.
- The government **provides subsidies to fertilizer manufacturers based on their production costs** at each plant.
- These manufacturers are then obligated to **sell urea at the government-determined Maximum Retail Price (MRP)**.

New Initiatives Introduced within PMFBY

- The Union Government has introduced three new initiatives under the Pradhan Mantri Fasal Bima Yojana (PMFBY), given below:

Krishi Rakshak Portal and Helpline (KRPH) 14447	Aimed at offering multilingual support, ensuring transparent communication, and facilitating real-time grievance resolution.
Learning Management System (LMS)	Implemented to educate stakeholders on efficient crop insurance procedures and agricultural credit management.
SARTHI Portal	The portal aims to broaden coverage to include health, life, home, shop, agricultural implements, motor, and parametric products. SARATHI is a digital insurance platform developed in collaboration with UNDP India.

National Livestock Mission (NLM)

- The Cabinet has approved the expansion of activities under the National Livestock Mission (NLM), introducing key changes to enhance its effectiveness:
 - **Simplification of Livestock Insurance:**
 - The **premium for farmers has been reduced to 15%**, down from the previous levels of 20%, 30%, 40%, and 50%. **The remaining premium will be shared by the Centre and the State.**

- Moreover, the number of animals eligible for insurance has been increased to 10 cattle units instead of the previous 5 units for cattle, sheep, and goats.
- **Additional Coverage:** Eligible entrepreneurs will now receive capital subsidy, and state governments will be supported in the conservation of breeds like **horse, donkey, mule, and camel**.
- **Fodder Supply Enhancement:** Capital subsidy will be provided to eligible entrepreneurs for seed processing infrastructure. Additionally, state governments will receive assistance for fodder cultivation in non-forest, waste, or range lands.

National Livestock Mission (NLM)	
Ministry	Ministry of Fisheries, Animal Husbandry & Dairying
Type	Both Centrally Sponsored and Central sector Components
Key Objectives	<ul style="list-style-type: none"> • Entrepreneurship development in small ruminant, poultry, and piggery sector & Fodder sector. • Increase of per-animal productivity through breed improvement. • Increased meat, egg, goat milk, wool, and fodder production.
Jurisdiction	Implemented all over India from 2021-22.
Sub-missions of NLM	<ol style="list-style-type: none"> 1. Breed improvement of Livestock and Poultry. 2. Feed and Fodder. 3. Innovation and Extension.

Marine Products Export Development Authority

- Officials claim that India's shrimp exports' entire value chain is certified by the Marine Products Export Development Authority (MPEDA), ensuring no abusive conditions at farms.

About Marine Products Export Development Authority	
Purpose	To promote the export of marine products.
History	Established by an act of Parliament in 1972, merging the Marine Products Export Promotion Council set up by the Government of India in September 1961.
Functions	<ul style="list-style-type: none"> • Developing and regulating offshore and deep-sea fishing, along with measures for conservation and management of offshore and deep-sea fisheries. • Registering fishing vessels, processing plants, storage premises for marine products, and conveyances used for transport. • Establishing standards and specifications for marine products for export purposes. Regulating the export of marine products and registering exporters, subject to prescribed fees.
Headquarters	Kochi, Kerala
Trade Promotion Offices	New Delhi, Tokyo, and New York
Nodal Ministry	Ministry of Commerce and Industry

TAXATION

Interim Union Budget 2024-2025

The Finance Minister N. Sitharaman presented the Interim Union Budget for 2024-2025 in Parliament.

Interim Budget

- As per Article 112 of the Indian Constitution, the annual financial statement must be presented before both Houses of Parliament, detailing estimated receipts and expenditures.

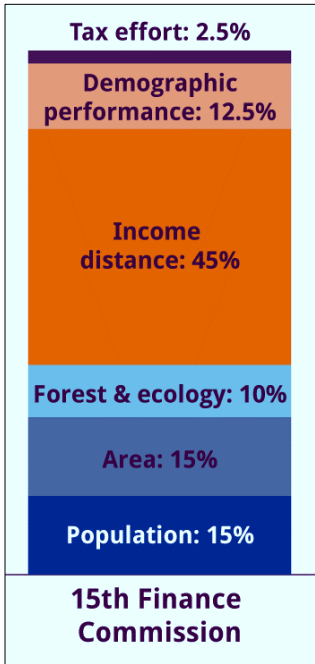
- The Centre requires approval from both Houses to withdraw funds from the Consolidated Fund of India.
- **In an election year, the incumbent Government cannot present a full Budget due to potential executive changes** after the polls, necessitating an interim budget.
- The Finance Minister presents the **current state of the Indian economy**, fiscal status, and revised estimated growth for the next year.
- **Details of planned and non-planned expenditures and receipts are provided.**
- While **major scheme** announcements influencing voters or **Economic Survey** presentations are **prohibited**, **tax rate revisions are permitted.**
- Presented to both Houses on February 1, put to vote, and then sent for Presidential approval.
- Similar to the Union budget, the interim budget **undergoes debate in the Lok Sabha before passage.**
- **There are no specific constitutional provision exists for an interim budget.**
- The Centre seeks approval from the Lower House for funds required during the transition period (April - July) until the new government presents a full Budget, using the votes on account provision.

Vote on Account

- According to Article 116 of the Constitution, the **Lower House can make grants in advance for estimated expenditures for part of any financial year**, known as a vote on account.
- A vote on account **addresses the Centre's fund requirements for salaries, ongoing projects, and other expenditures during the transitional period.**
- It **does not permit changes to tax rates** and is **valid for two months, extendable up to four months.**

16th Finance Commission

- **Arvind Panagariya**, former vice-chairman of NITI Aayog, has been appointed as the **chairman of 16th Finance Commission**, while the appointment of other members was notified separately.
- The commission will provide recommendations on the following matters:
 - Distribution of the net proceeds of taxes between the Union and States, as well as the allocation of these proceeds among the States.
 - Principles governing grants-in-aid for the revenues of the states under Article 275 of the Constitution.
 - Measures to enhance the Consolidated Fund of a State to support the resources of Panchayats and Municipalities, based on recommendations from the state finance commission.
 - Reviewing current financing arrangements for Disaster Management initiatives, including funds established under the Disaster Management Act, 2005.



Finance Commission	
About	A constitutional body responsible for recommending the distribution of tax revenues between the Union and the States, as well as among the States themselves.
Constituted by	The President constitutes the Finance Commission under Article 280 of the Constitution.
Tenure	It is constituted at the end of every fifth year or earlier if deemed necessary by the President.
Mandate	<ul style="list-style-type: none"> • Recommending the distribution of net tax proceeds between the Union and States; Suggesting principles for grants-in-aid to States from the Consolidated Fund of India; Advising measures to augment the Consolidated Fund of a State for local bodies' support.

	<ul style="list-style-type: none"> Addressing any other financial matters referred by the President.
Composition	Consists of a Chairman and four members appointed by the President.
Qualifications	The Chairman should have experience in public affairs, while other members should have expertise in various fields such as judiciary, finance, administration, or economics.
Recommendations	Not binding on the government.

UN Framework Convention on International Tax Cooperation (FTC)

- India recently voted in favor of FTC proposal at the UN General Assembly, put forth by Nigeria, aimed at establishing the terms of reference for a 'United Nations framework on international tax cooperation' by August 2024.
- The UN Framework Convention on International Tax Cooperation (FTC) is a **proposal by developing countries that aims to move the global debate around minimum corporate taxation to a more global level.**
- The FTC is meant to:
 - Respect countries' sovereignty
 - Account for the real ways markets operate and business is done in the modern world
 - Establish transparent international tax rules and procedures
- The move signifies an effort by India and other developing countries to **challenge the dominance of the Organisation for Economic Co-operation and Development (OECD) in setting international tax policy and standards.**

Revision of financial limits for 'New Service (NS)' and 'New Instruments of Service (NIS)'

- The Public Accounts Committee (PAC) has endorsed the revision of financial limits for 'New Service (NS)' and 'New Instruments of Service (NIS)'. The proposal, put forth by the Ministry of Finance, seeks to increase these limits, which were last updated in 2006.
- These limits are **applicable when augmenting expenditure provisions through the appropriation of funds** from available savings within corresponding sections of Grants/Appropriation.
- Expenditure exceeding these financial limits** requires supplementary proposals from ministries/departments, necessitating parliamentary approval.

Highlights	New Service (NS)	New Instruments of Service (NIS)
Definition	Expenditure arising from a new policy decision or activity	Relatively large expenditure from expansion of existing policy
Examples	Machinery & equipment, ICT equipment, buildings & structures, infrastructure assets, arm & ammunition, land	Investment, loans and advances, subsidies, etc.
Financial Limit	Above Rs 50 crore to Rs 100 crore	20% of the original appropriation or up to Rs 100 crore, whichever is higher
Public Accounts Committee (PAC)		
Establishment	<ul style="list-style-type: none"> Introduced in 1921 after mention in Government of India Act, 1919 (Montford Reforms) Constituted annually under Rule 308 of Lok Sabha Procedures 	
Appointment	Chairman appointed by Speaker of Lok Sabha; Decisions are advisory in nature	

Members	Comprises 22 members (15 elected by Lok Sabha Speaker, 7 by Rajya Sabha Chairman) with one-year term
Purpose	<ul style="list-style-type: none"> • Ascertain if Parliament's granted money is spent within "scope of demand" • Ministers cannot be elected as members
Functions	<ul style="list-style-type: none"> • Examine appropriation of sums granted by Parliament, annual Finance Accounts, and other relevant accounts • Examine reports of Comptroller and Auditor General of India (CAG) on various aspects of government expenditure • Review savings and excesses in government expenditure

Direct Tax to GDP Ratio Rose To 15-Year High

- The **Direct Tax to GDP ratio reached a 15-year high** of 6.11% in FY23, according to data from the Central Board of Direct Taxes (CBDT).
 - The Direct Tax to GDP ratio serves as an indicator of a country's ability to generate resources for its development.
- Despite the increase in the Direct Tax to GDP ratio, **tax buoyancy declined** from 2.52 to 1.18 compared to the previous year, suggesting a decrease in tax collection efficiency relative to GDP growth.
 - **Tax buoyancy** measures the responsiveness of tax collection to changes in GDP, indicating how efficiently tax revenues increase alongside economic growth.
- While gross direct tax collections surged by over 173% to Rs 19.72 trillion in FY23 from Rs 7.22 trillion in FY14, the recent decline in tax buoyancy implies that the economic growth in FY23 did not proportionally boost direct tax collections as in FY22.

Factors Contributing to the Rise

- Implementation of the Vivad se Vishwas Scheme aimed at reducing litigations in direct tax payments.
- Gradual reduction in corporate tax rates since the Finance Act of 2016.
- Phasing out of exemptions and incentives for the corporate sector.
- Other reforms such as Aadhaar-PAN linkage, adoption of digital technology (Faceless Assessment, Faceless Appeal) to enhance tax administration, introduction of the Taxpayers Charter, among others.

Input Service Distribution (ISD)

- The interim budget proposes **mandatory registration for ISD for companies operating in multiple cities to facilitate the claiming of input tax credit.**
 - **Input Tax Credit** refers to the tax paid by a business on purchases, which can be utilized to reduce tax liability upon sale.
- ISD (Input Service Distributor) is a type of **taxpayer under GST who needs to distribute the GST input tax credits that pertain to its GST Identification Number (GSTIN) to its units or branches having different GSTIN but registered under the same PAN.**
 - ISD works like a central office that handles and distributes the tax credits for services used within the company to different branches or departments.
- This recent initiative is anticipated to notably **diminish disputes.**

Windfall Profit

- A windfall profit refers to a **sudden increase in profits, typically caused by an unexpected event or circumstance.**
- Such profits are generally **well above historical norms** and may occur due to factors such as a price spike or supply shortage that are either temporary in nature or longer-lasting.
- Windfall profits are **generally reaped by an entire industry sector** but can also find their way to an individual company or individual.

Windfall Tax

- Windfall profits often receive a windfall tax.
- It is a tax levied by governments against certain industries when economic conditions allow those industries to experience significantly above-average profits.

FINANCIAL MARKETS

Financial Intelligence Unit Notice to Crypto Firms

The Financial Intelligence Unit India (FIU IND) issued show-cause notices to 9 offshore virtual digital asset service providers (VDA SPs).

Virtual Digital Asset Service Providers (VDA SPs):

- Virtual Asset service providers (VASPs) are entities that carry out exchanges between different forms of virtual assets or between virtual assets and fiat currencies. i.e.- **Bitfinex.**
- **In March 2023**, VDA SPs in India were brought under anti-money laundering/counter financing of terrorism regulations.
- They are mandated **to comply with PMLA 2002**, verify the identities of onboarded clients, and maintain records of their financial positions and potentially suspicious transactions.
- This obligation applies to all VDA SPs operating in India irrespective of physical presence.

Financial Intelligence Unit – India (FIU-IND)

- FIU-IND) is an **independent** body reporting directly to the **Economic Intelligence Council (EIC)** headed by the Finance Minister of India.
- It was established in 2004 as the **central national agency responsible for receiving, processing and analysing information relating to suspect financial transactions.**
- It is responsible for coordinating and strengthening efforts of national and international intelligence.
- It also undertakes investigations for pursuing the global efforts against money laundering and related crimes.

About Virtual Assets

They are distinguished from other types of digital assets as they have an **inherent value that can be "traded or transferred and used for payment or investment."** E.g. **Bitcoins, NFTs.**

Gold Exchange Traded Funds (ETFs)

- Gold Exchange Traded Funds (ETFs) saw a remarkable surge in January, attracting Rs 657 crore, marking a seven-fold increase from the previous month.
- Heightened inflation, subsequent interest rate hikes, and geopolitical uncertainties drove up demand as investors sought secure investment avenues.
- **Gold ETFs, designed to mirror domestic physical gold prices**, serve as passive investment instruments based on gold prices and invest in gold bullion. These ETFs represent physical gold in either paper or dematerialized form.
- **Each gold ETF unit corresponds to 1 gram of gold, backed by physically held gold of high purity**, blending the flexibility of stock investments with the simplicity of gold investments.

Exchange-Traded Funds (ETFs)

- ETFs, or Exchange-Traded Funds, are essentially index funds but with a key difference: **they are traded on exchanges throughout the day, similar to ordinary stocks.**
- This sets them apart from mutual funds, which are traded once a day after the market closes.
- ETFs are a type of security that comprises a collection of securities, such as stocks, bonds, or commodities, often tracking an underlying index.
- Their trading value is based on the net asset value of the underlying stocks they represent.

Momentum Investing

- Momentum Investment refers to a **style of investing** wherein investors **purchase assets** such as stocks or bonds **that are consistently rising** in price while **selling assets whose prices are falling.**
- Momentum investors buy assets with rising prices in the hope that the upward price momentum of these assets would continue, thus allowing them to sell these assets at higher prices in the future to make profits.
- It is based on the philosophy that there can be discernible trends in asset prices and that these trends tend to persist over time.
- Momentum investors generally **do not conduct a deep analysis** of the fundamental or intrinsic value of the assets in which they invest their money.
- The **“buy high, sell higher”** philosophy of momentum investing is in stark contrast to the traditional **“buy low, sell high”** advice given to investors.

Credit Information Companies

RBI has mandated Central Industrial Credit Corporations (CICs) to establish a compensation framework for delayed credit information updates or rectification, requiring CICs to compensate complainants if the issue cannot be resolved within 30 days.

About Credit Information Companies (CICs)

- CICs collect public data, credit transactions and payment histories of individuals and companies regarding loans and credit cards, among others.
- Their primary function is to **gather data from various sources**, such as banks, financial institutions, lenders, and other credit-granting entities, and then **compile this data into credit reports.**
- Banks, non-banking financial institutions refer to the CIC's report and score to decide borrowers' creditworthiness before granting a loan or issuing a credit card.

Credit Information Companies Regulation Act, 2005 (CICRA)

- India's Credit Information Companies (CICs) are licensed by the RBI and governed by the Credit Information Companies Regulation Act, 2005 (CICRA). Section 15 of CICRA mandates that every credit institution, like banks, must be a member of at least one CIC.
- CICs can only obtain information from its members, meaning banks can only access information from other institutions.
- At present, four credit information companies are given certificates of registration by the RBI: Credit Information Bureau (India) Limited (CIBIL), Equifax, Experian and CRIF High Mark.

Direct Listing

- The Companies (Amendment) Act 2020, specifically Section 5, has been officially notified by the Ministry of Corporate Affairs, allowing for **direct listing of certain classes of unlisted companies to issue securities directly on foreign stock exchanges.**
- This change provides Indian companies with an additional avenue for international fundraising and expansion, allowing them to access overseas equity markets more effectively through GIFT-IFSC's India International Exchange and NSE International Exchange.

- Direct listing is a process where a **privately held company becomes publicly traded on a stock exchange by allowing its existing shares to be traded without issuing new shares.**
- This allows existing shareholders, including employees, founders, and early investors, to sell their shares to the public, providing liquidity without the need for traditional underwriters or intermediaries.
- **Direct listings bypass the initial public offering (IPO) step,** allowing the company's shares to be bought and sold **without an underwriting process** or associated fees.
- **Benefits:** Greater Flexibility for Shareholders, Cost Savings, and Increased Transparency.
- **Challenges:** Potential Stock Price Volatility and Limited Control over the Initial Trading Process.

Direct Listing of Securities by Public Indian Companies

The Ministry of Corporate Affairs (MCA) and the Ministry of Finance have recently issued notification in 2024.

This move facilitates **Indian public companies to list their equity shares** on eligible international stock exchanges located in the Gujarat International Finance Tec-City - International Financial Services Centre (GIFT-IFSC).

Microfinance in India

- A report by Microfinance Industry Network (MFIN), an association of Non-Bank Finance Company Micro Finance Institutions (NBFC-MFIs), revealed that NBFC-MFIs followed by banks are the largest providers of micro-credit.
- The report also revealed a decrease in MFIs' gross Non-Performing Assets (NPA) from 5.6% to 2.7% in FY23, and a decrease in the share of East and Northeast states from 37.7% to 34.9%.
- **Micro finance is a financial service that offers small value loans to households, businesses, and entrepreneurs without formal banking access.** It is a sustainable tool for financial inclusion, enabling the poor and marginalized to achieve social equity and empowerment.
- The Reserve Bank of India (RBI) is the regulatory body for Micro Finance Institutions (MFIs) operating in the country.
- **Government Measures for Development of Micro Finance Sector**
 - **India Micro Finance Equity Fund** was created in FY 2012 to support smaller, socially oriented microfinance institutions (MFIs) in underserved areas.
 - **Pradhan Mantri MUDRA Yojana** was launched in 2015 to facilitate credit flow to small businesses. It offers loans up to Rs. 10 lakh without collateral, through partner institutions.
 - **E-Shakti initiative** aims to enhance Micro Finance by mapping existing SHGs and uploading financial and non-financial information on a dedicated website.

Investor Risk Reduction Access (IRRA) Platform

- The Securities and Exchange Board of India (SEBI) has launched the Investor Risk Reduction Access (IRRA) platform **to provide a safety net for investors in case of technical glitches** faced by trading members or stock brokers.
- The platform aims to reduce risks faced by investors in the event of **technical glitches at the trading member's end at both the primary site and disaster recovery site.**
- It allows investors to square off/close open positions and cancel pending orders in case of technical glitches or unforeseen outages that render the trading member's site inaccessible.
- **IRRA was jointly developed by all stock exchanges,** including BSE, NSE, National Commodity and Derivatives Exchange (NCDEX), Multi Commodity Exchange (MCX), and Metropolitan Stock Exchange of India.

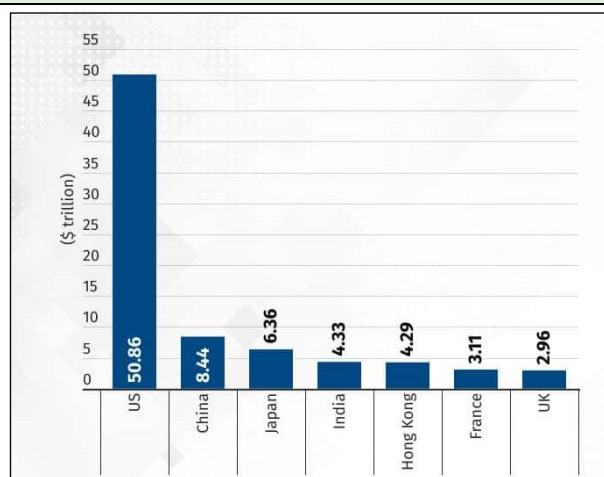
Securities Appellate Tribunal (SAT)

- The absence of a full bench is causing disruptions and delays in the functioning of the Securities Appellate Tribunal (SAT).

Securities Appellate Tribunal (SAT)	
Type	Statutory Body
Establishment	Established under the Securities and Exchange Board of India (SEBI) Act, 1992
Jurisdiction	Adjudicates appeals against orders issued by regulatory bodies including – SEBI , Pension Fund Regulatory and Development Authority (PFRDA), and Insurance Regulatory and Development Authority of India (IRDAI)
Location	Mumbai
Appointment of Members	<ul style="list-style-type: none"> • Presiding Officer and Judicial Members: Appointed by the Central Government in consultation with the Chief Justice of India or his nominee • Technical Members: Appointed based on recommendations from a Search-cum-Selection Committee

India Becomes Fourth-Largest Stock Market

- India has **surpassed Hong Kong** to secure the position of the world's fourth-largest stock market.
- According to data compiled by Bloomberg on January 22, 2024, the total value of shares listed on Indian exchanges reached USD 4.33 trillion, slightly edging out Hong Kong's USD 4.29 trillion.
- **The top three stock markets globally are the US, China, and Japan.**
- In the stock market, investors, both individual and institutional, engage in trading various securities such as stocks, bonds, Exchange Traded Funds (ETFs), and derivatives.
- Stock markets consist of two main types: the **primary market**, where new shares and bonds are offered for the first time, and the **secondary market**, where existing securities like equities and bonds are traded. Examples of stock exchanges include the Bombay Stock Exchange, National Stock Exchange.



SCORES 2.0 by SEBI

- SEBI recently launched the new version of the SEBI Complaint Redress System (SCORES 2.0).
- SCORES 2.0 will feature **reduced and uniform timelines for redressal of investor complaints**, which is **21 calendar days** from the date of receipt of the complaint.
- An **auto-routing of complaints to the concerned regulated entity** will be facilitated to eliminate time lapses, if any, in the flow of complaints. Designated bodies will have to monitor the timely redressal of investors' complaints.
- There will be **two levels of review**.
 - The **first review** will be by the '**designated body**' if the investor is dissatisfied with the resolution provided by the concerned regulated entity.
 - The **second review** will be by **SEBI** if the investor is still dissatisfied after the first review.
- If there is non-adherence to the prescribed timelines by the regulated entity, then there would be auto-escalation of the complaint to the next level.
- SCORES 2.0 will be **integrated with the KYC Registration Agency database** for easy registration of the investor on SCORES.

(Please refer to Prelims Quick Revision Part 1 for detailed note on SEBI and SCORES)

Electronic Trading Platforms

- These are **electronic systems**, other than a recognised stock exchange, **on which transactions in eligible instruments like securities, money market instruments, foreign exchange instruments, derivatives, etc. are contracted.**
- In India **no entity shall operate an ETP without obtaining prior authorisation of RBI** under The Electronic Trading Platforms (Reserve Bank) Directions, 2018.
- Resident persons operating ETPs without authorisation from RBI, collecting and remitting payments directly/indirectly outside India shall render themselves liable for penal action, including the Foreign Exchange Management Act, 1999 and the Prevention of Money Laundering Act, 2002.

Criteria for authorization of ETPs

- The entity shall be a **company** incorporated in India.
- An entity seeking authorisation as an ETP operator shall maintain a **minimum net-worth of Rs.5 crore** and shall continue to maintain the minimum net-worth.

MISCELLANEOUS

Guidelines on State Guarantees on Borrowings

- A report addressing issues related to guarantees extended by State governments has been submitted by a working group formed by the RBI.

About Guarantees

- In legal terms, a '**guarantee**' entails a **state's commitment to make payments and safeguard an investor or lender from the risk of default by a borrower.**
- According to the Indian Contracts Act (1872), '**guarantee**' constitutes a contract to fulfil the promise or discharge the liability of a third party in case of their default.
- This contract involves three parties: the principal debtor, creditor, and surety.
 - The **creditor is the entity to whom the guarantee is provided.**
 - The **principal debtor is the defaulting entity** on whose behalf the guarantee is issued.
 - The **entity offering the guarantee** (State governments in this context) is termed the surety.
 - For instance, if party A provides goods or services to party B who fails to make the agreed-upon payment, party B is considered to be in default and may be liable to be sued for the debt. In such a scenario, party C steps in and pledges to fulfilled party B's obligation. This constitutes a guarantee.
- **Purposes of guarantees at the State level:**
 - **Facilitating concessional loans** from bilateral or multilateral agencies to public sector enterprises, where a sovereign guarantee is required.
 - **Enhancing the viability of projects** or activities that offer significant social and economic benefits.
 - **Assisting public sector enterprises in securing resources** at lower interest rates or under more favorable terms.

Household Consumption Expenditure Survey 2022-23

- The **Ministry of Statistics and Programme Implementation released** data on household consumption expenditure for the year 2022-23.
- The data indicates that per capita monthly household expenditure increased by over twofold in 2022-23 compared to 2011-12, with food spending decreasing in both rural and urban households over the past two decades.

About Consumer Expenditure Survey (CES)

Engel Curve Hypothesis

- Named after the 19th-century German statistician Ernst Engel.
- The Engel Curve hypothesis suggests that **as household incomes increase, the proportion of income spent on food decreases.**

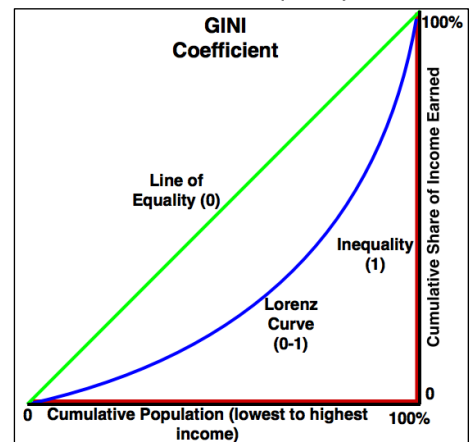
- The CES, **typically conducted every five years** by National Sample Survey Office (NSSO) serves as a comprehensive assessment of household consumption patterns nationwide, encompassing both urban and rural areas.
- This survey **collects data on household spending on goods** (including food and non-food items) and services.
- By analyzing this information, the survey generates **estimates of household Monthly Per Capita Consumer Expenditure (MPCE)** and the distribution of households and individuals across various MPCE classes.
- The last consumer expenditure survey was conducted during the 68th round (July 2011 to June 2012).
- Recently, the government released the data from the All-India Household Consumption Expenditure Survey, which was conducted between August 2022 and July 2023.

Income Inequality

- According to a recent report by the **State Bank of India (SBI)**, India has witnessed a **significant fall in inequality** over the last decade.
- Examining taxpayer data, the report claims that the **Gini coefficient has fallen from 0.472 in 2014-15 to 0.402 in 2022-23**. A fall of almost 15% in the Gini coefficient indicates a significant reduction in inequality.

About Gini Coefficient

- The Gini coefficient (Gini index or Gini ratio) is a statistical measure of economic inequality in a population.
- It measures the distribution of income or wealth among the members of a population.
- The co-efficient ranges from 0 to 1, with 0 representing perfect equality and 1 representing perfect inequality.
- Thus, a **higher Gini coefficient** indicates **greater inequality**, with high-income individuals receiving much larger percentages of the population's total income.
- Values greater than 1 are theoretically possible due to negative income or wealth.



Sangam: Digital Twin Initiative

- The Department of Telecommunications (**DoT**) has launched the '**Sangam: Digital Twin**' initiative, calling for Expressions of Interest from various sectors.
- **Digital Twin technology involves creating a virtual replica or simulation of a physical object or system.**
 - **This digital counterpart mirrors the physical entity in real-time or near-real-time, allowing for monitoring, analysis, and simulation.**
- The initiative **aims to demonstrate practical implementation of innovative infrastructure planning solutions**, to develop a model framework for facilitating faster and more effective collaboration.
- The initiative follows a two-stage Proof of Concept (PoC) process:
 - The first stage focuses on creative exploration.
 - The second stage demonstrates specific use cases, paving the way for scalability and replication in future infrastructure projects.
 - A PoC demonstrates product feasibility and provides a compelling business case for adoption.
- The initiative leverages advancements in communication, computation, and sensing, integrating 5G, IoT, AI, AR/VR, AI native 6G, Digital Twin, and next-gen computational technologies.

Inauguration of Skill India Centre in Sambalpur, Odisha

- The Ministry of Skill Development & Entrepreneurship recently unveiled the first Skill India Centre (SIC) in Sambalpur, Odisha.

- Each **SIC** aims to target sectors with high economic growth potential, addressing specific skill gaps to foster regional development and sustainable employment.
- This initiative intentions to **provide access to new-age and future skills**, typically costly in global markets, thus democratizing quality education and ensuring equal opportunities for youth.
- The SIC will empower a vast number of young individuals with sought-after skills in industries like Media & Entertainment, Leather, Tourism & Hospitality, and IT-ITeS, facilitating an industry-ready workforce, promoting entrepreneurship, and fortifying the skilling ecosystem.

India Employment Report 2024

- The **International Labour Organisation (ILO)** and the **Institute of Human Development (IHD)** have jointly published a report titled “India Employment Report 2024”.
 - IHD was established in the year 1998 under the aegis of the **Indian Society of Labour Economics (ISLE)**. It undertakes **research in the areas of labour and employment**, livelihood, gender, health, education and other aspects of human development.

Employment Trends & Current Scenario:

- **Female labor market participation**, after a significant decline, **saw a faster upward trend** from 2019, especially in rural areas.
- **Self-employment and casual employment dominate** the employment landscape in India.
- **Approximately 82% of the workforce is engaged in the informal sector**, within this nearly 90% are informally employed.
- While casual labourer wages saw a modest increase during 2012–22, real wages for regular workers either stagnated or declined.
- By 2030, **India is projected to have a migration rate of around 40%** and an urban population of approximately 607 million.

Vocal for Local initiative

- **NITI Aayog** has launched the ‘Vocal for Local’ initiative as part of the Aspirational Blocks Programme. The initiative aims to bolster local economies and promote grassroots entrepreneurship.
- It is being **implemented in partnership with Government e-Marketplace (GeM) and Open Network for Digital Commerce (ONDC) platforms**.
- GeM and ONDC will provide technical and operational support for e-commerce onboarding, establishing linkages, enhancing financial and digital literacy, facilitating documentation and certification, and promoting skill development
- As a part of this initiative, indigenous local products from 500 Aspirational Blocks have been mapped and consolidated under **Aakanksha**.

Aakanksha

- Akansha, an umbrella brand, has the potential to expand into multiple sub-brands, creating an international market.
- To promote these products, a dedicated window named 'Aakanksha' has been established under the Aspirational Blocks Programme on the GeM portal.
- This initiative aims to foster a conducive ecosystem for local businesses, ushering in economic empowerment and self-sufficiency.

Government e-Marketplace (GeM)

- Launched in 2016, Government e-Marketplace (GeM) is a contactless, paperless, and cashless online marketplace designed to enhance transparency, efficiency, and speed in public procurement.

Aspirational Blocks Programme (ABP)

1 Launched in 2023, ABP focuses on improving governance to enhance the quality of life of citizens in the most difficult and relatively underdeveloped blocks of India.

2 500 blocks from 329 districts across 27 states & 4 UTs are part of the programme.

3 The programme strategy is based on convergence of existing schemes, defining outcomes, and monitoring them on a constant basis.

- It serves as a one-stop portal for various government departments, organizations, and PSUs to procure common use goods and services.
- GeM offers tools such as e-bidding, reverse e-auction, and demand aggregation to ensure government users achieve the best value for their money.
- The platform is owned by Gem Special Purpose Vehicle (SPV), a 100% government-owned non-profit company under the Ministry of Commerce and Industries.

WEIDE Fund

- The **World Trade Organization (WTO) and the International Trade Centre (ITC)** has launched a USD 50 million “**Women Exporters in the Digital Economy (WEIDE)**” fund.
 - The **International Trade Centre’s (ITC) is the joint agency of the WTO and the United Nations**. Its mission is to foster sustainable economic development and contribute to achieving the SDGs in developing countries.
- The fund will **help women-led businesses and women entrepreneurs in developing economies and least-developed countries**, adopt digital technologies and expand the online presence of their enterprises.
- The **United Arab Emirates** has allocated **USD 5 million to the fund as its first donor**.



CAROTAR Rules

- Thailand has objected to India’s **custom regulations** implemented as CAROTAR 2020.
- The regulation, CAROTAR, is aimed at **strictly verifying the rules of origin under the free trade agreements (FTAs)** to guard against misuse of benefits.

CAROTAR 2020

- **Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020** aims to supplement the certification procedures related to implementing the Rules of Origin as prescribed under the respective Trade agreements (FTA/PTA/CECA/CEPA).
- An importer must do **due diligence** before importing the goods to ensure they meet the prescribed **rules of origin** provisions.
- A list of minimum information the importer must possess has also been provided in the rules, along with general guidance.
- Also, an importer will have to enter specific origin-related information in the Bill of Entry, as available in the Certificate of Origin.

Rules of Origin (ROO) Norms

- ROO norms **specify the minimum level of processing that must occur in the FTA country** for the final product to be considered **originating goods in that country**.
- This provision serves to safeguard against unfair trade practices and ensures that goods traded under FTAs genuinely benefit the participating countries.

International Competition Network (ICN)

- Recently, the Competition Commission of India (CCI) has become a part of the prestigious 18-member steering committee of the International Competition Network (ICN).
- This membership will be valid for 2 years.

International Competition Network (ICN)

- The idea for the ICN originated from **recommendations put forth by the International Competition Policy Advisory Committee (ICPAC)**, which was established in 1997.
- In October 2001, officials from 15 competition agencies worldwide came together to establish the ICN.
- At the helm of the ICN is its **steering committee**, serving as the apex body. During odd-numbered years at the ICN Annual Conference, the Steering Group members elect a Chair from among the representatives.

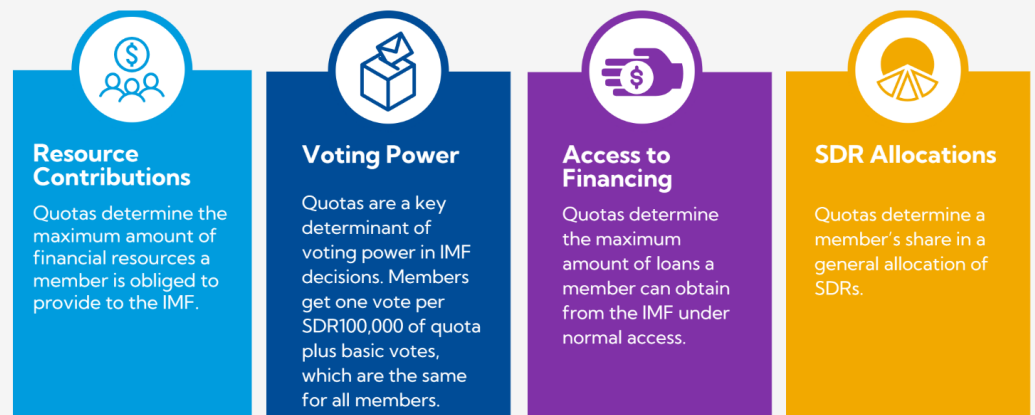
- **Comprising 140 competition agencies**, the ICN offers antitrust authorities a specialized and informal platform for regular communication and addressing practical competition concerns.
- The ICN stands as the **sole global body exclusively dedicated to competition law enforcement, representing both national and multinational competition authorities.**
- Notably, the ICN **operates without a formal Secretariat** or physical premises.

Competition Commission of India (CCI)	
Establishment	In March 2009 as a Statutory Body under the Competition Act, 2002
Goal	To create and sustain fair competition in the economy for a 'level playing field' and consumer welfare
Composition	Quasi-judicial body with one chairperson and six additional members
Appointment	All members appointed by the Central Government
Headquarters	New Delhi

Increase in IMF Quota

- The IMF Executive Board has **approved a 50% quota increase** to provide critical resources to developing nations, emphasizing fair representation and safeguarding the poorest members' shares.

How does the IMF use quotas?



- The proposal aims to strengthen global financial stability, minimize reliance on borrowed resources, and preserve the IMF's robust, quota-based, and adequately funded structure within the Global Financial Safety Net.

IMF Quotas

- Quotas are the building blocks of the IMF's financial and governance structure.
- An individual member country's quota broadly reflects its relative position in the world economy.
- Quotas are denominated in **Special Drawing Rights (SDRs)**, the IMF's unit of account.
- The **IMF's Board of Governors conducts general quota reviews every five years**, focusing on the size of an overall quota increase and its distribution among members.
- **Changes in quotas require approval from 85% of the total voting power**, and a member's quota cannot be changed without consent.

IMF Quota Formula

50%	GDP
30%	Openness
15%	Economic Variability
5%	International Reserves

The Quota Formula

The current IMF quota formula is a complex calculation agreed in 2008.

National Startup Advisory Council	
Constituted by	Department for Promotion of Industry and Internal Trade (DPIIT) under the Union Ministry of Commerce and Industry
Objective	To advise the Government on measures needed to build a strong ecosystem for nurturing innovation and startups in the country, aiming to drive sustainable economic growth and generate large-scale employment opportunities.
Composition of the Council	<ul style="list-style-type: none"> • Chairman: Minister for Commerce & Industry. • Ex-officio Members: Nominees of concerned Ministries/Departments/Organizations not below the rank of Joint Secretary • Non-official Members: Representatives from various stakeholders such as founders of successful startups and veterans
Role and Contributions	<ul style="list-style-type: none"> • Playing a pivotal role in identifying areas of intervention for the expansion of the startup ecosystem. • Ideating and nurturing national programs under the Startup India initiative.
Start-up India Initiative	<ul style="list-style-type: none"> • A flagship initiative of the Government of India, launched in 2016. • Aims to catalyze the startup culture and build a strong and inclusive ecosystem for innovation and entrepreneurship in India.
Programs ideated and incubated by NSAC	<ul style="list-style-type: none"> • Mentorship, Advisory, Assistance, Resilience and Growth (MAARG) portal • National Mentorship Program • Adoption of NavIC Grand Challenge • Startup Champions 2.0

Launch of Reference Gasoline and Diesel Fuels by Indian Oil

- Recently, the Union Minister of Petroleum & Natural Gas inaugurated the production of 'Reference Gasoline and Diesel Fuels' by **Indian Oil, marking the first of its kind in India.**

About Reference Fuels

- **Purpose:** Reference fuels, both Gasoline and Diesel, are **premium products crucial for calibrating and testing vehicles by automobile OEMs and certification organizations.**
- **Usage:** These fuels are **utilized for vehicle calibration and testing** by automobile manufacturers and testing agencies like ICAT and ARAI.
- **Availability:**
 - Reference Gasoline fuels, including various ethanol blends, are produced at the Paradip Refinery.
 - Reference Diesel fuel (B7 grade) is produced at the Panipat Refinery.
- **Benefits:** Presently, India relies on imported reference fuels from other countries to meet its demand. Indian Oil's domestically developed reference fuels meet Automotive Industry Standard (AIS) specifications, substituting imports while offering better prices and reduced lead times.

Significance of Reference Fuels

- Reference fuels are essential for automobile manufacturers to develop engines and **evaluate vehicle performance across diverse climatic conditions.**
- Currently, India imports reference fuels from specific companies in Europe and the US to fulfil its requirements.

Inclusive Access to Advanced AI

- The **AI Governance Alliance (AIGA), initiated in 2023 by the World Economic Forum (WEF),** advocates for **global collaboration to ensure inclusive access to advanced Artificial Intelligence (AI).**
- AIGA's primary objective is to expedite the establishment of **ethical guidelines and governance structures specifically tailored for Generative AI.**
 - Generative AI represents a **category of AI technology capable of generating diverse forms of content,** spanning text, imagery, audio, and synthetic data.

World Economic Forum (WEF)

About	International NGO founded by Klaus Schwab in 1971
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Headquarters	Cologny- Geneva, Switzerland	
Activities	<ul style="list-style-type: none"> • Holds meetings (e.g., Annual meeting in Davos, Annual Meeting of the New Champions (also called Summer Davos)) • Conducts research and publishes reports • Develops initiatives to address global challenges • Provides platforms for collaboration between public and private sectors 	
Reports	<ul style="list-style-type: none"> • Global Competitiveness Report • Global Information Technology Report • Global Gender Gap Report • Global Risks Report 	<ul style="list-style-type: none"> • Global Travel and Tourism Report • Financial Development Report • Global Enabling Trade Report

Point of Presence (PoP) Regulations for NPS Subscribers

- The Point of Presence (PoP) Regulations 2023, recently notified by the **Pension Fund Regulatory and Development Authority (PFRDA)**, aim to streamline the registration process for the **National Pension System (NPS)**.
- This regulation **enables both banks and non-banking entities to act as Points of Presence (PoPs)**, facilitating individuals in joining the NPS.
- Under this, individuals now only need a **single registration for NPS**. Moreover, they can manage their NPS accounts through a single branch with a broader digital footprint, simplifying the operational process.

National Pension System

- The NPS is a **retirement benefit scheme** introduced by the Indian government to provide regular income post-retirement.
- Launched in 2004, it initially targeted government recruits, but since May 2009, it has been available to all citizens, including unorganised sector workers, on a voluntary basis.
- Investing in an NPS account is possible at any time. There is no defined benefit that would be available at the time of exit from the system, and the accumulated wealth depends on the contributions made and the income generated from the investment of such wealth.
- **PFRDA (Pension Fund Regulatory and Development Authority)** is the governing body for NPS.
 - The PFRDA Act, passed on September 19, 2013, regulates NPS, subscribed by employees of the Indian government, state governments, private institutions, and unorganized sectors.
 - Its objective is to promote old-age income security by establishing, developing, and regulating pension funds to protect subscribers' interests and related matters.

Global Hydrogen Trading Mechanism

- **Indian Gas Exchange (IGX)**, India's sole gas exchange, and **Gujarat State Petroleum Corporation (GSPC)** have signed a Memorandum of Understanding (MoU) to establish a **Global Hydrogen Trading Market (GHTM)** in partnership with **IFSC-GIFT City in Gandhinagar, Gujarat**.
- The initiative **aims to create a global hydrogen price index** for India's green hydrogen market, and establish a pioneering Global Hydrogen Trading Mechanism, establishing GIFT City as a leader in global green hydrogen.
- The mechanism is expected to enhance transparency, boost investor confidence, and facilitate the growth of the green hydrogen market.

National Creators Awards

- The Indian Government Launched First-Ever National Creators Award.
- The award aims to honor the diverse voices and talents that contribute to India's growth and cultural landscape within the Digital Creator Economy, fostering positive social change.

The **Digital Creator Economy** includes individuals who generate content, products, or services and monetize them through digital platforms.

National Creators Awards:

- They include a broad **range of categories recognizing excellence and impact** across various sectors such as storytelling, advocacy for social change, environmental sustainability, education, and more.
- **Selection Process:** A blend of jury evaluations and public participation.
- **Led by: MyGov India.**
- **Eligibility Criteria:**
 - **Age Requirement:** Participants must be 18 years of age or above at the time of nomination.
 - **Nationality and Residency:** 19 categories are open exclusively to individuals of Indian nationality. One category is dedicated to international digital creators.
 - **Platforms:** Content must be published on one or more of the following digital platforms: Instagram, YouTube, Twitter, LinkedIn, or Facebook.
 - **Language:** Content submission can be in English or any other Indian language.
 - **Nomination Limits:** Creators can self-nominate in a maximum of three categories. Those nominating others can nominate in all 20 categories.

Solar Power Scheme for PVTGs Habitations

- The President has approved the implementation of a **new solar power scheme for Particularly Vulnerable Tribal Groups (PVTGs) Habitations/Villages**, launched under the Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (**PM JANMAN**).

Components	<ol style="list-style-type: none">1. Electrification of 1 Lakh PVTG households (HHs) through Off-grid solar power, including Solar Home Lighting Systems (SHLS) and Solar Mini-grids.2. Solarization of multi-purpose centers (MPCs) by installing Off-grid Solar power packs with battery banks.
Implementing Agency	Respective DISCOMs in PVTG areas
Timeline	2023-24 to 2025-26
Monitoring	Ministry of New and Renewable Energy (MNRE) and Ministry of Tribal Affairs (MoTA)
Grievance Redress Mechanism	Vendors shall operationalize a helpline number in the local language or the language of the PVTG area.

Funding Winter

- Funding winter describes a **period of market correction in which capital inflow reduces leading to lowering startup valuations in the short to mid-term**.
- This makes it challenging for founders to secure funding and attain high valuations. Investors tend to avoid firms lacking a clear path to profitability, necessitating a reassessment of startup value.
- During funding winter, startups focus on conserving working capital, minimizing expenses such as advertising, capital expenditures, and expansion plans. Priority shifts towards maximizing profitability, with only essential expenditures undertaken.
- This **cyclical phenomenon** is influenced by various factors, including geopolitical unrest, monetary policies, and sector-specific issues.
- The **duration of funding winter is unpredictable** and can last depending on multiple factors affecting market investments.

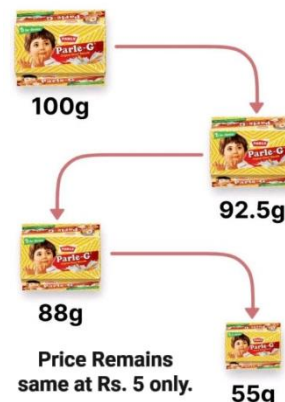
CDP-SURAKSHA

- The Government of India has come up with a new digital platform called CDP-SURAKSHA to disburse subsidies to horticulture farmers under the Cluster Development Programme (CDP).

About CDP-SURAKSHA	
SURAKSHA stands for	System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance
Purpose	The platform facilitates the disbursement of subsidies to horticulture farmers under the Cluster Development Programme (CDP)
Subsidy Disbursement	Utilizes the e-RUPI voucher from the National Payments Corporation of India (NPCI) for instant subsidy disbursement to farmers' bank accounts
Features	Database integration with PM-KISAN, cloud-based server space from NIC, UIDAI validation, e-RUPI integration, local government directory (LGD), content management system, geotagging, and geo-fencing
Users	Farmers, vendors, implementing agencies (IA), cluster development agencies (CDAs), and officials of the National Horticulture Board (NHB)
Farmer Interaction	Farmers can log in using their mobile number, place orders for planting material, contribute their share of the cost, receive government subsidy, generate e-RUPI voucher, and verify delivery of ordered material through geo-tagged media
Vendor Interaction	Vendors receive e-RUPI vouchers, provide planting material to farmers, upload invoices for payment on the portal
Payment Verification	IA verifies delivery and payment documents before releasing subsidies to vendors
What is e-RUPI?	<ul style="list-style-type: none"> ○ A one-time payment mechanism that can be redeemed without a card, digital payments app, or internet banking access. ○ It is shared with beneficiaries via SMS or QR code for specific purposes or activities.

Shrinkflation

- It occurs when goods shrink in size but consumers pay the same price. It occurs when manufacturers downsize products to offset higher production costs but keep retail prices the same.
- It is basically a form of **hidden inflation**.
- Instead of increasing the price of a product, **producers reduce the size of the product while maintaining the same price.**
- The absolute price of the product doesn't go **up**, but the **price per unit of weight or volume has increased.**
- The reasons for shrinkflation are **rising production costs and market competition.**



ENVIRONMENT AND GEOGRAPHY

CLIMATE

IISc Study: Impact of Climate Change on Montane Bird Species

- Researchers at the **Indian Institute of Science (IISc.)** in **Bengaluru** have found that logging and climate change pose a threat to montane birds.
- The IISc team collected data from the **Eaglenest Wildlife Sanctuary** in **Arunachal Pradesh**.

Findings of the Study:

- **Climate change** induced temperature rise causing many bird species to shift their ranges to higher elevations in search of cooler habitats.
- **Logging** is destroying montane forests, shrinking the available habitat for birds.
- **Understory insectivores** (birds that feed on insects found in the lower levels of the forest) are particularly vulnerable to both climate change and habitat loss.
- **Smaller bird species** seem to be better adapted to the warmer temperatures of logged forests, In contrast, the density of larger bird species appears to be increasing in primary forests.

Eaglenest Wildlife Sanctuary

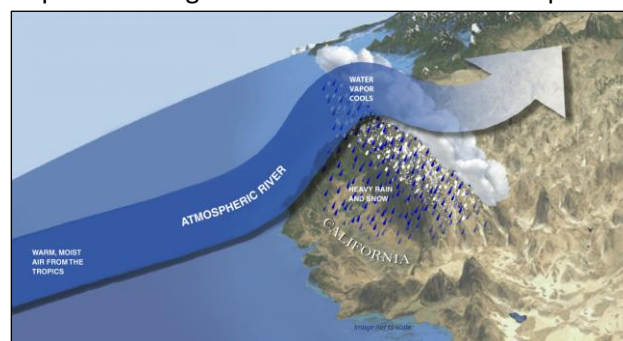
Location	Part of the Kameng Elephant Reserve, which is the largest contiguous protected area in Arunachal Pradesh.
Altitude	Altitude ranges from 500 meters to 3,250 meters.
Habitat	Encompasses subtropical broadleaved forest, temperate forest, bamboo forest, coniferous forest, and scrubland.
Fauna	Home to over 500 species of birds, including the Blyth's Tragopan, Temminck's Tragopan, Rufous-necked Hornbill, Ward's Trogon, and White-browed Shortwing.
Facts	A biodiversity hotspot and a birder's paradise

Atmospheric Rivers

- Recently, certain parts of the US, notably California, have experienced significant rainfall due to Atmospheric Rivers.

About Atmospheric Rivers

- Atmospheric Rivers are **similar to tropical or moisture plumes, resembling water vapor surges or cloud bands**.
- They are **elongated corridors in the atmosphere**, often stretching thousands of miles in length and hundreds of miles wide, **functioning like rivers in the sky**.
- These phenomena **transport immense amounts of moisture, comparable to the flow of the Amazon River**.
- E.g. **Pineapple Express**, a strong atmospheric river channeling moisture from the tropical Pacific around Hawaii to the US and Canadian West Coasts.



Formation

- Atmospheric rivers **originate over warm tropical oceans**, where solar heat evaporates substantial water vapor into the atmosphere, **leading to cloud formation**.
- The **Earth's rotation causes the Coriolis force**, deflecting these air masses poleward and shaping them into long, narrow bands known as atmospheric rivers.

Impacts of Atmospheric Rivers	
Moisture Redistribution	Responsible for 90% of moisture movement from tropics to poles. Influences cloud formation and various climate components such as air temperatures and sea ice.
Heavy Rain	Atmospheric rivers can result in intense rainfall. This can lead to flooding, landslides, and other hazards.
Snowfall	In colder regions, atmospheric rivers contribute to heavy snowfall. Beneficial for water resources but may disrupt transportation and infrastructure.
Strong Winds	Atmospheric rivers may bring strong winds. Potential to cause damage to trees, power lines, and buildings.

Green Fuels Alliance India (GFAI)

- **Denmark** has launched an initiative **with India**, called Green Fuels Alliance India (GFAI).

About GFAI:

- It is a key initiative **under the Green Strategic Partnership (GSP)** signed **between India and Denmark** in 2020 **to achieve sustainable energy solutions** sector and advance their joint global goal towards carbon neutrality.
- It **aligns with** India's ambitious target of achieving **net-zero emissions by 2070**.
- It aims to support the development of a **green hydrogen ecosystem** in India, including production, storage, and transportation infrastructure.

About Global Biofuels Alliance (GBA):

- **GBA** is made up of **19 countries** and **12 international organizations**, including the World Economic Forum, the World Bank, and the Asian Development Bank.
- **India first proposed the GBA** at the India Energy Week in **February 2023** and **launched the GBA at the G20** summit in September 2023.
- The **GBA's goal** is to promote the development and adoption of sustainable biofuels and set standards and certifications.

Fifth mass Coral Bleaching event

- The World-Wide Fund for Nature (WWF)-Australia expresses profound concern over the official declaration of the 5th mass coral bleaching event on the Great Barrier Reef since 2016.
- Mass bleaching incidents on the Great Barrier Reef were initially observed in 1998 and recurred in 2002, 2016, 2017, 2020, 2022, and now in 2024.
- The declaration is supported by data from the MUR SST (Multi-scale Ultra-high Resolution Sea Surface Temperature) project, led by NASA's Jet Propulsion Laboratory (JPL).

Coral Bleaching

- Coral reefs, hosting about 25% of marine species, face a significant threat known as coral bleaching.
- **Causes of Coral Bleaching**
 - **Prolonged Heat Stress:** Rising sea temperatures, exacerbated by phenomena like El Niño, subject corals to prolonged heat stress.
 - **Other Stressors:** Factors such as pollution, ocean acidification, excessive sunlight exposure, and extreme low tides contribute to coral bleaching.
- **Mechanism of Coral Bleaching:** During coral bleaching events, corals expel symbiotic algae living within their tissues due to stress induced by warm water. This results in corals losing their vibrant colors.
- **Consequences of Coral Bleaching:** The bleaching weakens coral reefs, rendering them susceptible to diseases and eventual death. This disruption in coral ecosystems has far-reaching impacts on marine biodiversity.

Ethanol 100

- The Ministry of Petroleum has launched 'ETHANOL 100', a groundbreaking automotive fuel.

- In August 2023, the Union Minister of Road Transport and Highways unveiled the world's first Bharat Stage (BS)-VI-compliant electrified flex-fuel car by Toyota Kirloskar Motor, running on 100% ethanol (E100) for 40% of its distance and electric power for the remaining 60%.
- Ethanol 100 is **pure ethanol, devoid of gasoline or additives**. It is colourless, flammable with a distinctive odour.
- It is derived from the fermentation and distillation of plant-based materials like corn, sugarcane, or biomass sources.
- Ethanol 100 boasts a **high-octane rating, lower greenhouse gas emissions**, and potential for reducing reliance on fossil fuels.
- However, it has **lower energy density** and can be **corrosive** to certain engine components.

MethaneSAT

- MethaneSAT was launched aboard a SpaceX Falcon9 rocket from California.
- MethaneSAT is an **advanced satellite project** led by the **Environmental Defense Fund (EDF) in collaboration with the New Zealand Space Agency**.
 - **Environmental Defense Fund (EDF) is a US-based nonprofit group.**
- It **aims to monitor global methane emissions with high precision**.
- Orbiting the Earth 15 times a day, MethaneSAT focuses on the oil and gas sector and utilizes advanced spectrometer technology to detect even small methane concentrations.
- The collected data, processed with Google's technology, will be openly accessible, aiding in identifying emission sources and informing climate change mitigation efforts.

Note: Over 150 countries signed the **Global Methane Pledge in 2021** to cut collective methane emissions by at least 30% from 2020 levels by 2030.

Green Rising Initiative

- Recently, the **United Nations Children's Fund (UNICEF)'s Generation Unlimited** in collaboration with India's **Ministry of Environment, Forest, and Climate Change** unveiled the **"Green Rising" initiative** at COP28 in Dubai.

Green Rising Initiative

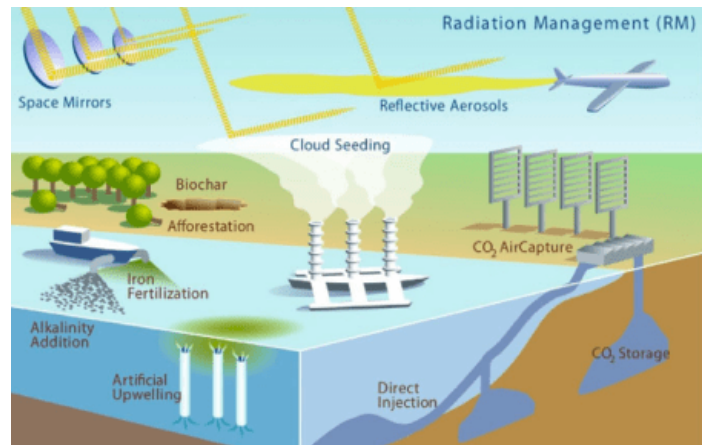
- This initiative focuses on **engaging youth for impactful environmental actions at the grassroots level**, aligning with the global effort to address the severe impacts of climate change.
- The global "Green Rising" initiative and the "Green Rising India Alliance" marks a collaborative effort involving UNICEF, Generation Unlimited, and a diverse network of public, private, and youth partners.
- The main goal is to mobilize millions of young people worldwide, encouraging their active participation in green initiatives addressing and adapting to the severe impacts of climate change on their communities.
- Through the **YuWaah campaign in India**, the focus is on engaging youth to drive impactful environmental actions at the grassroots level.

United Nations Children's Fund (UNICEF)	
Foundation	Originally founded as the United Nations International Children's Emergency Fund on December 11, 1946
Purpose	To provide emergency food and healthcare to children and mothers in countries devastated by World War II
Role	A leading source of information on the situation of children worldwide
Funding	Relies entirely on contributions from governments and private donors
Executive Board	Comprises 36 Member States, elected to three-year terms by the Economic and Social Council. Regional allocation: Africa (8 seats), Asia (7), Eastern Europe (4), Latin America and Caribbean (5), Western Europe and Others (12)

Headquarters	New York, US
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Climate Engineering

- Climate engineering is a broad category of techniques and technologies that intentionally modify the climate system to lessen the effects of climate change, **according to the Intergovernmental Panel on Climate Change (IPCC) in its Fifth Assessment Report.**
- Climate engineering, while not directly addressing the root cause of climate change, can take crucial steps to slow it down.
- It consists of **two techniques-**
 - Carbon dioxide removal (CDR)** is the process of taking out and storing carbon dioxide (CO₂) emissions from the atmosphere. CDR techniques are mostly reversible and act very slowly.
 - Solar Radiation Modification (SRM) or Solar Geoengineering**, reflects sunlight into space. Certain SRM strategies might be effective immediately, but they're probably hard to undo.



Climate Engineering Initiatives taken by India

Climate Modelling Research Program	Under the Department of Science and Technology (DST), support is provided to research in geoengineering at the Indian Institute of Science.
Major Research and Development Program (MRDP)	The DST has initiated the MRDP to comprehensively investigate the ramifications of geoengineering, with the objective of gaining profound insights into its potential impacts.
Earth System Model	Indian Institute of Tropical Meteorology is actively engaged in crafting an Earth system model tailored for conducting solar geoengineering simulations, contributing to the research efforts.

Methane Emissions

- ISRO scientists recently published a ground-breaking analysis paper on **methane emissions** across various locations in India using satellite data.
- Key points from the report:**
 - Due to its significant global warming potential, monitoring methane emissions from various sources is crucial.
 - The study utilized data from **NASA's Earth Surface Mineral Dust Source Investigation (EMIT)** and the **European Space Agency's Sentinel-5P TROPOMI**.
 - EMIT measures surface mineralogy in arid dust source regions**, while TROPOMI is a space-borne imaging spectrometer covering UV to shortwave infrared bands.
 - According to the report, **Methane emissions from municipal solid waste landfills in India have risen significantly**, with an estimated net annual emission of 1084 Gg in 2015 compared to 404 Gg in 1999-2000.
 - This increase contributes to carbon emissions, with **methane accounting for 14.43% of India's total carbon emissions**. The primary contributors to this percentage are enteric fermentation and rice cultivation areas in agriculture.

About Methane

- Methane (CH₄) is a hydrocarbon found in **natural gas and is a potent greenhouse gas (GHG)**, contributing significantly to global warming.
- It has a **short lifespan of about a decade** and a Global Warming Potential around 80 times greater than carbon dioxide (CO₂) over a 20-year period.

- Methane emissions **lead to ground-level ozone pollution**, causing numerous premature deaths globally and harming crop productivity and ecosystems.
- **Human-driven methane emissions primarily come from agriculture (40%)**, fossil fuels (35%), and solid waste and wastewater (20%).

Initiatives on Global Level	
International Methane Emissions Observatory (IMEO)	Launched by UNEP to provide open and actionable data for reducing methane emissions.
Methane Alert and Response System (MARS)	Part of IMEO, MARS is the first global satellite detection and notification system offering actionable data on large methane emissions worldwide.
Global Methane Pledge	Led by the EU and US, this initiative aims to cut methane emissions by at least 30% by 2030 from 2020 levels. India has not signed this pledge.
Oil & Gas Methane Partnership Initiative	A reporting and mitigation program by UNEP and the Climate and Clean Air Coalition (CCA) since 2014, focusing on the oil and gas sector.
Global Methane Alliance (GMA)	Launched by UNEP and CCAC, it targets significant reduction of methane emissions in the oil and gas sector by 2030.
Indian Initiatives	
National Mission on Sustainable Agriculture (NMSA)	Aims to promote sustainable agricultural practices to mitigate methane emissions and enhance productivity.
Gobar (Galvanizing Organic Bio-Agro Resources)-Dhan' scheme	Focuses on converting cattle dung and organic waste into compost, reducing methane emissions while promoting organic farming.
New National Biogas and Organic Manure Programme	Encourages the production and use of biogas as a renewable energy source while managing organic waste, thereby reducing methane emissions and promoting sustainable agriculture.

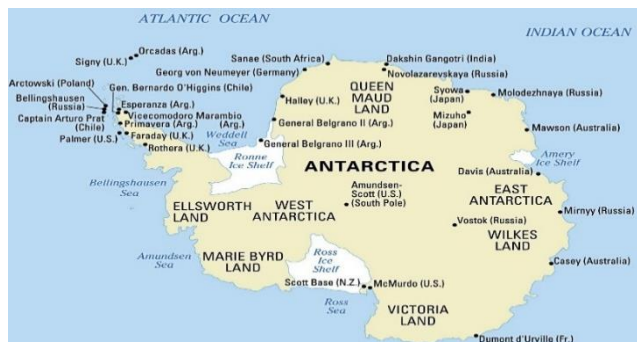
World's Largest Solar Facilities

- Recently launched **Noor Abu Dhabi of the UAE** is one of the world's largest stand-alone operational solar plants with a total capacity of 1.2 GW.

Solar Projects In India	Location	Capacity	Additional Information
Bhadla Solar Park (multiple plants)	Rajasthan	2.25 GW	Largest solar park in World as of 2023
Pavagada Solar Park	Karnataka	2 GW	Third Largest solar park in World
Ramagundam Floating Solar PV Project	Telangana	100 MW	India's largest floating solar power project, commissioned in 2022
Cochin International Airport	Kerala	12 MW	World's first solar-powered airport

Ice Melt in West Antarctica

- A new study by Nature suggests that the rapid melting of West Antarctica's ice sheet due to warm waters is unavoidable, regardless of carbon emissions reduction.
- The **Amundsen Sea**, located off West Antarctica, is controlled by ocean-driven melting of ice shelves, as per a high-resolution computer model used by the researcher.



Climate Resilient Agriculture

- The Standing Committee on Agriculture, Animal Husbandry, and Food Processing presented a report on promoting climate-resilient farming.

Climate Resilient Agriculture

- Climate resilient Agriculture **integrates adaptation, mitigation, and other strategies in agriculture to enhance the system's ability to withstand and recover from climate-related disruptions effectively.**
- It involves the **prudent and enhanced management of natural resources** such as land, water, soil, and genetic resources through the adoption of best practices.
- These practices have the potential to transform existing conditions and maintain agricultural productivity from local to global scales.

Agriculture and Climate

- The agricultural sector in India contributes approximately **14%** of the total emissions.
- GHGs such as **methane (CH₄)** and **nitrous oxide (N₂O)** are significant components of these emissions.
- The majority of GHG emissions originate from **enteric fermentation (54.6%)**, followed by rice cultivation (17.5%), fertilizer use in agricultural soils (19.1%), management of manure (6.7%), and field burning of agricultural residues (2.2%).

Climate Resilient Agriculture Initiatives in India

National Innovations in Climate Resilient Agriculture (NICRA)	Launched by Indian Council of Agricultural Research (ICAR) to develop and promote climate-resilient agricultural practices.
Per Drop More Crop	Launched under Pradhan Mantri Krishi Sinchayee Yojana to improve water use efficiency in agriculture, aiming for more crop yield with less water consumption.
The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	Aims to enhance agri-food systems and address environmental degradation, particularly in semi-arid regions.
Soil Health Mission	Aims to promote soil health management and sustainable agriculture
National Mission for Sustainable Agriculture (NMSA)	Implements the Rainfed Area Development (RAD) scheme to enhance agricultural productivity in rainfed areas, focusing on sustainable practices.
Paramparagat Krishi Vikas Yojana and Soil Health Card scheme	Launched to promote soil health management and organic farming practices through the issuance of soil health cards and support for traditional agriculture.
Food & Agriculture for Sustainable Transformation (FAST) Partnership	Introduced at COP27 to drive the transformation of agriculture and food systems towards sustainability, considering the welfare of people, climate, and nature.
Biotech-KISAN	This scheme empowers farmers, especially women farmers, to make informed decisions on their farms

Climate and Clean Air Conference 2024

- The Climate and Clean Air Conference, held in Nairobi, Kenya, was an annual meeting of the Climate and Clean Air Coalition.
- The conference aimed to discuss ways to scale up the implementation of the Global Methane Pledge, Clean Air Flagship, and Kigali Amendment.

Key outcomes of the CCAC Conference 2024 include:

- Launch of the Clean Air Flagship program** aimed at saving lives and mitigating climate change by enhancing cooperation and reducing pollutant emissions. This initiative supports governments in achieving cleaner air as quickly as possible, aligning with improved WHO air quality interim targets.

- **Introduction of the 'Used Heavy Duty Vehicles (HDVs) and the Environment' report by UNEP & the CCAC**, providing a roadmap for reducing emissions from the sector through standardization, monitoring, and greening strategies.
- **Establishment of the CCAC Technology and Economic Assessment Panel** to address barriers to scaling up climate finance by bridging the gap between technologies and finance.
- **Launch of a significant study on the cost of inaction**, supporting the economic case for addressing short-lived climate pollutants (SLCPs) to mitigate hazardous global warming and climate disasters.

Short-lived Climate Pollutants (SLCPs)

- SLCPs are a group of greenhouse gases and air pollutants that have a near-term warming impact on climate and can affect air quality.
- SLCPs include black carbon, methane, ground-level ozone, and hydrofluorocarbons (HFCs).

About Climate and Clean Air Coalition (CCAC)		
Mission	The only global alliance dedicated exclusively to the reduction of short-lived climate pollutants (SLCPs).	
Genesis	Founded in 2012 and convened within the United Nations Environment Programme (UNEP).	
Membership	Voluntary partnership of over 160 governments, intergovernmental organizations, and non-governmental organizations. India joined in 2019.	
Other Key Information	<ul style="list-style-type: none"> • Provides secretariat functions of the Global Methane Pledge (GMP) and the coordination group of the Lowering Organic Waste Methane Initiative. • The GMP, launched at COP26 by the European Union and the United States, aims to reduce global methane emissions by at least 30% from 2020 levels by 2030. 	
SLCP	Anthropogenic Sources	Lifetime in Atmosphere
Carbon Dioxide (CO₂)	Fossil Fuels, Industrial Production, Agricultural and Waste Burning	Indefinite
Black Carbon (Soot)	Fossil Fuels, Industrial Production, Agricultural and Waste Burning	4-12 days
Methane (CH₄)	Agriculture, Fossil Fuels, Landfills, Open Dumps, and Wastewater	12 years
Tropospheric Ozone (O₃)	Secondary pollutant formed by the interaction of sunlight with VOCs and NO _x	Few hours to a few weeks
Hydrofluorocarbons (HFCs)	Refrigeration, Air-Conditioning, Insulating Foams, Aerosol Propellants	15 years

India Surpassed Montreal Protocol Threshold

- According to the research, India has **surpassed the 35% HCFC** (Hydrochlorofluorocarbons) phase-out target, eliminating **HCFC 141b** and achieving a 44% reduction from the baseline in 2020.
- **HCFCs are used as refrigerants** in new equipment production and as **blowing agents in rigid polyurethane (PU) foam production.**
- India plans to phase out HCFCs in new equipment manufacturing completely by December 2024, ahead of the Montreal Protocol Schedule of 2030.

Montreal Protocol and India

- The Montreal Protocol, a global environmental treaty, was implemented under the **Vienna Convention in 1985**. It aimed to **protect the stratospheric ozone layer** by phasing out the production and consumption of ozone-depleting substances (ODS).

- The **Kigali Amendment to the Montreal Protocol** was adopted in **2016**, aiming to **phase down the production and consumption of Hydrofluorocarbons (HFCs)**.
- **India became a party to the Montreal Protocol in June 1992**. As a developing country, it is classified as an **Article 5 nation**, entitled to aid from the Multilateral Fund for phasing out ozone-depleting substances (ODS) and adopting alternatives.
- **India has successfully phased out several ODS groups** as per the Montreal Protocol schedule. This includes phasing out of Chlorofluorocarbons (CFCs), Carbon tetrachloride, Halons, Methyl Bromide, and Methyl Chloroform by 2010.
- **India is currently phasing out HCFCs** according to the Montreal Protocol's accelerated plan. Notably, India achieved the complete phase-out of HCFC-141b in the foam sector by 2020.
- The Ministry of Environment, Forest and Climate Change's Ozone Cell is responsible for implementing the Montreal Protocol in India.

About Ozone		
Ozone (O₃) is a molecule with three oxygen atoms. It exists in two key regions: the troposphere and the stratosphere.		
	Stratospheric Ozone (Good Ozone)	Tropospheric Ozone (Bad Ozone)
Location	Upper atmosphere (15-35 km above Earth's surface)	Lower atmosphere (ground level up to 10 km)
Formation	Sunlight splitting oxygen molecules (O ₂)	Chemical reactions involving pollutants like nitrogen oxides (NO _x) and volatile organic compounds (VOCs)
Major Sources	Natural processes	Car emissions, industrial processes
Benefit/Detriment	Acts as a shield against harmful UV-B radiation	Harmful air pollutant
Effects	Protects life from skin cancer, cataracts, and ecosystem damage	Irritates lungs, reduces lung function, contributes to smog, damages vegetation

Precautionary Principle

- The Precautionary Principle is a policymaking approach that encourages the **use of preventative measures to mitigate potential risks** to the public or environment.
- It states that “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent such environmental degradation.”
- This principle was first introduced in the 1970s and has been incorporated into various international treaties such as
 - European Union's Treaty on the Functioning of the North Sea.
 - Protocol on Substances that Deplete the Ozone Layer
 - 1992 Rio Declaration- United Nations Framework Convention on Climate Change
 - Convention on International Trade in Endangered Species in 1994
- It was adopted by the Food and Agriculture Organization of the United Nations in the 1995.
- The principle is a cornerstone of European Union (EU) environmental law and has been crucial in determining the EU's stance towards genetically modified organisms.

Clean Energy Transitions Programme

- Recently, the International Energy Agency (IEA) launched the Clean Energy Transitions Programme Annual Report 2023.
- Clean Energy Transitions Programme is the **IEA's flagship initiative launched in 2017 for accelerating progress toward a global net zero energy system**.

- It leverages the insights and influence of the world's leading energy authority to accelerate clean energy transitions, particularly in emerging and developing economies.
- Its goals are **in line with the objectives of the 2015 Paris Agreement and the Sustainable Development Goals** established by the United Nations.

Microplastics

- Microplastics are **minute plastic particles formed from both industrial processes and the degradation of larger plastic items.**
- They are **plastics smaller than five millimeters (0.2 inches) in diameter**, distinct from larger plastics like bottles and bags.
 - There is no universal agreement on the size for microplastics. The U.S. National Oceanic and Atmospheric Administration and the European Chemical Agency define microplastic as less than 5mm in length.
- Found in various products like cosmetics, synthetic clothing, and plastic bags.
- Comprising **carbon and hydrogen atoms in polymer chains**, microplastics also contain additional **chemicals like phthalates, polybrominated diphenyl ethers (PBDEs), and tetrabromobisphenol A (TBBPA).**
- They are categorized as primary and secondary.
 - **Primary microplastics** include **small particles from cosmetics and microfibers** from textiles like fishing nets.
 - **Secondary microplastics** form **from the degradation of larger plastic items**, like water bottles, due to environmental factors such as sunlight and ocean waves.

Science Based Targets Initiative (SBTi)

- SBTi is a **global initiative** established in 2015 that **aims to encourage and support companies to set science-based targets (SBTs) to reduce greenhouse gas emissions** and limit global warming to well below 2°C above pre-industrial levels.
- The SBTi is a **partnership between CDP, the United Nations Global Compact, the World Resources Institute (WRI) and the World-Wide Fund for Nature (WWF).**
- The SBTi **provides a framework and guidelines** for companies to set targets that are in line with the latest climate science, including the goals of the Paris Agreement.
- This involves setting targets that are consistent with limiting warming to 1.5 °C above pre-industrial levels, which is the more ambitious goal of the Paris Agreement.
- **Companies can have their targets independently verified and approved by SBTi**, ensuring they align with the latest science and the goals of the Paris Agreement.
- By setting science-based targets, **companies can demonstrate their commitment to addressing climate change and reducing their carbon footprint.**
- The SBTi distinguishes between near- and long-term goals and commitments.
 - **Near-term targets** show how organizations intend to reduce emissions over the next 5-10 years, crucial for significant progress by 2030 and a prerequisite for net zero targets.
 - **Long-term targets** indicate how organizations need to reduce their emissions to achieve net zero, according to the criteria of the SBTi Corporate Net-Zero Standard, by 2050 at the latest (2040 for the energy sector).
- The SBTi Net-Zero Standard is the world's only framework for corporate net-zero target setting in line with climate science.

BIODIVERSITY

Green Cover Index (GCI)

- The **National Highways Authority of India (NHAI)** has signed a Memorandum of Understanding (MoU) with the **National Remote Sensing Centre (NRSC)**, to develop a “**Green Cover Index**” for India’s extensive National Highways network.
- **National Remote Sensing Centre** (headquartered in **Hyderabad**) is a part of the **Indian Space Research Organization (ISRO)**.

About GCI (Allows for comparisons and rankings of different national highways):

- This project **aligns with** the Green Highways Policy implemented in 2015, prioritizing the greening of highway corridors. By **estimating green cover** for **every 1 km length of the highways**, the project generates detailed metrics for individual projects and packages.
- The project **utilizes the expertise of ISRO’s NRSC** to undertake a comprehensive, high-resolution satellite imagery-based estimation of green cover across all national highways.
- **Note:** The Mountain Green Cover Index (MGCI) is a metric that measures the amount of green vegetation in mountain areas. It is an indicator of the Sustainable Development Goals (**SDGs**) **15**.

Pantoea Tagorei

- Researchers from Visva Bharti University have Identified **Pantoea Tagorei** (a plant growth promoting bacteria) in **Jharia coal mine** soil samples. It is named after Rabindranath Tagore.

About Pantoea Tagorei:

- Efficiently **extract potassium** from the soil, making it readily available to plants.
- **Fix nitrogen**, reducing the need for synthetic fertilizers.

Tapioca Plants (Cassava)

- **Central Tuber Crops Research Institute (CTCRI)** issues advisory on using parts of tapioca plant to feed cattle in view of the incident in Idukki district of Kerala where 13 cows had died in a farm recently.

About Tapioca Plant:

- It is cultivated **throughout the tropical world** for its tuberous roots, from which cassava flour, breads and an alcoholic beverage are derived.
- Tapioca thrives in **well-drained**, warm, and humid climates.
- It grows up to **3 meters tall**.
- It is a crucial source of **carbohydrates** for millions of people, particularly in **Africa and Asia**.
- Cassava **leaves** and **peels** can be used as **animal feed** after proper processing to remove toxins.
- Its bitter varieties contain higher levels of **cyanogenic glycosides**, which can be toxic if not properly processed.

Central Tuber Crops Research Institute

- The ICAR-Central Tuber Crops Research Institute (ICAR-CTCRI) a constituent Institute under the **Indian Council of Agricultural Research (ICAR)**
- It is the **only research organization** in the World dedicated **solely to the research on tropical tuber crops**.
- The Institute established in **1963** with its **Headquarters** at **Thiruvananthapuram, Kerala**.
- The **Regional Centre** of the Institute at **Bhubaneswar**.

Wetland City Accreditation (WCA)

- Ministry of Environment, Forest, and Climate Change (MoEFCC) submits first proposals of its kind for Wetland City Accreditation under the Ramsar Convention on Wetlands for cities of **Indore, Bhopal** and **Udaipur**.

About WCA (A Voluntary Program Launched by the Ramsar Convention on Wetlands in 2015)

- It aims to promote the conservation and wise use of urban and peri-urban wetlands, as well as sustainable socio-economic benefits for local populations.
- The Accreditation seeks to encourage cities that are close to and dependent on wetlands, primarily Wetlands of International Importance.
- It acknowledges and celebrates cities that prioritize the conservation and wise use of their urban wetlands.
- **32 cities worldwide** have been awarded WCA status presently.

Sites Proposed for Respective Cities:

- **Indore:** Sirpur Wetland, Yashwant Sagar
- **Bhopal:** Bhoj Wetland, Bhopal
- **Udaipur (5 major wetlands):** Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, and Doodh Talai.



Ramsar Sites in India:

- The **Ramsar Convention**, signed in **1971** at **Ramsar, Iran**, includes India as one of its Contracting Parties. As of January 2024, the **total Ramsar sites in India are 75**.
- **Amrit Dharohar**, part of the 2023-24 budget announcement, promotes the unique conservation values of the Ramsar Sites in India.

Wetlands:

- Wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.

Invasive Species

Name (Native To)	Features & Affected Area
Lantana Camara (South America) 	<ul style="list-style-type: none"> • Introduced to India in the early 1800s for its aesthetic appeal, it has proliferated across national parks, disguising its presence with a luxuriant green facade. • It is listed as one of the world's top 10 invasive species, Lantana has now taken over crucial wild habitats in India. • Toxic to animals like horses, livestock, and pets, causing liver damage and other health problems and Difficult to control due to its vigorous growth
Senna Spectabilis (South and Central America) 	<ul style="list-style-type: none"> • Introduced as shade trees for coffee and firewood in the country, it soon became a threat to native tree species as its dense foliage prevented the growth of other indigenous trees and grass species. • Typically reaches 7-10 meters (maximum 15 meters) in height with a spreading crown. • Uses: Ornamental tree, shade tree, source of timber and firewood

Humboldt's Enigma

- Humboldt's enigma (introduced by **Alexander von Humboldt** during the **19th century**) sets a connection among **temperature, altitude, humidity, and biodiversity**.

What is Humboldt's enigma?

- Humboldt's enigma is a term that describes the observation that **mountain regions are generally more diverse than tropical regions**.
- This observation **contradicts the common belief** that the most diverse areas on Earth are the rainforests around the equator (areas are the lowland tropical forests).
- **Example:** The eastern Himalayas serve as an illustration, showcasing how differences in climate and varied geological composition contribute to the region's rich biodiversity.

Factors Responsible for Such Enigma:

- **Topography and climate:** The varied topography of mountains creates a dramatic range of microclimates with diverse temperatures, humidity, and sunlight conditions.
- **Elevational gradients:** As you climb a mountain, you essentially travel through different climate zones, from scorching tropical lowlands to icy peaks.
- **Isolation and refugia:** Mountain ranges often act as “islands” surrounded by lowland plains. This geographic isolation can lead to unique evolutionary trajectories and endemism, where species are found nowhere else.

Vulture Restaurant in Jharkhand

- A vulture restaurant to conserve declining population of vulture has been established in **Koderma**, Jharkhand.

About Vulture Restaurant

- It is a **designated area** where **non-toxic carcasses** are provided for vultures **and other scavengers**.
- It supports vulture populations by offering safe food sources, especially important due to the decline caused by diclofenac poisoning in livestock medication.
- It also protects the ecosystem by maintaining vulture populations, which play a crucial role in preventing disease spread by rapidly consuming carrion.
- The **first ‘vulture restaurant’** came up in **2015** at **Phansad Wildlife Sanctuary** in Raigad, **Maharashtra**. There are four other such restaurants in Maharashtra.

Brumation

- Brumation is a **state of reduced activity and physiological slowdown** experienced by certain **reptiles** during **colder months**. (Similar to hibernation in mammals).
- While **hibernation** is a natural process for **mammals** (warm-blooded animals which have fur or hair), **brumation** is specific to **cold-blooded animals** like reptiles (snakes, lizards, turtles) and amphibians (frogs, toads).
 - **Torpor** is a physiological state in animals characterized by a decrease in activity and metabolic rate. It is utilized by animals like **mice, bats, and hummingbirds** to survive in cold weather, allowing them to slow down naturally.

About Brumation

Purpose	Conservation of energy during environmental stress
Trigger	Decrease in environmental temperature and daylight hours
Physiological Changes	Decrease in metabolism- decrease in heart rate, respiratory rate, and overall activity
Duration and Patterns	Varies based on species and local climate conditions
Commonly Observed Species	Reptiles, primarily ectothermic (cold-blooded), including snakes, turtles, and some lizards
Emergence and Post-Dormancy Behavior	Resume normal activities gradually when environmental conditions improve

Seaweed Cultivation

- The first National Conference on the Promotion of Seaweed Cultivation was held at Koteswar, Kutch in Gujarat.

Seaweeds

- Seaweeds, the **non-flowering algae** (devoid of roots, stems, and leaves), **thrive in marine and shallow coastal waters as well as on rocky shores**.
- They are classified as chlorophyta (green), rhodophyta (red) and phaeophyta (brown) on the basis of their pigmentation.
- **Big seaweed creates kelp forests**, which are dense underwater forests

About Seaweed Cultivation

- Seaweed cultivation, also known as seaweed farming, **involves the deliberate growth and harvest of seaweed under controlled conditions**, yielding a range of products including food, fuel, and more. It has a **duration of 45-60 days**.
- Seaweed is a **renewable resource that grows quickly and does not require freshwater or land**. It can also help to improve water quality by absorbing excess nutrients.
- India has a **seaweed production potential of 10 million tonnes** (targeted to produce 1.1 million tonnes of seaweed by 2025).
- **Two main types of seaweed cultivation:**
 - **Marine (most common type):** Takes place in the ocean, either in open water or in net pens
 - **Land-based (Less common than marine type):** Takes place in tanks or ponds on land and becoming more popular because it is less susceptible to pests and diseases

Application of Seaweeds

- **Food:** Seaweed is a nutritious food that is **high in vitamins, minerals, and fiber**. It can be eaten fresh, dried, or processed into a variety of products, such as sushi, soups, and snacks.
- **Animal feed:** Seaweed can be used as a feed supplement for animals, such as fish and poultry.
- **Fuel:** Seaweed can be fermented to produce biofuels, such as ethanol and biogas.
- **Chemicals & Fertilizer:** Seaweed can be used as a fertilizer to improve soil fertility. Seaweed has the ability to reduce the effects of ocean acidification.
- **Medical:** Seaweeds are also termed as the **'Medical Food of the 21st Century'** as they are being used as laxatives, for making pharmaceutical capsules, in treatment of goiter, cancer, bone-replacement therapy and in cardiovascular surgeries.
- **Binding agent:** In many commercial items such as toothpaste and fruit jelly and is a popular softener in organic cosmetics and skin care products.

Government Initiatives to Promote Seaweed Cultivation

- **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**
 - Executed by the Department of Fisheries, PMMSY aims to enhance fish production and the income of fishers and fish farmers.
 - It adopts a "cluster or area-based approach" to develop fisheries clusters, with a focus on employment-generating activities like seaweed and ornamental fish cultivation.
- **Seaweed Mission**
 - This mission, an **initiative of Technology Information, Forecasting and Assessment Council (TIFAC)**, aims to commercialize seaweed farming and processing to add value.
 - It endeavors to expand cultivation across India's 7,500 kilometers coastline.
- **Multi-Purpose Seaweed Parks**
 - These parks are being established in coastal districts to create integrated seaweed farming ecosystems.
 - The first park has been initiated in Tamil Nadu.
- **Commercialization of Seaweed Products**
 - The **Indian Council of Agricultural Research (ICAR)-Central Marine Fisheries Research Institute (CMFRI)** has successfully commercialized two seaweed-based nutraceutical products: CadalminTM Immunalgin extract (CadalminTM IMe) CadalminTM Antihypercholesterolemic extract (CadalminTM ACe).
 - Developed with eco-friendly 'green' technology, these products aim to enhance anti-viral immunity and combat high cholesterol or dyslipidemia.

Broom Grass

- Tribal communities in Karbi Anglong and Assam, are harvesting broom grass during the cash crop harvest season, which ends in February, making **Karbi Anglong the top producer of brooms in India**.

- Broom grass, also recognized as *Andropogon glomeratus* or Jharu, is a **tall, clump-forming perennial grass native to Asia, Africa, and Europe**. This **wind-pollinated plant** disperses its seeds effortlessly through the air.
- **Perennial and Non-Perishable:** Broom grass is a perennial, high-value **non-timber forest product (NTFP)** thriving abundantly in degraded, steep, or marginal lands.
- **Botanical Characteristics:**
 - Capable of reaching heights of up to 3 meters, it bears long, narrow leaves extending up to 1 meter. Its flowers are arranged in a spike-like inflorescence atop the stem.
 - This resilient plant exhibits adaptability, thriving in diverse conditions, including poor soil and arid climates.
- **Types:** Varieties of broom grass include **Big bluestem, little bluestem, Indiangrass, and Switchgrass**.

Greening and Restoration of Wasteland with Agroforestry (GROW)

- The GROW initiative, **spearheaded by NITI Aayog, aims to enhance land use sustainability across India by emphasizing agroforestry practices**.
- The recently released **GROW report** utilizes cutting-edge remote sensing and GIS technologies to evaluate the nation's environmental endeavors and sustainable land utilization.

Objectives

- **Restore Degraded Land:** GROW aims to rejuvenate 26 million hectares of barren land by 2030, aligning with India's commitment to Land Degradation Neutrality (LDN).
- **Promote Agroforestry & Improve Rural Livelihoods:** The initiative advocates for the integration of trees and shrubs alongside crops and livestock on farms, enhancing both environmental and economic benefits for rural communities.
- **Create Carbon Sink:** GROW endeavors to establish a new carbon sink capable of sequestering 2.5 to 3 billion tonnes of carbon dioxide equivalent, thereby mitigating the impact of climate change.

Key Features

- **Multi-institutional Collaboration:** GROW brings together government entities, private organizations, and NGOs to collaborate on this initiative.
- **Agroforestry Suitability Index (ASI):** It has created the Agroforestry Suitability Index using remote sensing and GIS technologies, a comprehensive map of agroforestry practices across all Indian districts.
- **Generating Live Maps:** GROW generates live maps that prioritize areas based on suitability for agroforestry, categorizing them into highly suitable, moderately suitable, and less suitable regions.
- **GROW-Suitability Mapping Portal:** It provides state and district-level agroforestry suitability data, enabling stakeholders to make informed decisions about land use and agroforestry practices.

Chinnar Wildlife Sanctuary

- A team of researchers found **Eurasia otter** for the first time in **Kerala** in **Chinnar wildlife sanctuary (WLS)**.

Chinnar Wildlife Sanctuary	
Location	Situated in the Western Ghats Mountain range, specifically in the Idukki district of Kerala.
Physiography	Characterized by dry deciduous forests, rolling hills, and cascading waterfalls.
Biodiversity	Flora includes sandalwood trees, teak, ebony, and bamboos. Fauna comprises Indian gaur, spotted deer, barking deer, slender lorises, and Indian star tortoises.
Tribes	Inhabited by the Muthuvan and Hill Pulaya tribes.
Additional Information	Only rehabilitation center for the Indian star tortoise in India. Contains the largest megalithic sites in Kerala. A part of the larger Anamalai Hills, which is a UNESCO World Heritage site.

Kuno National Park

- Namibian cheetah **Jwala** has given **birth to four cubs** at the Kuno National Park in **Madhya Pradesh**.

Kuno National Park	
Establishment	2011, Reintroducing the Asiatic lion, an endangered species, to its historical range in India after an absence of more than 70 years.
Location	Lies at the crossroads of the Malwa plateau and Bundelkhand in Madhya Pradesh
Rivers	The Kuno River, one of the major tributaries of the Chambal River
Flora	Dominated by Kardhai, Salai, and Khair trees with vast grasslands.
Fauna	Home to a diverse range of wildlife, including tigers, leopards, sloth bears, striped hyenas, chital, sambar, nilgai, blackbuck.
Cheetah Reintroduction	In 2009, Kuno Wildlife Sanctuary was also proposed as a possible site for cheetah reintroduction in India, which has begun with eight of the animals released in September 2022.

Nilgiri Biosphere Reserve

About Nilgiri Biosphere Reserve	
Establishment	Established in 1986 and declared UNESCO World Heritage Site 2012
Location	Western Ghats ; Includes 2 of India's 10 biogeographical provinces: Malabar Plains Area and Western Ghats Mountains Area
States Covered	Tamil Nadu, Kerala, Karnataka
Protected Areas Include	Mudumalai WLS, Wayanad WLS, Bandipur NP, Nagarhole NP, Mukurthi NP, Silent Valley NP
Vegetation	Tropical evergreen forests, Montane sholas and grasslands , semi-evergreen forests, moist deciduous forests, dry deciduous forests, thorn forests
Flora	Endemic species: 132 Unique genus: Baeolepis Plants restricted to NBR: Adenoon, Calacanthus, Baeolepis, Frerea, Jarodina, Wagatea, Poeciloneuron , etc.
Fauna	Nilgiri tahr, Nilgiri langur, slender loris, blackbuck, tiger, gaur, Indian elephant, marten
Catchment Area	Tributaries of the river Cauvery such as Bhavani, Moyar, Kabini, Chaliyar, Punampuzha, etc.
Tribal groups	Todas, Kotas, Kattunayakan, Irullas, Kurumbas, Paniyas, Adiyans, Edanadan Chettis, Cholanaickens, Allar, Malayan, etc., are native to the reserve.

Wayanad Wildlife Sanctuary (WWS)

Aspect	Details
Location	Wayanad, Kerala, Southern Western Ghats, part of the Nilgiri Biosphere Reserve, a UNESCO World Heritage Site. It was established in 1973, the sanctuary covers an area of approximately 344.44 sq. km,
Bordering Areas	Bordered by Nagarhole TR and Bandipur NP in Karnataka (northeastern side) and Mudumalai NP in Tamil Nadu (southeastern side)
Tribal Inhabitants	Paniyas, Kattunaikkans, Kurumas, Ooralis, Adiyans, and Kurichiyas
Flora	Mosaic of significant vegetation types from moist deciduous to dry deciduous and semi-evergreen patches; teak, rosewood, eucalyptus, and silver oak plantations

	Presence of marshy lands
Fauna	Home to elephants, panthers, tigers, jungle cats, civet cats, monkeys, wild dogs, bisons, deer, and bears Known for having the largest population of tigers in Kerala

Oran Sacred grove

- Communities in western Rajasthan express apprehension regarding the state's proposal to classify orans (sacred groves) as deemed forests.

About Oran (Sacred Groves)

- Orans hold significant religious importance, governed by well-defined social norms and practices.
- Orans often **host shrines** dedicated to local deities, serving as vital centers of cultural and spiritual activities.
- They play a **crucial role in conserving biodiversity**, typically located amidst dense vegetation cover and natural water sources.
- Orans are essential **habitats for the Great Indian Bustard (GIB)**, India's most **critically endangered** bird species, protected under the Wildlife Protection Act, 1972.
 - **Rajasthan recognizes GIB as its state bird**, with initiatives like Project Godawan aimed at its conservation.

Sacred Groves are also known by various names like Kavvu/SarpaKavvu in Kerala, Devarakadu/Devkad in Karnataka, Deorai/Devrai in Maharashtra, Jahera/Thakuramma in Odisha, among others.

Pandavula Gutta & Ramgarh Crater- Geoheritage Sites

- Pandavula Gutta has been officially recognized as the sole **Geo-heritage site** in Telangana. Also, Ramgarh Crater in Rajasthan has been designated as a geo-heritage site.

About Geoheritage sites

- These sites have geological features, which hold significance either due to their natural or cultural importance and provide valuable insights into the Earth's history and evolution
- **Designated by the Geological Survey of India (GSI)**, India is a member of the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage.
- The Geological Survey of India, under the **Ministry of Mines**, was established in 1851 and is headquartered in Kolkata.

About Pandavula Gutta (in Jayashankar Bhupalpally district, Telangana)

- Rich in prehistoric habitation sites with evidence from Mesolithic to medieval periods.
- Paleolithic cave paintings have been found at Pandavula Gutta (Regondamandal). (depicting geometric designs, animals, and tools)
- It has Ancient geological marvel, **predating** the Himalayas

About Ramgarh Crater (3.5-kilometer diameter crater in Rajasthan)

- Ramgarh Crater was formed 165 million years ago by a meteor impact.
- It was first discovered by GSI in 1869.
- It's also known as Ramgarh structure, Ramgarh Dome, and Ramgarh astrobleme. The crater is located in the Kota plateau of Vindhya range.
- It's also the country's third crater, following Lunar crater in Maharashtra and Dhala crater in Madhya Pradesh.
- The Ramgarh crater has been recognised as the **200th crater of the World Geo-Heritage**.

50 Years of Project Tiger

- Launched in **1973**, Project Tiger was initially introduced in 9 Tiger Reserves – which have since rapidly increased to 55 in 2023.
- It is a **tiger conservation programme (a Centrally Sponsored Scheme of the MoEF&CC)** launched in 1973 by the Government of India and **administered by the National Tiger Conservation Authority (NTCA)**.

- The government created the 'Critical Tiger Habitat' (under the Wildlife Protection Act) in areas of National Parks and Sanctuaries which are required to be kept as **involute** for the purposes of wildlife conservation.
- The **funding pattern** involves **60% Central Assistance for non-recurring expenditures, 50% for recurring items**, and matching grants from Project States. **North Eastern and Himalayan States receive 90% central assistance in both cases.**
- In 2023 the MoEF&CC announced the merger of Project Tiger and Project Elephant into a new division, Project Tiger and Elephant (PTE).

Royal Bengal Tiger (Panthera tigris tigris)

- **IUCN Status:** Endangered
- **Habitat:** Found in grasslands, swamps, and forests of India, Nepal, Bhutan, Bangladesh, and parts of China.
- **Physical Characteristics:**
 - **Size:** Second largest tiger subspecies after the Siberian tiger. Males are larger than females.
 - **Males:** Up to 3.2 meters (10.5 ft) long, 225 kg
 - **Females:** Up to 2.7 meters (9 ft) long, 181 kg
 - **Coat:** Orange with black stripes. A rare white tiger variation exists due to a genetic mutation.
 - **Behavior:** Solitary hunters, except for mating pairs. They are excellent swimmers and stalk prey at night.
 - **Diet:** Deer, antelope, wild boar, but can take down larger prey like gaur.
- The Royal Bengal Tiger is the **national animal of India.**

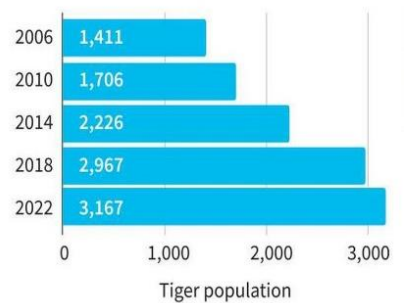
Activities by Project Tiger	
Tiger Reserve Establishment	Project Tiger manages the establishment of tiger reserves in India, including new reserves like Veerangana Durgavati and Dholpur – Karauli declared in 2023.
Core-Buffer Management Strategy	Utilizes core areas as national parks or sanctuaries, while buffer zones are multipurpose areas, facilitating conservation efforts and habitat protection.
Technological Innovations	Implements aerial surveillance through the e-Bird project and employs the M-STRIPES app for tiger assessment and monitoring, enhancing conservation efficiency.
Special Tiger Protection Force	Deploys specialized anti-poaching units across reserves , ensuring focused efforts to combat poaching and protect tiger habitats.

Tiger Census

- The 5th cycle of Tiger Census, an evaluation of tiger reserves in India has estimated the number of big cats in the country (interim figures) at 3,167 in 2022 (increased by 200 or 6.7% in the past four years).
- As many as 1,161 of India's tigers are now in Central India, 824 in the Western Ghats, 804 in the Shivalik Range, 194 in the North-eastern states and 100 in the Sundarbans.
- The Western Ghats, which are home to the largest tiger population in the world, have shown a significant fall in the occupancy of tigers.
- Tiger occupancy has also declined in the states of Jharkhand, Odisha, Chhattisgarh, and Telangana.
- The north-western states such as Uttarakhand and Uttar Pradesh now have more tigers outside reserves, requiring officials to step up habitat conservation.

Big cat count

According to the data released by the PM, the number of tigers in India increased by 200 in the past four years. A look at the tiger population



Report on the Status of Leopards in India

- The Ministry of Environment, Forest and Climate Change released a 2022 report on the status of leopards in India, covering 20 states and 70% of their expected habitat.

About the Report on the Status of Leopards

- The **National Tiger Conservation Authority (NTCA)** and **Wildlife Institute of India (WII)** conducted the **Fifth cycle** leopard population estimation in 2022, collaborating with State Forest Departments as part of the quadrennial "**Monitoring of Tiger, Co-predators, prey and their habitat**" exercise in tiger range States.

- **Key findings from the report include:**
 - **Leopard population estimated at 13,874**, showing a 1.08% per annum growth compared to 2018.
 - **Central India and Eastern Ghats saw the largest growth**, while Shivaliks and Gangetic plains experienced a decline in leopard population.
 - **Madhya Pradesh hosts the largest population of leopards**, followed by Maharashtra, Karnataka, and Tamil Nadu.
 - **Tiger Reserves with the highest leopard population include Nagarajunasagar Srisailem** (Andhra Pradesh and Telangana), Panna, and Satpura (Madhya Pradesh) tiger reserves.

Indian Leopard

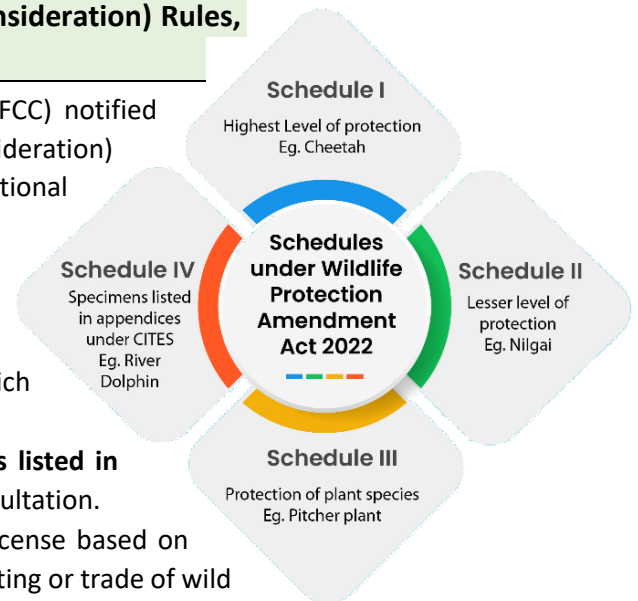
The **Indian Leopard (Panthera pardus fusca)** is a subspecies first scientifically described in **1794**.

- **Distribution:** Widely distributed across the Indian subcontinent.
- **Threats:** Faces threats from illegal trade of skins and body parts, human-leopard conflict, and retaliation for livestock depredation.
- **Physical Characteristics:** Strong legs, long tail, broad muzzle, short ears, small yellowish-grey eyes, and light-grey ocular bulbs. Coat is spotted and rosetted on a pale yellow to yellowish-brown or golden background.
- **Population:** Approximately 13,874 leopards in India as of 2024, with Madhya Pradesh housing the largest number.
- **Habitat:** Known for adaptability, found in forests, grasslands, and urban areas.
- **WPA 1972: Schedule I; CITES: Appedix 1; IUCN Status: VU**

Organization	Description
National Tiger Conservation Authority (NTCA)	<ul style="list-style-type: none"> • Established in 2005, following Tiger Task Force recommendations. • Statutory body under MoEFCC constituted under Wildlife (Protection) Act, 1972. • Objectives: Provide statutory authority to Project Tiger, address livelihood interests of local people around Tiger Reserves. • Power and Functions: Lay down standards for tourism activities, guidelines for Project Tiger, address man-animal conflicts for co-existence in forest areas outside National Parks.
Wildlife Institute of India (WII)	<ul style="list-style-type: none"> • Established in 1982. • Headquarters: Dehradun. • Autonomous institution of MoEFCC, mission to nurture wildlife science and its application in conservation. • Mandate: Build capacity through training, education, and research in wildlife conservation.
Initiatives in India to Conserve Leopard	
International Big Cat Alliance (IBCA)	Headquartered in India, aims to strengthen global cooperation for conservation of seven big cat species.
World Wide Fund for Nature-India (WWF-India)	Studies leopard populations in Protected Areas, supports anti-poaching, conflict management, and conservation awareness.
SECURE Himalaya project	Joint initiative of MoEFCC and UNDP, funded by GEF, for conservation of high-altitude Himalayan ecosystems.

Wildlife (Protection) Licensing (Additional Matters for Consideration) Rules, 2024

- Ministry of Environment Forest and Climate Change (MoEFCC) notified Wildlife (Protection) Licensing (Additional Matters for Consideration) Rules, 2024 to replace Wildlife (Protection) Licensing (Additional Matters for Consideration) Rules, 1983
- The **1983 rules prohibited issuing licenses for trading wild animals under the Schedule I or Part 2 of Schedule II of Wildlife Protection Act 1972**, but these were granted in exceptional cases with previous government approval, which was changed in 2024 rules.
- New **2024 rules prohibit granting licenses for wild animals listed in Schedule I of the Act** without prior Central Government consultation.
- The Chief Wildlife Warden or Authorised Officer issues a license based on parameters such as existing licenses and implications for hunting or trade of wild animals.



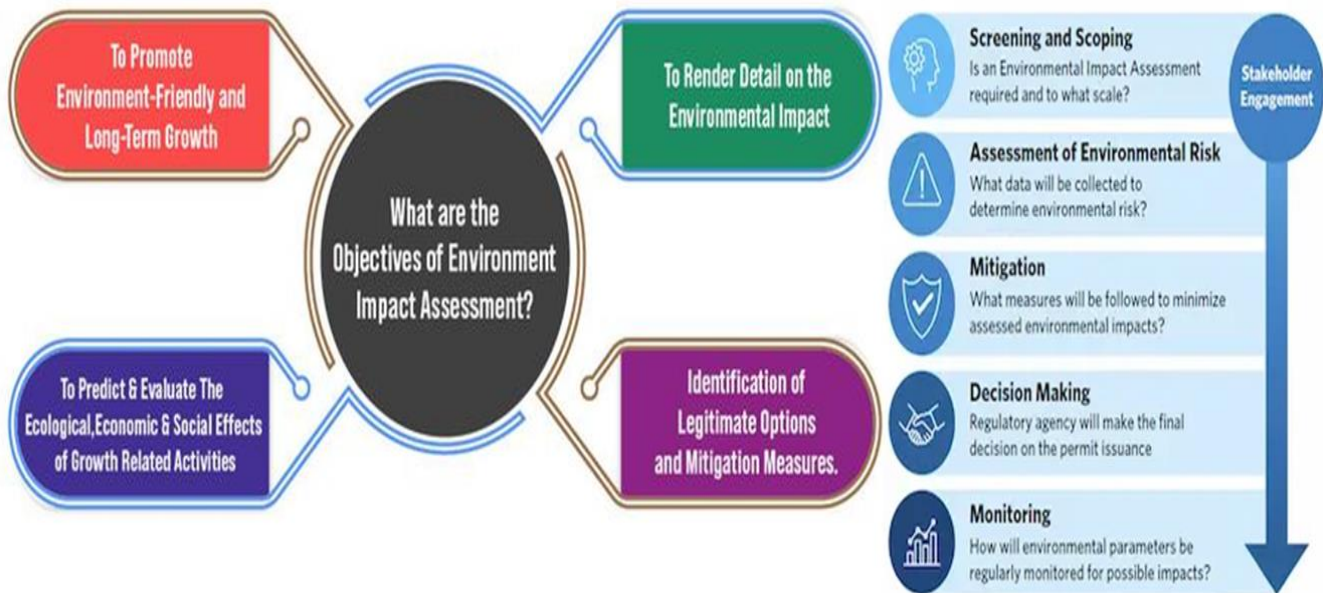
Environmental Impact Assessment

- The Supreme Court of India stayed two union government orders from 2021 and 2022, granting permission for ex-post facto clearance, which involves seeking approval or clearance for a project after it has already been initiated or implemented, under the 2006 Environment Impact Assessment (EIA) notification.

About Environmental Impact Assessment (EIA)

- The UN Environment Programme (UNEP) defines EIA to be an analytical process that systematically examines the possible environmental consequences of the implementation of a given activity (project).
- The EIA notification was first formulated in India in 1994, under the Environment (Protection) Act 1986.
- To decentralize the process of project clearance, the EIA Notification 2006 has categorized the projects into Category 'A' and Category 'B' based on their impact potential.
 - **Category 'A'** projects will be appraised at the **Central** level while **Category 'B'** projects at the **State** level.
 - **Category A projects require mandatory environmental clearance** and thus they do not have to undergo the screening process.
 - **Category B projects undergo a screening process** and are further classified into B1 (Mandatorily requiring EIA) and B2 (Not requiring EIA).
- **Mandatory clearance is required** for projects such as **mining, thermal power plants, river valleys, infrastructure, and industries, including small electroplating or foundry units.**

Environmental Impact Assessment



- The **Expert Appraisal Committee (EAC)** is a multidisciplinary committee of experts responsible for evaluating sector-specific projects, acting as a recommendatory body. Its recommendations determine whether MoEF&CC grants environmental clearance to the project.

Exemption under Amendments to EIA Rules 2006	
Strategic and Defence Projects	Highway projects deemed of strategic and defence importance, located within 100 km of the Line of Control or other sensitive areas.
Biomass Based Power Plants	Thermal power plants with a capacity of up to 15 MW using biomass or non-hazardous municipal solid waste as primary fuel and up to 15% auxiliary fuels like coal, lignite, or petroleum products – with eco- friendly mixing of fuels
Ports and Harbours dealing in Fish	Fish handling ports and harbours with minimal pollution potential, primarily serving small-scale fishermen
Toll Plazas	Toll plazas necessitating expanded width for the installation of toll collection booths to accommodate increased vehicular traffic
Airport Terminal Expansion	Expansion projects concerning terminal buildings at existing airports without altering the airport's footprint (excluding runway expansions)

Report on the Status of Snow Leopards in India

- Recently, the Ministry of Environment, Forest, and Climate Change (MoEFCC) released a report on the Status of Snow Leopards in India, which is the outcome of the **Snow Leopard Population Assessment in India (SPAI) program** conducted between 2019 and 2023.
- This marks the first scientific endeavor to estimate the snow leopard population in the country.
- The **Wildlife Institute of India (WII)** served as the **National Coordinator for SPAI**, with support from all snow leopard range states and two conservation partners, the **Nature Conservation Foundation, Mysuru, and the World Wildlife Fund (WWF) India.**

Snow Leopard Population Assessment in India (SPAI)

- SPAI was launched by MoEFCC in 2019 as part of the **Global Snow Leopard and Ecosystem Protection Program (GSLEP)**, known as the **Population Assessment of World's Snow Leopards (PAWS).**
- Endorsed in the 2013 **Bishkek Declaration**, GSLEP is an **alliance of all 12 snow leopard range countries** and non-governmental partners.

- SPAI covered over 70% of the potential snow leopard range in the country across the trans-Himalayan region, including Union Territories of Ladakh and J&K, as well as states like Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.

Initiatives for Conservation of Snow Leopards	
Three landscapes under GSLEP	India has identified three landscapes under the GSLEP for the restoration of snow leopard species: Hemis-Spiti (Ladakh and Himachal Pradesh), Nanda Devi-Gangotri (Uttarakhand), and Khangchendzonga Tawang (Sikkim and Arunachal Pradesh).
Project Snow Leopard	Aims to safeguard and conserve India's unique natural heritage of high altitude wildlife populations and their habitats by promoting conservation through participatory policies and actions.
International Snow Leopard Day	Established in 2014, celebrated on October 23 every year to raise awareness for the conservation and protection of snow leopards.
Snow Leopard Breeding Project	One of the most successful breeding programs for the species in Southeast Asia, located at the Padmaja Naidu Himalayan Zoological Park in Darjeeling .

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

- **CMS COP 14**, the Fourteenth Meeting of the **Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals**, was convened in Samarkand, Uzbekistan.
- **Key Outcomes:**
 - Adoption of the slogan "**Nature knows no borders.**"
 - **Addition of 14 species to the Conservation of Migratory Species (CMS) Appendices**, including the Eurasian Lynx, Pallas's Cat, and the Sand Tiger Shark.
 - **Introduction of new Concerted Actions for six species**, such as the Chimpanzee, Straw-colored Fruit Bat, and Blue Shark.
 - Development of **Single Species Action Plans (SSAPs) for aquatic species**, such as the Atlantic Humpback Dolphin, the Hawksbill Turtle, and the Angelshark.
 - **Agreement on the Central Asian Flyway (CAF)**, spanning 30 Range States of migratory birds, with the establishment of a coordinating unit in India.

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

- The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as the **Bonn Convention**, is an **intergovernmental treaty** operating under the United Nations Environment Programme (UNEP).
- It serves as a **global platform** dedicated to the conservation and sustainable utilization of migratory animals and their habitats.
- **Established in 1979 and enacted in 1983**, the convention boasts a membership of 133 Parties, with India joining as a member in 1983.
- **COP to the CMS** is the **principal decision-making body** of the Convention on the Conservation of Migratory Species.
 - It **convenes once every three years** to establish budgets and priorities for the subsequent three years, as well as to decide on amendments to the Appendices and review reports from member Parties.

Migratory Species

These are wild animals whose entire population or any geographically separate part cyclically and predictably crosses one or more national boundaries.

Under CMS, migratory species are classified into two appendices:

Appendix I	Migratory species considered endangered, facing a very high risk of extinction in the near future.
Appendix II	Migratory species with unfavorable conservation status, requiring international agreements for their preservation and management.

- **India's involvement with CMS includes:**
 - Signing **non-legally binding Memorandums of Understanding (MoUs)** for the conservation and management of Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008), and Raptors (2016).
 - Hosting the **CMS COP-13 in Gandhinagar, Gujarat, in 2020.**
 - Participation in two of CMS's Special Species Initiatives: **Central Asian Flyway** and the **Central Asian Mammals Initiative.**

Initiatives taken in India to conserve Migratory Species	
National Action Plan for conservation of Migratory birds along the Central Asian Flyway (2018-2023)	Aims to arrest population decline and secure habitats of migratory bird species.
Identification of Important Bird Areas (IBAs) programme	Led by Birdlife International, with the objective of protecting a global network of IBAs for the conservation of birds and associated biodiversity.
National Marine Turtle Action Plan (2021-2026)	Designed to conserve marine turtles and their habitats to maintain a healthy marine ecosystem.

Definition of Forests

- The Supreme Court issued a temporary order instructing States and Union Territories to follow the 1996 definition of forest from the T.N. Godavarman Thirumalpad case.

Evolution of Definition of Forests under different Acts/Judgements	
Indian Forest Act, 1865	Defines forest as land covered with trees, brushwood, and jungle.
The Forest Act, 1878	Redefines forests, expanding the definition to include any land that could be designated as such. Forests categorized into state or reserved forests, protected forests, and village forests.
The Indian Forest Act, 1927	Incorporates major provisions of previous acts, with the addition of duties on timber.
Forest Conservation Act, 1980	Makes central government approval mandatory before diverting forest land for non-forest use. Provisions mainly apply to tracts of forest land recognized by states.
T N Godavarman case (1996)	Expands the definition of "forest" to include areas recorded as "forest" in any government record, areas conforming to the dictionary meaning of forest, and areas identified as "forest" by expert committees set up by state governments post-1996 order.
Forest Conservation (Amendment) Act, 2023	Specifies forest land as land declared/notified under the Indian Forest Act, 1927 or other laws, or recorded in government records as forest since 1980. Excludes land officially changed from forest use to non-forest purposes before 1996.
Van (Sanrakshan Evam Samvardhan) Rules, 2023	State governments/UT administrations must prepare a consolidated record of lands falling under the Forest Conservation (Amendment) Act, 2023, including areas identified by expert committees, unclassified forest lands, and community forest lands, within one year.

- The Supreme Court directed that the term 'forest' will retain its broad and all-encompassing meaning, as per the 1996 judgment. This includes approximately 1.97 lakh square km of undeclared forest lands. The Court stressed the importance of upholding the broad dictionary definition of "forest" established over 25 years ago.
- This directive remains in force until comprehensive records of all lands marked as 'forest' in government records, including forest-like areas, unclassified, and community forest lands, are compiled by the States and union territories.
- Furthermore, the **Court instructed states to submit reports on forest lands identified in accordance with its ruling in the T N Godavarman case** by the end of March 2024.

- Additionally, the **establishment of "zoos or safaris"** by any government or authority **requires final approval from the apex court** before proceeding.

Indian Gharial

The Forest Department officials confirmed the presence of Indian Gharial in Greater Kaziranga after 75 years.

Indian Gharial	
Habitat	<ul style="list-style-type: none"> • Inhabits exclusively in river ecosystems with deep, clear, fast-flowing waters and steep, sandy banks. • Females lay eggs in steep, sandy river banks.
Features	<ul style="list-style-type: none"> • Named for the bulbous knob (narial excrescence) at the end of their snout, resembling a pot ("ghara" in Hindi). • Only mature males possess this bulb. • Exhibits sexual dimorphism (differences in appearance between males and females of the same species) in size and appearance. • Unlike other crocodiles, gharials primarily feed on fish, not warm-blooded species. • Physically incapable of consuming large mammals, including humans.
Distribution	<ul style="list-style-type: none"> • Found primarily in India and Nepal, with major populations in tributaries of the Ganga River: Chambal and Girwa Rivers in India, and Rapti-Naryani River in Nepal
Gharial Reserves	<ul style="list-style-type: none"> • Located in Uttar Pradesh, Madhya Pradesh, and Rajasthan states of India
Conservation Status	<ul style="list-style-type: none"> • IUCN: Critically endangered • Wildlife (Protection) Act, 1972: Schedule I • CITES: Appendix I
Conservation Initiatives	<ul style="list-style-type: none"> • The Crocodile Conservation Project was launched in 1975. • Breeding Centres of Kukrail Gharial Rehabilitation Centre in Lucknow, Uttar Pradesh • National Chambal Sanctuary in Madhya Pradesh

STAR Metric

- The **Species Threat Abatement and Restoration (STAR)** metric, initially **introduced in 2021 for terrestrial areas** by the International Union for Conservation of Nature (IUCN) and partners, has now been **expanded for marine areas**.
- It **leverages data from the IUCN Red List of Threatened Species to assess extinction risks and threats**.
- STAR evaluates the effectiveness of actions in specific locations, **focusing on threat abatement** and habitat restoration to support international conservation goals.

Neem Tree

- The Neem Summit & Global Neem Trade fair is being organized in New Delhi by World Neem Organisation (WNO) in partnership with ICAR-Central Agroforestry Research Institute, Jhansi.

Aspect	Neem Tree
Origin	Native to the Indian subcontinent.
Climate	Grows in arid, semi-arid, wet tropical, and sub-tropical climates; tolerant to high temperatures up to 49°C.
Type	Evergreen tree, but deciduous in drier areas.
Benefits	Nearly all parts of the Neem tree are useful. It acts as efficient natural air filters, trapping dust particles and absorbing gaseous pollutants. Used in pesticides, mosquito repellents, fertilizers (neem-coated urea), etc.

Conservation Reserve

- Telangana's State Board for Wildlife (SBWL) has sanctioned the corridor region connecting Tadoba-Andhari Tiger Reserve in Maharashtra to Kawal Tiger Reserve in Telangana as a conservation reserve.
 - The State Board for Wildlife, established under the Wildlife (Protection) Amendment (WPA) Act of 2002, is overseen by the Chief Minister or Administrator in the case of Union Territories.

About Conservation Reserve:

- It is a protected area designated under the 'Wildlife (Protection) Act (WPA), 1972', introduced through the WPA Act of 2002.
- Serving as a buffer zone, it **connects migration corridors between national parks, wildlife sanctuaries, and other protected areas.**

- **Declaration of such reserves is made by the State Government**, following consultations with the central government and local communities.
- Management of these reserves is facilitated by the **Conservation Reserve Management Committee.**

Aspect	Conservation Reserves	Community Reserves
Ownership	Owned completely by the Government of India.	Portions of the land may be privately owned.
Habitat	Typically, uninhabited and not utilized for human settlements.	May include areas inhabited or utilized by local communities.
Management	Managed solely by government authorities.	Managed collaboratively with involvement from local communities.

GEOGRAPHY

Five More Wetlands to Ramsar List

- Five new wetlands (3 in Karnataka and 2 in Tamil Nadu) in India have been added to the Ramsar list reaching total count to 80

Wetland	Location	Description
Aghanashini Estuary	Karnataka	
Magadi Kere Conservation Reserve	Karnataka	
Ankasamudra Bird Conservation Reserve	Karnataka	
Karaivetti Bird Sanctuary	Tamil Nadu	

Longwood Shola Reserve Forest	Tamil Nadu	<ul style="list-style-type: none"> Named after the Tamil word "Solai", meaning a tropical rainforest. Habitat for endangered species like the Black-chinned Nilgiri Laughing thrush, Nilgiri Blue Robin, and vulnerable Nilgiri Wood-pigeon. Houses 14 out of 26 endemic bird species of the Western Ghats.
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Analysis of Ramsar Sites

- The Ramsar Convention, established in 1971 in Ramsar, Iran, stands as the sole international treaty dedicated exclusively to the preservation of wetlands. India signed this convention in February 1982.
- Tamil Nadu has the maximum number of Ramsar Sites (16 sites) followed by Uttar Pradesh (10 sites).
- The countries with the most Sites are the United Kingdom with 175 and Mexico with 142.

Ramsar Site	Location	Size
Sundarbans	West Bengal	Largest
Renuka Wetland	Himachal Pradesh	Smallest
Chilika Lake	Odisha	First Ramsar Sites (1981)
Keoladeo National Park	Rajasthan	

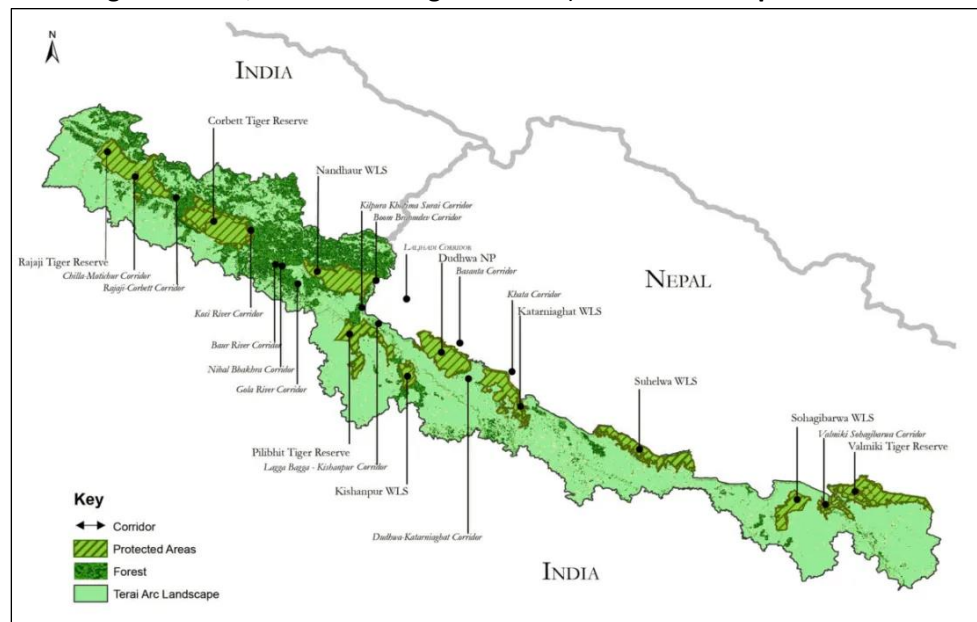
The Montreux Record

- It is a list of wetland sites on the Ramsar List of wetlands of international importance.
- The list includes sites where ecological changes have occurred, are occurring, or are likely to occur due to human interference, pollution, or technological developments.
- Two wetlands of India are in Montreux record: **Keoladeo National Park (Rajasthan), Loktak Lake (Manipur)**
 - Chilika Lake in Odisha was also on the Montreux Record (1993) but was removed in 2002.

Terai Arc Landscape

- The United Nations has bestowed global recognition upon **Nepal's Terai Arc Landscape (TAL) initiative**, which was launched in 2001, **designating it as one of seven World Restoration Flagships.**
- Terai Arc Landscape spans an **810-kilometer stretch from the river Yamuna in the west to the river Bhagmati in the east**, including the **Shivalik hills**, adjoining **bhabhar areas**, and the **Terai flood plains.**
- Geographical Spread:**
 - This landscape spans across the **Indian states of Uttarakhand, Uttar Pradesh, and Bihar**, along with the low-lying hills of Nepal.
 - It **comprises a total of 13 Protected Areas, with nine located in India** (including Corbett Tiger Reserve, Rajaji National Park, Dudhwa Tiger Reserve, and Valmiki Tiger Reserve) **and four in Nepal.**

- Objectives:** The initiative is dedicated to conserving critical habitats, connecting fragmented landscapes, and fostering transboundary cooperation while actively involving local communities.
- Flagship Species:** Bengal tiger (*Panthera tigris*), the greater one-horned rhinoceros (*Rhinoceros unicornis*), and the Asian elephant.



UN World Restoration Flagships

- The United Nations has recognized seven initiatives from regions spanning Africa, Latin America, the Mediterranean, and Southeast Asia as World Restoration Flagships.
- Global initiative launched in 2021 by the **UN Decade on Ecosystem Restoration (2021-2030)** and led by the UN Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO).
 - It aims to prevent, halt, and reverse the degradation of ecosystems on every continent and in every ocean.

World Restoration Flagships

- The Restoring Mediterranean Forests Initiative
- The Living Indus initiative
- The Acción Andina Social Movement
- Sri Lanka Mangrove Regeneration Initiative
- Regreening Africa's Agriculture
- Growing Forests in Africa's Drylands Initiative
- Terai Arc Landscape (TAL) Initiative

Largest Deep-Sea Corals Mapping and Study

- Scientists have mapped the largest coral reef deep in the ocean, stretching hundreds of miles off the **U.S. Atlantic coast**. This Reefs spans approximately **500 km in length, and width reaches up to 110 km**.
- Scientists have been **aware of the reef's presence** since the **1960s**. However, new underwater mapping technology made it possible to construct 3D images of the ocean floor.

About Deep Sea Coral Reefs:

- Unlike shallow-water corals reliant on algae for photosynthesis, **deep-sea corals lack sunlight** and have developed alternative feeding strategies.
- Some species also produce **bioluminescent light**, illuminating their surroundings and potentially attracting prey or mates.
- They often **grow slowly** due to the cold temperatures and limited food availability.
- To withstand the crushing pressure, deep-sea corals have **reinforced skeletons** made of **calcium carbonate or protein**.

Difference Between Deep and Shallow Water Coral Reef:

Factors	Shallow Water Coral Reef	Deep Water Coral Reef
Colour	Brown & Green	White
Depth	Up to 200 feet (60 meters) from surface. (with high diversity)	Beyond 200 meters to several thousand meters. (with low diversity)
Light Availability	Typically found in the euphotic zone where sunlight penetrates and supports photosynthesis. (faster coral growth)	Beyond the reach of sunlight for photosynthesis. So, they rely on alternative energy sources, such as capturing small particles and organic matter
Temperature & Pressure	Stable temperatures & lower pressures compared to deep water	Colder temperatures and higher pressures
Threats	Coral bleaching, overfishing etc.	Bottom trawling, deep-sea mining etc.
Key Example	The Great Barrier Reef	Recently found & located off the Atlantic coast

Gupteshwar Forest

- The **Odisha** government has officially designated the **Gupteshwar Forest as the fourth Biodiversity Heritage Site (BHS) within the state**. Prior to this, Mandasaru, Mahendra Giri, and Gandhamardan had been recognized as BHS.

Selection Process for BHS:

- Biodiversity Heritage Sites (BHS) are chosen according to the provisions outlined in Section 37 of the **Biological Diversity Act, 2002**.
- **The State Government, in consultation with local bodies, has the authority to identify and notify areas of significant biodiversity as BHS.**
- These sites are characterized by well-defined boundaries and are distinguished by their unique ecological characteristics, fragility, and rich diversity of both wild and domesticated species.

Lakshadweep

- India's smallest Union Territory Lakshadweep is an archipelago consisting of 36 islands with an area of 32 square km.
- The capital is Kavaratti and it is also the principal town of the UT.
- The maritime boundary between the Maldives and Minicoy (India) runs through the **Eight Degree Channel**.
- **Nine Degree Channel** separates the island of Minicoy from the main Lakshadweep archipelago.
- According to the 2011 Census, Lakshadweep has a population of 64473 persons.
- More than 93% of the population who are indigenous, are Muslims and majority of them belong to the Shafi School of the Sunni Sect.
- Malayalam is spoken in all the islands except Minicoy where people speak Mahl which is written in Divehi script and is spoken in Maldives also.
- The entire indigenous population has been classified as Scheduled Tribes.

Wadge Bank Ecosystem & Hydrocarbon Exploration

- Wadge Bank faces a potential risk as the Indian government considers offering three oil and gas blocks for exploration in the area under the Hydrocarbon Exploration and Licensing Policy (HELP).

About Wadge Bank (India's richest fishery resource):

- The Wadge Bank is a **submerged plateau**/ a continental shelf (10,000 square kilometre area) of the sea **south of Kanyakumari**.
- **Hydrography:** Characterized by low tidal amplitude and weak currents, creating favourable conditions for nutrient accumulation and plankton growth.
- **Unique biodiversity & High productivity:** Supports a diverse community of marine life, including fish, crustaceans, mollusks, and other invertebrates.

Gibraltar Arc

A modelling study suggests a slumbering (dormant) subduction zone below the Gibraltar Strait is active and could break into the Atlantic Ocean in 20 million years' time, giving birth to an Atlantic "Ring of Fire."

About Gibraltar Arc

- It is a geological region consisting of a curved mountain range (orogen) surrounding the Alboran Sea, located between the Iberian Peninsula (Spain) and Africa (Morocco).
- Gibraltar Arc is a product of the ongoing convergence of the Eurasian & African tectonic plates. The collision and convergence of these two tectonic plates have led to the formation of the Betic-Rif mountain range.
- The collision zone between these plates is what pushes up mountain ranges. The Gibraltar Arc began forming millions of years ago during the Oligocene epoch (34 million to 23 million years ago) and is still geologically active today.

Subduction zones

- Subduction occurs when one tectonic plate slides beneath another, leading to seismic activity, volcanic eruptions, and the formation of mountain ranges.
- Other Subduction Zones in the Atlantic region are the Lesser Antilles Arc in the Caribbean and Scotia Arc near Antarctica.

Magnetic Fossils

- Scientists have discovered a 50,000-year-old sediment — a giant magneto fossil and one of the youngest to be found yet in Bay of Bengal.

About Magnetic Fossils

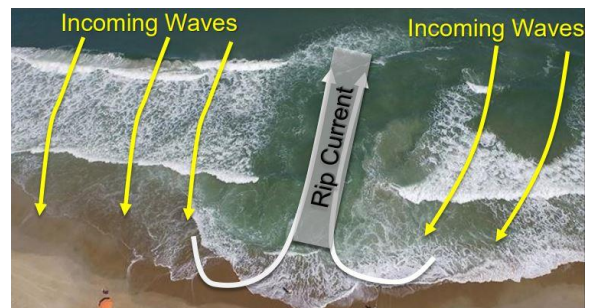
- **Formation:** Fossilized remains of magnetic particles created by magnetotactic bacteria which are microorganisms that biomineralized magnetic minerals such as magnetite (Fe_3O_4).
- **Preservation:** When these magnetotactic bacteria die, their magnetic minerals can be preserved in sediments or rocks.
- **Identification:** Magnetic fossils are identified through various techniques such as rock magnetism, electron microscopy, and paleomagnetic analysis.
- **Applications:** By analyzing the magnetic properties of sedimentary rocks containing magnetic fossils, researchers can reconstruct past variations in the Earth's magnetic field and infer changes in the climate, ocean circulation, and tectonic processes.
- **Significance:** Magneto fossils Can provide evidence for the presence of ancient life in rocks and sediments (the evolution of magnetosomes), even when other fossils are absent.

Afanasy Nikitin (AN) Seamount

- India has applied to the International Seabed Authority (ISA) for exploration rights over the Afanasy Nikitin Seamount (AN Seamount) in the Indian Ocean.
- AN Seamount is a structural feature rich in cobalt, nickel, manganese, and copper.
- It is 400 km-long and 150 km-wide structural features located in the Central Indian Ocean Basin (CIOB).
- Despite being 3,000 km away from India's coast, it falls within an area claimed by Sri Lanka to the Commission on the Limits of the Continental Shelf.
- This move by India reflects concerns over China's dominance in mineral processing.

Rip Currents

- The Indian National Centre for Ocean Information Services (INCOIS) and ISRO have collaborated to monitor and issue operational forecast alerts regarding rip currents.
- Rip currents are **strong flows of water that move from a beach back toward the open ocean, sea, or lake.**
 - While they **can be narrow**, sometimes just 10 or 20 feet wide, they can also stretch up to ten times wider.
- Rip currents are **commonly found along the East, Gulf, and West coasts of the U.S.**, as well as along the shores of the Great Lakes.
- Importantly, rip currents do not pull people underwater; instead, **they pull individuals away from the shore.**



India's Maiden Winter Arctic Expedition

- Ministry of Earth Sciences has launched **India's first winter scientific expedition to Himadri**, the Arctic Research Station in **Ny-Ålesund, Norway**.
- The first batch of the expedition includes **researchers from the National Centre for Polar and Ocean Research, Indian Institute of Technology Mandi, Indian Institute of Tropical Meteorology, and Raman Research Institute (RRI).**
 - RRI, Bengaluru is an autonomous research institute engaged in research in basic sciences. It was founded in 1948 by the Indian physicist and Nobel Laureate **Sir C V Raman**.
 - It was restructured in 1972 to become an aided autonomous institute receiving funds from the Department of Science and Technology.
- This will be for the first time that researchers will examine the characterisation of the radio frequency environment in the Svalbard region of the Arctic.

- Indian scientific missions to the Earth's polar regions (Arctic and the Antarctic) are supported by the Polar Science and Cryosphere Research (**PACER**) scheme administered by the National Centre for Polar and Ocean Research, an institute under the Ministry of Earth Sciences.

India's Involvement in Arctic

- India engaged with the Arctic since 1920 with the signing of the **Svalbard Treaty**.
- First scientific expedition launched in August 2007, with subsequent annual expeditions.
- Studies focus on glaciology, hydrochemistry, microbiology, and atmospheric sciences.
- **Himadri research station** started in July 2008 in Ny Alesund, Svalbard.
- **Deployment of IndArc**, a multisensory observatory, in Kongsfjorden in 2014.
- Establishment of India's northernmost atmospheric laboratory at **Gruvebadet** in 2016, focusing on atmospheric parameters.
- India became an **observer in the Arctic Council in 2013**, with membership renewed in 2019 for another five years.
- The Indian government **introduced an Arctic policy in March 2022**, focusing on climate research, environmental monitoring, maritime cooperation, and energy security, with the **National Centre for Polar and Ocean Research to implement it**.

ADB and Hindu Kush Himalayas

- The **Asian Development Bank (ADB)** has launched the **Building Adaptation and Resilience in the Hindu Kush Himalayas Initiative**, aiming to tackle climate change challenges in the region.
- The initiative will use advanced risk assessment and management tools to guide investment decisions for large-scale infrastructure projects, including support for Bhutan and Nepal.
- The Hindu-Kush-Himalayan (HKH) region encompasses **Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan**.
- It is considered the **Third Pole** (after the North and South Poles) and has significant implications for climate.
- It contains the largest volume of ice and snow outside of the Arctic and Antarctica. The ice and snow from this region are an **important source of water for 12 rivers that flow through 16 countries in Asia**.



Initiatives in HKH Region	
National Mission for Sustaining the Himalayan Eco-system (NMSHE)	Launched under the National Action Plan on Climate Change (NAPCC), NMSHE aims to continuously assess the health status of the Himalayan Ecosystem , addressing climate change impacts and ensuring its sustainability.
SECURE Himalaya	Implemented by MoEFCC (India) and the United Nations Development Programme (UNDP) , SECURE Himalaya is part of the Global Wildlife Program (GWP) funded by the Global Environment Facility (GEF) . It focuses on securing livelihoods and conservation in the high range Himalayan ecosystems.
Hindu Kush Himalayan Monitoring and Assessment Programme	Coordinated by the International Centre for Integrated Mountain Development (ICIMOD) , gathers and disseminates scientific data on the region's environmental and socioeconomic changes.

Triple-dip La Niña

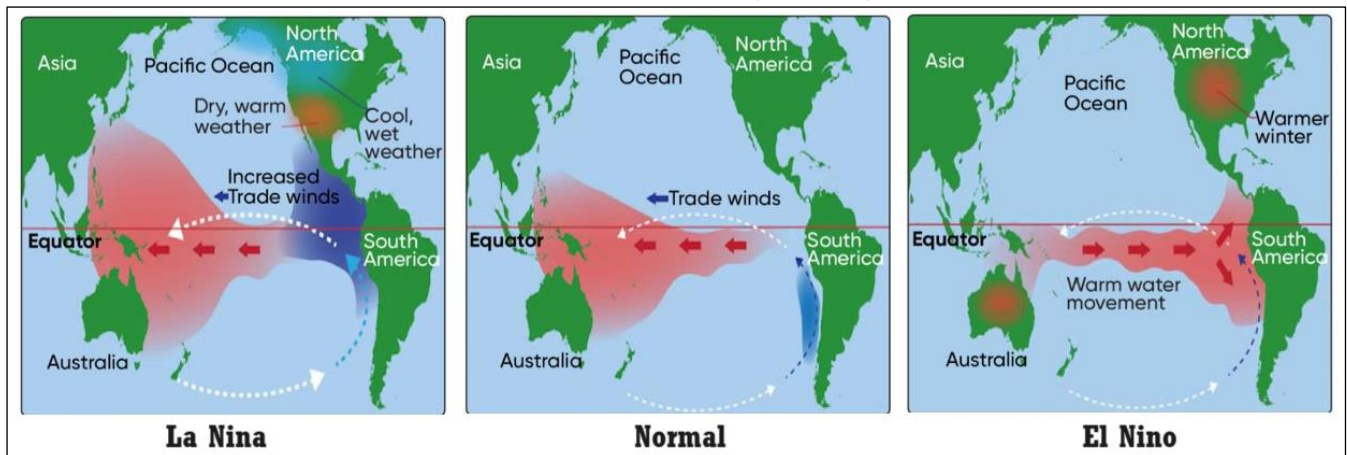
- A triple-dip La Niña event is a rare occurrence when the La Niña effect persists for three consecutive years.
- A recent study found that the triple-dip La Niña phenomenon had a significant impact on air quality in peninsular and North India during the winter of 2022–23.
 - **Air Quality Trends:**
 - **Peninsular India:** Higher northerly winds trapped pollutants, leading to poor air quality with increased PM2.5 concentration.
 - **North India:** Unusual wind patterns and faster ventilation, along with the absence of rain and clouds, improved air quality.
 - These trends differed from the usual patterns observed in recent decades, where North India typically experiences increased pollution levels during winter.

About El Niño Southern Oscillation (ENSO)

- ENSO is a natural climate phenomenon characterized by fluctuating ocean temperatures in the central and eastern equatorial Pacific.
- It involves three phases:

La Niña	A cooling of the ocean surface with below-average sea surface temperatures (SST) in the central and eastern tropical Pacific Ocean .
El Niño	The opposite of La Niña, involving a warming of the ocean surface with above-average SST in the same region.
Neutral	Neither El Niño nor La Niña, where tropical Pacific SSTs are generally close to average .

- **Impacts of La Niña:**
 - Strengthened easterly winds along the equator and northward movement of the jet stream over the eastern Pacific.
 - Enhances cold water upwelling off the coast of Peru and Ecuador.
 - Can lead to better-than-normal Monsoon in India and, at times, cause floods.



- **Impacts of El Niño:**
 - Suppresses cold water upwelling off the coast of Peru and Ecuador.
 - Weakens the Indian Monsoon and may trigger drought.
- **Triple-Dip La Niña:**
 - While typical ENSO cycles last 9-12 months and recur every 2-7 years, **triple-dip La Niña events persist for three consecutive years**.
 - Previous occurrences were observed in **1998-2001, 1973-1976, and 1954-1956**.

Oceanic Niño Index

- Recently, the US National Oceanic and Atmospheric Administration has predicted an 83% probability of the Oceanic Niño Index (ONI) transitioning to a neutral range by April-June 2024.
- Oceanic Niño Index is the **National Oceanic and Atmospheric Administration's (NOAA) primary indicator for monitoring the ocean part** of the seasonal climate pattern called the **El Niño-Southern Oscillation, or "ENSO"**.
- The ONI **tracks the running 3-month average sea surface temperatures** in the east-central tropical Pacific between 120°-170°W, near the International Dateline, and whether they are warmer or cooler than average.
- Index values of +0.5 or higher indicate El Niño and values of -0.5 or lower indicate La Niña

Atlantic Meridional Overturning Circulation (AMOC)

- The Atlantic Meridional Overturning Circulation (AMOC) is a crucial system in the Earth's climate, responsible for **circulating water from the northern to southern parts of the Atlantic Ocean and back** again over a long cycle.
- This circulation plays a vital role in **distributing warmth globally and providing essential nutrients** for ocean life.
 - However, researchers have developed an early warning indicator for potential breakdowns in the AMOC, which is considered a **critical tipping element** in the climate system.
- AMOC operates based on differences in temperature and salt content, but it's facing challenges due to faster-than-expected melting of Greenland's glaciers and Arctic ice sheets.
- **Consequences of AMOC collapse:** a rise in Atlantic sea levels, alterations in the wet and dry seasons in the Amazon region, more erratic temperature fluctuations, and a warmer southern hemisphere.

Swell waves

- Recently, coastal areas in central and southern districts of Kerala experienced inundation due to swell waves.
- Swell waves are **long wavelength waves formed on the ocean surface, consisting of a series of surface gravity waves**.
- **They are not generated by local winds but originate from distant storms** such as hurricanes or prolonged periods of strong gale winds.
- During these storms, significant energy is transferred from the atmosphere to the ocean, resulting in the formation of exceptionally high waves that can travel thousands of kilometers until reaching the coast.
- Swell waves exhibit **distinct characteristics** compared to locally generated wind waves.
 - They have a **narrower range of frequencies and directions** because they have dispersed from their point of origin and have thus lost some randomness, assuming a more defined shape and direction.
 - Unlike wind-generated waves, swells can **propagate in directions different from the prevailing wind direction**.
 - Their wavelengths typically range up to 150 meters, although exceptionally severe storms can produce swells exceeding 700 meters in length.
- Importantly, swell waves **occur without warning signs or local wind activity**.

In India, early warning systems like the Swell Surge Forecast System are launched by the Indian National Centre for Ocean Information Services (INCOIS).

Tornado

- Recently, a deadly tornado struck the **Mainaguri area of Jalpaiguri district of West Bengal**.
- **Tornado is a land-based vertical column of violently rotating air** that forms from a thunderstorm to the ground. It can have **wind speeds in the range of 105-322 km per hour**.
- The rotating column is physically connected to the cloud base or wall cloud and is often visible as a **cloud-filled "condensation funnel"**. If the air is dry enough, the tornado may only appear as a swirl of dirt on the ground without a visible connection to the cloud above.

- **The tornado over the sea is called waterspouts.**
- **Formation:** Any **collision of warm, moist air with dry, cool air in the presence of a low-pressure system** like a trough causes thunderstorms and tornadoes.
- **Geographical distribution:** Continents in the **mid-latitudes (between 20 and 60 degrees north and south)**, where they are frequently associated with thunderstorms that develop in regions where cold polar air meets warm tropical air.
- Tornadoes are the **most common in the United States, Argentina and Bangladesh.**
- The **Enhanced Fujita scale is used to measure tornado strength.** It is used to assign a tornado a 'rating' based on estimated wind speeds and related damage.

Cyclones in News

Name	Type	Area of Impact	Name suggested by
Cyclone Biparjoy	Tropical	Bay of Bengal	Maldives
Cyclone Michaung	Tropical	Tamil Nadu, Andhra Pradesh	Myanmar
Cyclone Midhili	Tropical	Bay of Bengal	Maldives

MISCELLANEOUS

Coal Gasification

- Union cabinet approves Rs.8500 crore viability gap funding for coal gasification under **National Coal Gasification Mission.**

What is Coal Gasification?

- Coal gasification is a **chemical process** that converts coal into a **combustible gas mixture** called **Synthesis gas** (also called syngas), which is a mixture of **hydrogen (H₂)**, **carbon monoxide (CO)** and **carbon dioxide (CO₂)**.
- Syn Gas produced from Coal gasification can be **usable** in **producing Synthetic Natural Gas (SNG-For Transportation)**, **energy fuel** (methanol & ethanol), **ammonia** for fertilizers and **Petro-chemicals**.
- **Note: Blue Hydrogen** is Produced via **natural gas or coal gasification combined** with carbon capture storage (CCS).

National Coal Gasification Mission:

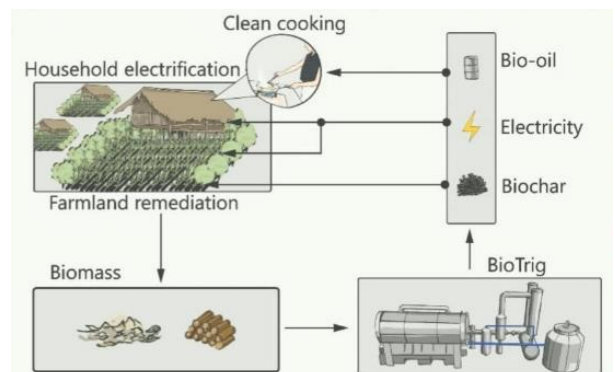
- In **July 2023**, government launched National Coal Gasification Mission to achieve coal gasification and liquefaction of **100 MT of coal by 2030.**
- A Steering Committee, chaired by **Dr. V.K. Saraswat** and comprising members from the Ministry of Coal, has been formed to oversee Surface Coal Gasification.
- **Coal India Limited (CIL)** plans to establish a minimum of **3 gasification plants** (apart from **Dankuni**).

BioTRIG

- Newly conducted research unveils 'BioTRIG,' a waste management innovation made for implementation in rural regions of India.

About BioTRIG

- BioTRIG is an innovative waste management technology that operates on the principle of pyrolysis at a community level.
 - Pyrolysis involves heating waste in an oxygen-free chamber at temperatures exceeding 400 degrees Celsius.



- Waste is sealed in an oxygen free chamber and heated, leading to the decomposition of organic materials.
- Pyrolysis produces three main by-products: Bio-oil, Syngas, Biochar.

Benefits to Rural India

- **Bio-oil:** Bio-oil is a versatile liquid fuel suitable for heating, cooking, or generating electricity.
- **Syngas:** Syngas, composed mainly of hydrogen (H₂) and carbon monoxide (CO), can fuel the pyrolysis process itself, making the system partially self-sustaining.
- **Biochar:** Biochar, a charcoal-like substance, serves as a soil amendment to enhance fertility and sequester carbon. Benefits include: Improved soil health, Generation of clean power, Reduction of indoor air pollution, Mitigation of greenhouse gas emissions.

Rejupave Technology

- The **Border Roads Organization (BRO)** introduced **indigenous technology - Rejupave** to enhance the capacity of the defence forces along the **Indo-China border in Arunachal Pradesh**.

About Rejupave Technology:

- Rejupave is a liquid **bio-based asphalt modifier & rejuvenating agent**. It was **developed by the CSIR-Central Road Research Institute (CSIR-CRRI)** (India's oldest and premier road research organisation)
- Rejupave is a bio-oil-based product that **reduces the heating requirement of bituminous mixes**. It is used in road construction to address challenges in low and sub-zero temperatures.
- Rejupave technology addresses construction challenges **in low and sub-zero temperatures**. It has been used by the Border Road Organization (BRO) to build bituminous road sections at the **Sela Road tunnel** and **LGG-Damteng-Yangste**.
- The technology is developed using a Bio-based eco-friendly product with **100% biooil**.

Star Rating System for SEIAA

- The MoEFCC has not yet implemented a star-rating system for **State Environment Impact Assessment Authorities (SEIAA)** based on their efficiency in granting environmental clearances to project.

Star Rating System for SEIAA

- The star-rating system for State Environment Impact Assessment Authorities (SEIAA) was **introduced by the Ministry of Environment, Forest and Climate Change (MoEFCC) in 2022**.
- It evaluates **states based on pollution control measures, environmental management practices, and compliance with regulatory requirements**.
- SEIAA is a **regulatory body** established by the MoEFCC under the Environment Impact Assessment (EIA) Notification 2006. It grants clearances based on recommendations from Expert Appraisal Committees.

Rating System	Rating Criteria
<ul style="list-style-type: none"> • Industries must apply annually for a star rating, ranging from one to five stars. Five stars indicate the highest environmental compliance and performance level. • Ratings are publicly displayed on the SEIAA website. 	<ul style="list-style-type: none"> • SEIAA receives points on a scale of 0 to 7: <ul style="list-style-type: none"> ○ Graded between 0 and 1 on five parameters and 0 and 2 for granting Environmental Clearance (EC). ○ Two points for granting clearance in less than 80 days, one point for 80 to 105 days, and 0.5 points for 105 to 120 days. ○ Zero points for clearances exceeding 120 days.

Plastic Waste Management (PWM-Amendment) Rules 2024

- The Ministry of Environment Forest and climate change (MoEF&CC) has amended the PWM Rules 2016 to Plastic Waste Management (Amendment) Rules 2024.

Revised definitions of “importer”, “manufacturer”, and “producer”

- **Expanded Definition of "Importer":** includes imports of any plastic packaging/commodity with plastic packaging/carry bags/plastic sheets/plastic raw material.
- **Comprehensive Definition of "Manufacturer":** includes a person engaged in the production of plastic raw material/compostable plastics/biodegradable plastics.
- **Extended Scope of "Producer":** includes persons engaged in manufacturing of intermediate material used for manufacturing plastic packaging. Only the producers registered under these rules can get raw materials from the manufacturer.
- **A new definition of “seller” has been inserted**, which means any person who sells plastic raw material for producing plastic packaging is a seller.

Highlights of the Plastic Waste Management (Amendment) Rules 2024:

- The 2024 introduce a definition of **biodegradable plastics**, which now not only refers to materials capable of degradation in specific environments but also emphasizes the absence of microplastics.
- Under the amendment, the **production of carry bags and commodities is permitted using compostable or biodegradable plastics.**
 - However, this is contingent upon complying with mandatory marking and labeling requirements outlined in the rules and regulations of the Food Safety and Standards Authority of India (FSSAI) for products intended for food contact.
- Manufacturers of commodities made from compostable or biodegradable plastics must obtain certification from the Central Pollution Control Board (CPCB) before marketing or selling their products.
- Additionally, these manufacturers are obligated to ensure the processing of pre-consumer plastic waste generated during manufacturing and report such activities to the relevant State Pollution Control Board or Pollution Control Committee.

Global Waste Management Outlook 2024

- The Global Waste Management Outlook 2024, a report **jointly launched by the United Nations Environment Programme (UNEP) & International Solid Waste Association (ISWA)** during the Sixth United Nations Environmental Assembly (UNEA-6) in Nairobi.
- This report provides a comprehensive assessment of the global waste challenge.

ISWA

Founded in 1970, ISWA is a non-profit NGO headquartered in Rotterdam, Netherlands.

It is the only worldwide association dedicated to promoting sustainable and professional waste management practices.

Key findings of the Report:

- **Waste generation is on the rise:** Global waste generation will increase from 2.3 billion tonnes in 2023 to 3.8 billion tonnes by 2050.
- **Waste collection:** Over 1/3rd of the world’s population, about 2.7 billion people, mainly in low- and middle-income countries (primarily in the Global South), lack access to waste collection services.
- **Waste management is expensive:** The global cost of waste management is currently USD 371.6 billion per year. Without urgent action, this cost could almost double to USD 640.3 billion by 2050.

International Tropical Timber Council

- The 59th Council session of the International Tropical Timber Organisation (ITTO) with the objective to promote sustainable tropical forest management has concluded recently.

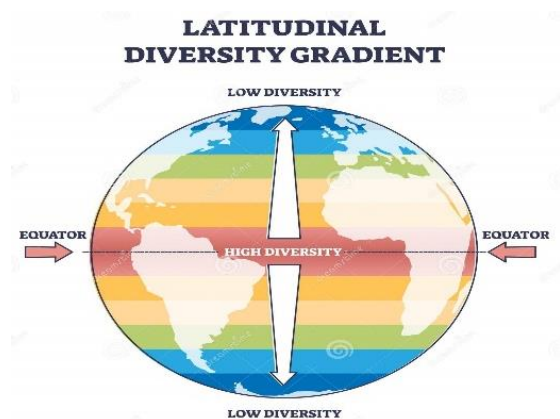
About International Tropical Timber Organisation (ITTO)

Governing Body	The International Tropical Timber Council (ITTC) serves as the governing body of the International Tropical Timber Organisation (ITTO).
Meeting Frequency	It convenes at least once a year to address a broad agenda focused on promoting sustainable tropical forest management and the trade of sustainably produced tropical timber.
Establishment	Established under the International Tropical Timber Agreement 1983 (ITTA 1983), negotiated under the auspices of the UN Conference on Trade and Development.

Funding	It facilitates funding for forestry projects in tropical timber-producing countries, with all projects funded by voluntary contributions from governments.
Membership	Consists of 75 countries, including India , whose members manage approximately 80 percent of the world's tropical forests and are responsible for 90 percent of the global tropical timber trade.
Headquarters	Yokohama, Japan

Latitudinal Diversity Gradient (LDG)

- LDG refers to the pattern of having more number of species at the equator with numbers reducing towards poles.
- A study on **Mycorrhizal Fungi- arbuscular mycorrhizal and ectomycorrhizal**, found that these fungi have a role in the overall LDG phenomenon.
- **Arbuscular fungi promote diversity near the equator**, while **ectomycorrhizal fungi support single tree species at higher latitudes, reducing diversity towards poles.**
- This highlights the importance of these fungi in maintaining global biodiversity.



Fungi

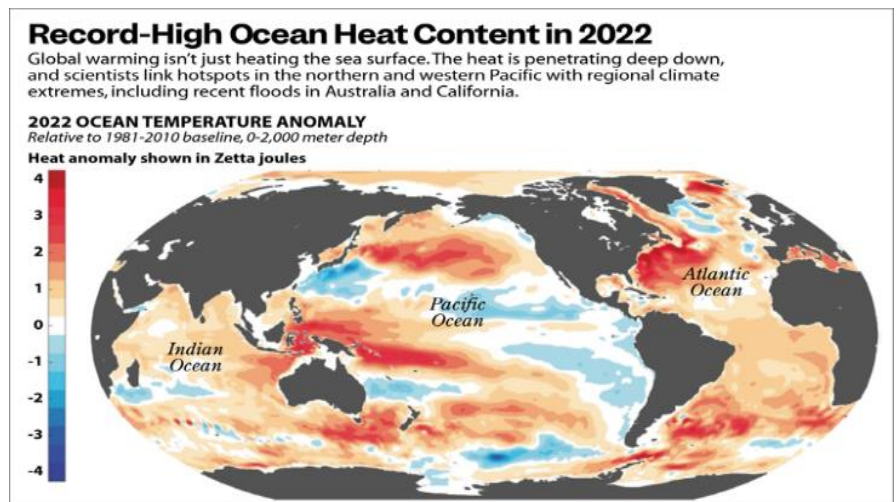
- Fungi (singular-Fungus) are **eukaryotic organisms** that include **moulds, yeasts**, and related organisms like **mushrooms** within the kingdom Fungi.
- Fungi come in both **unicellular and multicellular** forms, with yeast representing the simplest unicellular type and moulds like Rhizopus, Mucor, and Penicillium are examples of multicellular fungi.
- They exhibit **greater complexity and size compared to bacteria** and can function as either saprophytes or parasites. The scientific discipline focused on the study of fungi is known as Mycology.

Characteristics of Fungi

Heterotrophs	Fungi are heterotrophic organisms, meaning they obtain nutrients from other organisms. They absorb organic matter from their environment.
Cell walls	Fungi have cell walls, but unlike plant cell walls, which are made of cellulose, fungal cell walls are made of chitin, the same substance that makes up the shells of insects and crustaceans.
Reproduction	Fungi can reproduce both sexually and asexually. Asexual reproduction often involves spore production, while sexual reproduction forms fruiting bodies.

Global Ocean Heat Content

- In 2023, the global ocean's heat content reached 286 Zetajoules (10^{21} Joules), equivalent to 4.6 billion Hiroshima nuclear bombs.
- Warming in the Atlantic, North Pacific, Western Pacific, and Southern oceans is occurring faster than the global average.
- The atmosphere's CO₂ concentration is over 50% above pre-industrial levels, and the



SOURCE: Chinese Institute of Atmospheric Physics & Chinese Academy of Sciences, *Advances in Atmospheric Science* Inside Climate News

Salinity Contrast index has reached 7.2 mg per kg, the fourth-highest since 1958.

Ocean heat content (OHC)

- OHC is the **total amount of heat energy stored in the world's oceans**. It is a crucial metric for understanding and monitoring Earth's energy balance and its implications for climate change.
- OHC is calculated by **measuring ocean temperature at various depths across the globe**. Integrating these temperature measurements with the density and specific heat capacity of seawater provides the total heat content.
- It is quantified in **Joules**, the standard unit of energy. Compared to air, water exhibits a greater heat capacity, indicating its ability to retain significantly larger quantities of heat.

Tropicalisation

- Tropicalisation refers to a phenomenon observed in oceanic ecosystems where species typically found in tropical regions are moving towards the poles, while species adapted to temperate climates are retreating or shifting their ranges towards cooler waters.
- Notably, the Mediterranean Sea has emerged as a hotspot for tropicalisation, marked by a surge in tropical species.
- This phenomenon, along with Borealisation and Desertification, plays a pivotal role in the global redistribution of organisms and the restructuring of ecological communities.
- Borealization refers to the expansion of the Earth's boreal zone towards the poles and higher altitudes. Desertification refers to the land degradation process in which once fertile land becomes increasingly arid and unproductive.

Diel Vertical Migration

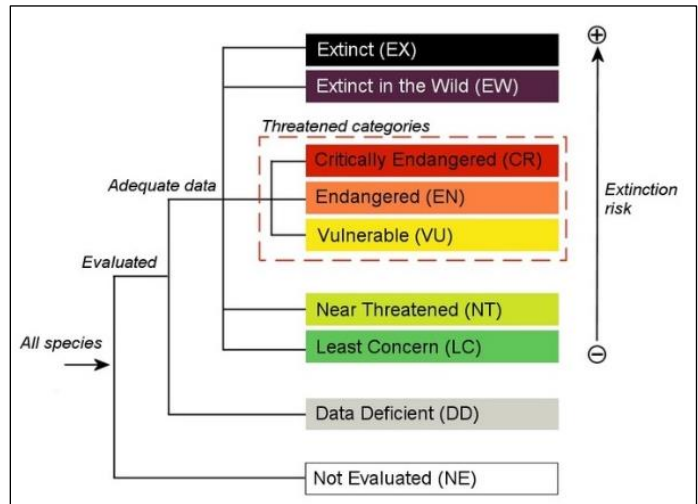
- Diel vertical migration (DVM), also known as diurnal vertical migration, is a 24-hour movement pattern used by some organisms like copepods in the ocean and lakes.
- It involves **moving to the upper water layer at night and returning to the daylight zone or dense lake layer during the day**.
- DVM is crucial for **deep-sea food webs and carbon sequestration** as animals remove substantial amounts of carbon from Upper Ocean as they feed on surface dwelling plankton.
- Deep-sea organisms perform DVM to **avoid predators and find food**. Many are vulnerable to daytime predators, so they move to the surface at night to feed on migrated plankton from the depths.
- However, DVM can be **absent during the midnight sun in Arctic regions**, and **sudden vertical migration can occur during a solar eclipse**.

Updated Red List By IUCN

- The IUCN recently updated its Red List, revealing insights into the status of thousands of species. This information was shared during the 28th Conference of Parties, highlighting the increasing threat of climate change on various species. The updated Red List now encompasses 157,190 species, with 44,016 facing the risk of extinction.
- The Saiga antelope, present since the Ice Age, has been reclassified from Critically Endangered to Near Threatened.
- A quarter of freshwater fish are in jeopardy, with 17% affected by climate change, marking the first global assessment for these species.
- Four freshwater subterranean fish species from Kerala are listed:
 - **Endangered:** Shaji's Catfish, Abdulkalam's Blind Cave Catfish, Pangio Bhujia
 - **Vulnerable:** Gollum snakehead

IUCN Red List

- The IUCN Red List serves as the primary global tool for evaluating the risk of extinction among animals, fungi, and plants.
- It provides vital insights into global biodiversity health, offering comprehensive data on species' characteristics, threats, and conservation efforts.
- Through its nine categories ranging from NE (Not Evaluated) to EX (Extinct), it defines the extinction risk of species, with Critically Endangered (CR), Endangered (EN), and Vulnerable (VU) species considered threatened.
- The IUCN Red List also includes the IUCN Green Status of Species, which evaluates population recovery and measures conservation success.



International Union for Conservation of Nature (IUCN)	
Establishment	1948
Scope	Global organization working to conserve the natural world and ensure sustainable use of natural resources. It is not an organ of the United Nations
Membership	Composed of government and civil society organizations Over 1,400 members from over 160 countries
Activities	Data gathering and analysis Research on environmental challenges Implementation of field projects for conservation Advocacy for environmental policies Education on conservation and sustainable practices

Rat Hole Mining Method

- In a recent incident in **Uttarakhand**, approximately 40 **laborers were trapped** in the **Silkyara Bend Barkot tunnel** following its collapse. After conventional rescue methods failed, rat-hole miners were summoned to aid in the rescue operation.
- The term “rat hole” refers to the **narrow pits dug into the ground, typically just large enough for one person to descend and extract coal.**
- Rat-hole mining is broadly of two types: Side Cutting and Box Cutting
 - In the **side-cutting procedure**, narrow tunnels are dug on the hill slopes and workers go inside until they find the coal seam.
 - The other type of rat-hole mining is called **box-cutting**.
 - In this type, a rectangular opening is made, varying from 10 to 100 sqm, and through that a vertical pit is dug, 100 to 400 feet deep.
 - Once the coal seam is found, rat-hole-sized tunnels are dug horizontally through which workers can extract the coal.
- Rat-hole coal mining, primarily practiced in Northeastern states like **Meghalaya**, faced a **ban by the National Green Tribunal (NGT)** in 2014 due to various concerns. Despite the ban, the state government appealed the decision in the Supreme Court, leading to the continued prevalence of this method in Meghalaya. **In 2022, a panel appointed by the Meghalaya High Court reported that rat-hole mining persists in the state.**

Weather Information Network and Data System (WINDS)

The Ministry of Agriculture & Farmers Welfare has introduced the Weather Information Network and Data System (WINDS) to generate detailed and localized weather forecasts.

About WINDS:

- It establishes a robust mechanism to integrate weather data from various observation systems across the country into a single national WINDS portal.
- Over 200,000 ground stations will be installed as part of this initiative.
- These stations aim to enhance the utilization of weather data, thereby improving weather predictions and decision-making processes.

About Hyperlocal Weather Forecasting:

- Hyperlocal weather forecasting offers highly detailed and specific weather predictions tailored to individual locations.
- It empowers farmers to make informed decisions regarding planting, irrigation, and harvesting based on real-time weather data relevant to their area.
- This approach utilizes advanced technologies such as high-resolution weather models, weather sensors, and data analytics to provide accurate and localized forecasts.

Flood Management and Border Areas Programme (FMBAP)

- The Union Cabinet has approved the continuation of the Flood Management and Border Areas Programme (FMBAP).

About Flood Management and Border Areas Programme (FMBAP)

Approval Period	5 years from 2021-22 to 2025-26
Launch	Initially launched during Eleventh Five Year Plan (2007–2012)
Objective	To supplement State Government efforts in protecting human life, land, and property from floods, and promote bilateral cooperation in water resources with neighboring countries
Ministry	Ministry of Jal Shakti
Scheme Type	Centrally Sponsored Scheme
Sub-components	
Flood Management Programme (FMP)	<ul style="list-style-type: none">• Covers critical works related to flood control, anti-erosion, drainage development, and anti-sea erosion• Funding Pattern: 90%:10% between Centre and 8 North-Eastern States and Hilly States (For other states 60%:40%)• 427 projects completed, benefiting 4.99 mha of land and providing protection to 53.57 million people
River Management and Border Areas (RMBA)	<ul style="list-style-type: none">• Covers flood control and anti-erosion works on common border rivers with neighboring countries• Includes hydrological observations, flood forecasting, and investigation & pre-construction activities of joint water resources projects• Funding Pattern: 100% central assistance.

India Meteorological Department

- Indian Meteorological Department will complete 150 years of its presence and services on 15th January, 2025.

India Meteorological Department (IMD)

Establishment	In 1875, headquartered in New Delhi
Organisation	The Director General of Meteorology is the Head of the India Meteorological Department. There are 6 Regional Meteorological Centres, each under a Deputy

	Director General with headquarters at Mumbai, Chennai, New Delhi, Calcutta, Nagpur and Guwahati
Nodal Ministry	Ministry of Earth Sciences
Mandate	<ul style="list-style-type: none"> • Acts as India's National Meteorological Service and the primary government agency for meteorology and related subjects. • Takes meteorological observations and forecasts weather information. • Issues warnings for severe weather phenomena. • Provides meteorological statistics necessary for agriculture, industries, etc. • Conducts and promotes research in meteorology and allied fields. • Detects and locates earthquakes and evaluates seismic activity across the country.

Initiatives under India Meteorological Department

- **National Framework of Climate Services (NFCS)**
 - Premised on the Global Framework for Climate Services (GFCS)
 - Aims to provide climate information and services for agriculture, energy, disaster management, health, and water sectors
 - Aims to make individuals and organizations climate-smart to improve the country's economy
- **Weather Analysis and Forecast Enabling System (WAFES)**
 - It is a Web-GIS-based integrated Indigenously Developed Decision Support System (DSS).
 - Serves as a visualization platform for meteorological observations and prediction models
 - Aids decision-making for severe weather phenomena and their socio-economic impact
 - Components include Meteorological Information Communication System (MICS), Data Information Processing System (DIPS), Synthesized Integrated Visualization System (SIVS), and Public Weather Information System (PWIS)
 - Provides real-time information for sectors such as Urban, Power, Hydrology, Health, Energy, Agriculture, Transport, and Tourism under the "UPHHEATT" initiative
- **Other initiatives launched**
 - **Panchayat Mausam Sewa Portal:** Assists farmers in planning agricultural activities
 - **IMD's Mobile App:** Integrated GIS-based interactive mobile app MAUSAM for all weather-related services

Energy Charter Treaty

- The UK has announced its withdrawal from the Energy Charter Treaty owing to its incompatibility with climate commitments

Energy Charter Treaty	
Purpose	Provides a multilateral framework for energy cooperation.
Legal Force	Entered into legal force in April 1998.
Objectives	Promotes energy security, open and competitive energy markets, and sustainable development.
Signatories and Parties	Currently has 53 Signatories and Contracting Parties. (India is not signatory)
More Information	It established the Energy Charter Conference , an inter-governmental organisation which meets on a regular basis to discuss issues affecting energy cooperation.

Paira Cropping System

- A unique conservation agricultural practice, Paira cropping system has dwindled.

About Paira Cropping System:

- The utera/paira is a type of cropping which is commonly practiced in **Bihar, Eastern Uttar Pradesh, West Bengal Chhattisgarh and Odisha**.
- It is a kind of **relay method of sowing** in which lentil/ lathyrus/ urdbean/ mungbean seeds are broadcast in the standing crop of rice about 2 weeks before its harvest.
- This system **does not allow agronomic intervention** such as **tillage, weeding, irrigation and fertilizer**. However, rice variety decides the productivity of pulses in this system.
- **Advantages include using better soil moisture** during harvesting, which could be lost quickly.
- **Experimental evidence** shows that **Paira cropping produces more lentil yield than tillage after harvesting**, making it an efficient method for sustainable crop intensification and land productivity.

Volcanic Vortex Rings

- Mount Etna volcano has been sending up almost perfect rings of smoke into the air which are a rare phenomenon that scientists refer to as volcanic vortex rings.
- Volcanic Vortex rings are **generated when gas, predominantly water vapour, is released rapidly through a vent in the crater**.
- The rings can **remain in the air for up to 10 minutes** but tend to disintegrate quickly if conditions are windy and turbulent.
- This phenomenon was **first observed at Etna and Vesuvius in Italy in 1724**.
- In more recent times, volcanic vortex rings have been observed at volcanoes such as
 - Redoubt in Alaska, Tungurahua in Ecuador, Pacaya in Guatemala, Eyjafjallajökull and Hekla in Iceland, Stromboli in Italy, Aso and Sakurajima in Japan, Yasur in Vanuatu, Whakaari in New Zealand, and Momotombo in Nicaragua.

- **Mount Etna** is an active volcano on **Sicily's east coast**.
- It is **Europe's largest and most active volcano**.
- It has been a **UNESCO World Heritage Site since 2013**.
- The volcano is in almost constant activity, with at least 60 flank eruptions since 1600.

Great Barrier Reef

- Great Barrier Reef is a **complex of coral reefs, shoals, and islets in the Pacific Ocean**.
- It is **located off the northeastern coast of Australia in the Coral Sea**.
- It is the **longest and largest reef complex in the world**. It is the largest living structure on Earth.
- It extends in roughly a northwest-southeast direction for more than 2,300 km, at an offshore distance ranging from 16 to 160 km, and its width ranges from 60 to 250 km. It has an area of some 350,000 square km.
- The reef, which is **large enough to be visible from space**, is made up of nearly 3,000 individual reefs and over 900 islands.
- UNESCO declared the Great Barrier Reef a World Heritage Site in 1981.
- Much of the Great Barrier Reef is a marine protected area, managed by the Great Barrier Reef Marine Park Authority of Australia.
- **Biodiversity:**
 - It is estimated that the reef is home to around 1500 species of fish and around 600 different coral species.
 - It is home to 4,000 mollusk species and over 250 different shrimp species.
 - The reef is also home to six of the seven known species of sea turtles, more than a dozen sea snakes, and nearly two dozen species of birds.

REPORTS IN NEWS


Trade Policy Tools for Climate Action	World Trade Organization (WTO)
Global Risk Report 2024	World Economic Forum







Dynamic Ground Water Resource Assessment Report	World Bank
Green and Sustainable Growth Agenda for the Global Economy	NITI Aayog
Global Cooling Watch Report	United Nations Environment Programme (UNEP) led coalition
Report on Conservation of Migratory Species	Convention on the Conservation of Migratory Species of Wild Animals (CMS)
State of Finance for Nature 2023 Report	UN Environment Programme (UNEP)
Sand and Dust Storms Report (SDS)	Food and Agriculture Organization (FAO)
Global Landscape of Climate Finance 2023 Report	Climate Policy Initiative (CPI)





Report	Key Findings
Global Methane Tracker 2024 Report	<ul style="list-style-type: none"> Published by International Energy Agency (IEA) Record-high emissions: methane emissions from fossil fuel use in 2023 were close to the highest ever recorded, reaching around 120 million Tonnes. Major emitters: United States leading in oil and gas emissions, followed by Russia. (China was the top emitter from coal operations).
State of the Global Report, 2023	<ul style="list-style-type: none"> Published by World Meteorological Organization (WMO) Record High Temperature: Global average near-surface temperature surged to at least 1.45°C above pre-industrial levels. Threshold levels of Greenhouse gas levels, surface temperatures, ocean heat and acidification, sea level rise, Antarctic Sea ice cover, and glacier retreat have been achieved.
Global E Waste Monitor Report	<ul style="list-style-type: none"> Released by United Nations Institute for Training and Research (UNITAR) Rapid Growth: E-waste generation is rising at an alarming rate, five times faster than documented e-waste recycling. Global Figures: In 2022, the world produced staggering 62 million tonnes (Up 82% from 2010) of e-waste. By 2030, this is projected to reach a whopping 82 Million Tonnes (On track to rise another 32% by 2030)





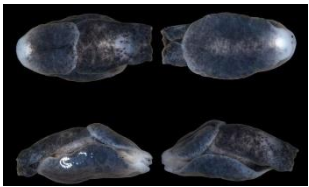

SPECIES IN NEWS




Fauna in News





<p>White rhinoceros</p> 	<ul style="list-style-type: none"> Scientists in Berlin announced the first successful embryo transfer in a white rhinoceros using a method that offers hope for saving the critically endangered northern white rhino subspecies from extinction. IUCN status: Northern White Rhino: Critically Endangered The Indian rhinoceros is different from its African counterparts with respect to possessing only one horn and is vulnerable in the IUCN Red list.
<p>Melanistic Tiger</p>	<ul style="list-style-type: none"> Odisha Govt announced to establish a melanistic tiger safari — a first of its kind in the world. The safari will be established near Baripada in Mayurbhanj. IUCN status: Endangered The abnormally dark or black coat in such tigers is termed pseudomelanistic or false coloured. Simlipal has the world's highest rate of black tiger sightings in the world

<p>Laughing Gull</p> 	<ul style="list-style-type: none"> • Laughing gull from North America spotted at Chittari estuary in Kasaragod, first time in India. • Conservation status: Least concern • Habitat: Salt marshes, coastal bays, piers, beaches, ocean. Generally found only in coastal regions, but also ranging several miles inland to rivers, fields, dumps.
<p>Snow Leopard</p> 	<ul style="list-style-type: none"> • Government of India have recently launched Status Report of Snow Leopards in India, India's first nationwide report. • The report emphasised the need for a dedicated Snow Leopard Cell at the Dehradun- based Wildlife Institute of India (WII) under the Union Ministry of Environment, Forest and Climate Change (MoEF&CC). • Habitat: Cold High Mountains. • IUCN: Vulnerable. Schedule I: Wildlife (Protection) Act, 1972
<p>Dusted Apollo</p> 	<ul style="list-style-type: none"> • Dusted Apollo, a rare high-altitude butterfly has been sighted and photographed for the first time in Himachal, indicating the flourishing diversity of Apollo butterflies in the region. • The most distinguishing feature is the dusting of brown scales on its forewings, which gives it its unique appearance. • This butterfly is found in the high-altitude regions of the Himalayas, between 3,500 and 4,800 meters above sea level. It is particularly common in Ladakh, India, and Nepal. • Schedule II: Wildlife (Protection) Act, 1972
<p>Black Necked Crane</p> 	<ul style="list-style-type: none"> • The Wildlife Institute of India and the Zoological Survey of India have been carrying out assessment of the black-necked cranes. • Listed in Schedule I of the Wild Life (Protection) Act, 1972, Appendix I of CITES and the Convention on Conservation of Migratory Species. • Important habitats of Black-necked Crane have been notified as a Protected Areas, for example, Changthang Sanctuary, Ladakh.
<p>Indian Gray Wolf</p> 	<ul style="list-style-type: none"> • The Indian grey wolf was spotted in the confines of the National Chambal Sanctuary (Uttar Pradesh) • IUCN: Least Concern, Wildlife (Protection) Act of 1972: Schedule I, CITES: Appendix 1 • Habitat: Scrub, grasslands and semi-arid pastoral agro-ecosystems • Wide distribution range that extends from the Indian subcontinent to Israel.
<p>Spur-winged lapwing</p> 	<ul style="list-style-type: none"> • Birdwatching community from Telangana have spotted a spur-winged lapwing at Ammavaripet Lake near Warangal • IUCN Status: Least Concern • Habitat is found around wetlands, but also away from water in cultivated areas. Its native to North Africa, the Middle East and Mediterranean regions.
<p>Siberian Rubythroat</p>	<ul style="list-style-type: none"> • It is a ground-loving songbird. Its winter migration has been recorded in Nilgiris. • It primarily breeds in Siberia, while wintering in southern and south-eastern Asia
<p>Steinernema Adamsi</p>	<ul style="list-style-type: none"> • The nematode Steinernema Adamsi is barely visible to the naked eye (around 0.5mm long and half the width of a human hair) holds the potential to revolutionize pest control in warm, humid climates. • It thrives in warm, humid conditions where other beneficial nematodes struggle.

	<ul style="list-style-type: none"> It offers a safe and environmentally friendly alternative to chemical pesticides which can help farmers reduce reliance on harmful chemicals and protect human health. Kills insects by entering their bodies and releasing bacteria that are fatal to the host and effective against a wide range of insect pests, including beetles, weevils, and moths.
Thrips Parvispinus	<ul style="list-style-type: none"> Thrips Parvispinus is an invasive pest species, which has dominated or even replaced the native chilli thrips. Also known as the South-East Asian thrips, is a tiny insect pest that is native to Southeast Asia but has spread to many other parts of the world, including Europe, North America, and Africa. It is a polyphagous pest, meaning that it can feed on a wide variety of plants, including vegetables, fruits, ornamentals, and even weeds. 40 to 80 per cent of the damage to chilli crop in Andhra Pradesh & Telangana is due to thrips.
Austropallenehalanychi 	<ul style="list-style-type: none"> Scientists have discovered a new species of sea spider. The spider with yellow body colour has four black eyes and large bulbous claws. It was found off the Antarctica Ocean. It is a distant relative to horseshoe crabs and arachnids. It does not use its mouth but a straw-like proboscis to consume food.
European Wood Bison 	<ul style="list-style-type: none"> Ongoing war in Ukraine had impacted the efforts to save the last remnant of European wood bison, also known as wisent. European bison (Bison bonasus) are the largest and heaviest land mammals in Europe. Habitat: Grassland, deciduous and mixed forests. Conservation status: Near Threatened (IUCN)
Camelids 	<ul style="list-style-type: none"> The United Nations recently declared 2024 the International Year of Camelids. A Camelid refers to any of the even-toed ungulates of the family Camelidae. E.g. camels, llamas, alpacas, guanacos, and vicuñas. These mammals are characterized by having soft-padded, snowshoe-like feet where each foot has two toes. They have long necks and slender legs. Their upper lips are split into two independent mobile protrusions. These animals are herbivorous, and have a unique digestive system that allows them to extract nutrients from fibrous plant material. They are ruminants. Their stomachs have three chambers, in contrast to other ruminants that have four.
Chum Salmon 	<ul style="list-style-type: none"> Scientists have recently discovered Chum salmon, a migratory fish, spawning in the Arctic waters. They do not reside in fresh water for an extended period. They are also known as dog salmon. They are the most widely distributed of all the Pacific salmon. They spend their early life growing and feeding in freshwater streams, estuaries, and associated wetlands.
Himalayan Wolf	<ul style="list-style-type: none"> Habitat: Found in Higher Altitude often exceeding 4,000 meters. Their hearts are specially adapted to function efficiently in the thin air of these high mountains.



	<ul style="list-style-type: none"> • Their fur coloration blends seamlessly with the rocky terrain, helping them stalk prey and avoid predators. • They are larger than their European and Indian counterparts. • They play a vital role in maintaining the delicate balance of the high-altitude ecosystem. • Conservation Status: Vulnerable
<p>Baleen Whales</p> 	<ul style="list-style-type: none"> • The Scientists discovered the anatomy behind the songs of Baleen Whales that use a larynx, or voice box, anatomically modified to enable underwater vocalisation. (marine mammals known for their haunting songs) • They have Unique feeding mechanism involving baleen plates, a large rack of fine, hair-like keratin used to filter out small krill from the water. (species such as the blue whale, humpback, North Atlantic right whales, bowhead whales)
<p>Green Anaconda (Least Concern)</p> 	<ul style="list-style-type: none"> • Recent study revealed that the green anaconda, formerly believed to be a single species, is actually two genetically distinct species. • World's heaviest snakes (weigh more than 250 kilograms) • Predominantly found in rivers and wetlands in South America. • First is the known species, Eunectes murinus, second, newly identified species is Eunectes akayima or "northern green anaconda", which is found in Ecuador, Colombia, Venezuela, Trinidad, Guyana, Suriname and French Guiana.
<p>Hawksbill Turtle (Critically Endangered)</p> 	<ul style="list-style-type: none"> • The 14th Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS COP14) adopted the Single Species Action Plan for conservation of the Hawksbill Turtle. • Only species of sea turtle that can survive on a diet consisting mainly of sponges. (named for their narrow, pointed beak) • They inhabit the tropical and sub-tropical waters of all of the world's major oceans.
<p>Melanochlamys Droupadi</p> 	<ul style="list-style-type: none"> • The Zoological Survey of India named a new marine species of head-shield sea slug after President of India Droupadi Murmu. • Sea slugs are hermaphroditic, meaning they possess both male and female reproductive organs. • Belonging to Melanochlamys genus was discovered from Digha of West Bengal coast and Udaipur of Odisha coast. • Live primarily in marine habitats and are slug-like
<p>Hangul (Critically Endangered)</p> 	<ul style="list-style-type: none"> • The experts suggested that the number of Hanguls in Kashmir will cross 300, the first time in more than three decades. • Distribution: Dachigam National Park and its nearby areas; Rajparian Wildlife Sanctuary, Overa Aru, Sind Valley, and the forests of Kishtwar and Baderwah in Jammu and Kashmir. • State Animal of Jammu and Kashmir (J&K) • Project Hangul was started to address the decreasing population of the Hangul by J & K Govt in collaboration with the IUCN and WWF.


<p>Golden Langur (Endangered)</p> 	<ul style="list-style-type: none"> • Recent Survey revealed that There are an estimated 7,396 golden langurs in India. (CITES: Appendix I) • Native to Assam, India and Bhutan (both folivores and frugivores) • Golden langurs occupy moist evergreen and tropical deciduous forests as well as some riverine areas and savannas. • It has been noted that their fur changes colors according to the seasons
<p>Parasitoid Wasp</p> 	<ul style="list-style-type: none"> • Entomologists from the Ashoka Trust for Research in Ecology and the Environment (ATREE) have discovered a new species of parasitoid wasp in the Western Ghats region of Karnataka. • Parasitoid wasps are a group of insects that lay their eggs inside other insects to complete their life cycle. • They are important biological control methods for gardeners. They are useful in controlling both native pests and invasive species. • They feed on the eggs, larvae, and sometimes pupae of many insects, including aphids, caterpillars, and other honeydew-producing sucking insects.
<p>Noa-Dihing Music Frog</p> 	<ul style="list-style-type: none"> • It is a new species of 'music frog' which is named Nidirana noa- Dihing. It is phenotypically distinct from its congeners by a combination of morphological characters. It is confirmed for the first time that the Nidirana genus has been found in India. The Nidirana species is known in Japan, Taiwan, China, Vietnam, Laos, and Thailand. • Nidirana are known to inhabit swamps, ponds, and paddy fields, and they often construct nests to lay their eggs. • The new species was named after the Noa-Dihing River, which is near where the specimens were discovered and collected. • Appearance: The amphibians have "irregularly shaped and sized spots" on their eyelids and they have dark stripes around their moderately large eyes. Their pupils are gold-rimmed. Their irises are dark brown and have a golden spackle
<p>Kumki Elephants</p>	<ul style="list-style-type: none"> • Kumkis are trained captive Asian elephants used to drive wild elephants away from human settlements and contribute to wildlife conservation. • Originating from the Persian word "kumak," they are used in forest patrolling, rescue operations, and medical treatment for injured wild elephants. • Kumkis also act as mediators between wild elephants and humans, ensuring their safety and well-being.
<p>Megalosaurus</p>	<ul style="list-style-type: none"> • Megalosaurus is an extinct genus of large carnivorous theropod dinosaurs from the Middle Jurassic Epoch of southern England. • Despite fossils from other areas, the only known remains of Megalosaurus come from Oxfordshire (South East England) and date back to the late Middle Jurassic, indicating its extinct status.

<p>Eurasian Otter</p> 	<p>It is a semi-aquatic carnivorous mammal. Scientific Name: <i>Lutra lutra</i></p> <ul style="list-style-type: none"> • It has one of the widest distributions of all Palaearctic mammals. Its range covers parts of three continents: Europe, Asia, and Africa. In India, it occurs in northern, northeast, and southern India. • Habitat: It lives in a wide variety of aquatic habitats, including highland and lowland lakes, rivers, streams, marshes, swamp forests, and coastal areas. In the Indian sub-continent, Eurasian otters occur in cold hill and mountain streams. • Features: It has a long lithe body with a thick tail and short legs. It has sensitive whiskers around the snout to help detect prey. It has two layers of fur: a thick waterproof outer one and a warm inner one with 50,000 hairs/cm square. It has an acute sense of sight, smell, and hearing. • Conservation Status: IUCN: Near threatened, Wildlife Protection Act: Schedule I, CITES: Appendix I
<p>Binturong</p> 	<ul style="list-style-type: none"> • The binturong (<i>Arctictis binturong</i>) is a medium-sized mammal, also known as a bearcat, of the Viverridae family, which includes civets, linsangs and genets. <ul style="list-style-type: none"> ○ Its nine subspecies are the sole occupants of the genus <i>Arctictis</i>. They can weigh up to 50 pounds, but most often weigh in at between 25 and 35 pounds. • Range: Binturongs, native to Southeast Asia, inhabit rainforests from Nepal, India, Bhutan, Sumatra, Java, and Borneo, extending southward to Indonesia. • Prehensile Tail: The binturong, a carnivore with a prehensile tail, is one of only two carnivores with such a tail, the other being the kinkajou. These animals spend most of their time on treetops, using their tail as a fifth limb for climbing through the forest. • IUCN: Vulnerable, WPA 1972: Schedule I, CITES: Appendix III
<p>Conjoined Silverline</p> 	<ul style="list-style-type: none"> • The butterfly species -- Conjoined Silverline (<i>Cigaritis conjuncta</i>) found from the Western Ghats biodiversity hotspot, India. • Features: The new butterfly is the size of a one-rupee coin but is invaluable to conservationists. <ul style="list-style-type: none"> ○ It is endemic to mid-elevation evergreen forests of the Western Ghats. ○ It has fused spots and bands on the underside of wings, and shiny silver lines in the centre of those bands. ○ The two sites where they have been located are at an elevation of 900 meters (Iruppu Falls) and 1,300 meters (Honey Valley). ○ India houses more than 1,400 species of butterflies, but very few new ones have been discovered in the last few decades.
<p>Caracal</p> 	<ul style="list-style-type: none"> • They are nocturnal animals known for their athleticism and ability to catch birds in flight. • They are found in Rajasthan, Gujarat, and Madhya Pradesh, as well as in several dozen countries across Africa, the Middle East, Central, and South Asia. • They live in woodlands, savannahs, and scrub forests. • IUCN Status- Near Threatened.
<p>Purple-striped jellyfish</p>	<ul style="list-style-type: none"> • It is primarily found in pelagic or open ocean habitats but can also survive in benthic and temperate coastal areas.


	<ul style="list-style-type: none"> It is found worldwide in tropical and warm-temperature seas, primarily in the Indo-Pacific, Atlantic Ocean, and Mediterranean Sea. Its unique feature is its bioluminescent stingers on the tentacles and bell, which produce light in the dark. This venomous species can cause varying degrees of illness, including diarrhea, extreme pain, vomiting, and anaphylactic shock. Jellyfish blooms occur when the species' population increases dramatically due to higher reproduction rates, often due to rising ocean temperatures.
Neptis Philyra	<ul style="list-style-type: none"> It is a rare butterfly species, has been discovered in India's Tale Valley Wildlife Sanctuary (Arunachal Pradesh) Known as the long-streak sailor, it is found in eastern Asia, including eastern Siberia, Korea, Japan, and central and southwest China.
Asiatic wild dogs (Dhole)	<ul style="list-style-type: none"> Also known as Indian wild dogs, are a type of wild canid found in forests across central, south, and southeast Asia. They can be found as far north as Siberia, south as Malaysian islands, and west as the Indian peninsula. Dholes inhabit dense jungles, steppes, mountains, scrub forests, and pine forests. Their conservation status is Endangered under the IUCN Red List and CITES Appendix II. <ul style="list-style-type: none"> The forest department is monitoring an outbreak of mange among Asiatic wild dogs in the Mudumalai Tiger Reserve in the Nilgiris. Mange is a skin disease caused by mite infestations, causing inflammation, itching, skin thickening, and hair loss. The most severe form is caused by <i>Sarcoptes scabiei</i>, which also causes human scabies.

Flora in News

Cuscuta dodder (love vine) 	<ul style="list-style-type: none"> Cuscuta dodder an Invasive weed, native to North America, is slowly threatening the Chengalpet forests and Vedanthangal Bird Sanctuary in Chennai. They are leafless, yellow, orange, or red thread-like twining stems that have no chlorophyll and therefore cannot photosynthesize. They obtain their nutrients by attaching themselves to other plants using haustoria, which are specialized root-like structures that penetrate the host plant's stem and tap into its vascular system.
Neelakurinji	<ul style="list-style-type: none"> It is a shrub that is found in the shola forests. Nilgiri Hills (literally means the blue mountains) got their name from the purplish-blue flowers of Neelakurinji that bloom only once in 12 years. It blooms in altitudes between 1,600 and 2,695 meters in the Western Ghats and grows abundantly in the shola grassland above 1,800 meters. Tamil Nadu's 'Paliyan' tribe used the Neelakurinji flowers to calculate age. Neelakurinji is now designated as a protected plant under Schedule III of the Wildlife (Protection) Act, 1972.
Cycas circinalis 	<ul style="list-style-type: none"> It is facing extinction in northern Kerala due to an unknown and fast-spreading plant disease. (Known for their medicinal & nutritional properties, are dying out without a focused research & action plan) It is an evergreen shrub that can grow up to 6 meters tall and can tolerate full sun or shade. It is found in dense, dry, scrubby woodlands in hilly areas in the states of Kerala, Karnataka, Tamil Nadu, and the south of Maharashtra

<p>Impatiens Karuppusamyi</p> 	<ul style="list-style-type: none"> • It is named after S Karuppusamy for his contributions to the taxonomy of South Indian angiosperms. • The plant is found only in the Agasthyamalai region in the southern Western Ghats. • The plant which belongs to the scapigerous group (stemless group) is seen only during the monsoon season for a few weeks. • Impatiens is a genus of more than 1,000 species of flowering plants widely distributed throughout tropical Africa, Madagascar, India, Sri Lanka, and China.
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Fungus in News

<p>Trichoglossum Syamviswanathii</p> 	<ul style="list-style-type: none"> • Researchers recently discovered a new fungus species in Kerala Commonly known as “hairy earth tongues” • It is a Saprobic fungus, meaning it decomposes dead organic matter. • Color & Shape: Dark brown to black; Club-shaped with a smooth, hairless cap. • Size: Cap diameter of 2-3 mm, stipe length of 10-15 mm • Habitat: Grows on decaying wood in tropical forests.
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SCIENCE AND TECHNOLOGY

SPACE AND SPACE TECH

Smart Lander for Investigating Moon (SLIM) Mission

- The Japan Aerospace Exploration Agency (JAXA)'s Smart Lander for Investigating Moon (SLIM) landed on the moon's surface.
- With this, Japan became the **fifth nation** to achieve a **soft landing** on the **Moon's surface**. The same club that India joined when Chandrayaan-3 landed in 2023.
- The **Soviet Union**, the **United States**, **China**, and **India** are the **only four** previous countries that have successfully carried out soft landings on the moon.

About SLIM)

- SLIM is the **smallest and lightest spacecraft to land on the Moon**, weighing just **200 kilograms**. To put that into context, the **Chandrayaan-3 lander** weighed about **1,750 kilograms**.
- SLIM is dubbed as the "**Moon sniper**". It is the **second Japanese mission** to target a soft landing on the Moon.
- SLIM Mission employs '**Vision based navigation**' technology for its higher landing accuracy.

Objectives:

- **Precision landing (Main Objective):** SLIM targets a **landing within 100 meters** (versus the conventional accuracy of several kilometres).
- **Technology demonstration:** To test autonomous hazard detection and avoidance systems.
- **Scientific investigation:** To analyse the lunar surface composition, measure radiation levels, and study the lunar mantle.
- **Future exploration preparation:** It paves the way for more advanced lunar probes and potentially manned missions in the future.

Square Kilometre Array Observatory (SKAO)

- **India** is set to **get full member status** (joined in January 2024) to the Square Kilometre Array that will function as the world's largest radio telescope.

About SKAO (World's Most Powerful Radio Telescope Anticipated to Commence in 2027):

- **Location:** Not a single large telescope, but a collection of thousands of dish antennas spread across vast distances in **Australia (mid-frequency range)** and **South Africa (low frequency)**, operating as a single unit.
- **Project Headquarters:** United Kingdom
- **Member countries:** Australia, Canada, China, France, Germany, India, Italy, New Zealand, South Africa, Spain, Sweden, Switzerland, The Netherlands and the UK.
- India's involvement in the project is facilitated by the **Department of Atomic Energy (DAE)** and the **Department of Science and Technology (DST)**.
- **Significance:** It will tackle the **enigmas of dark matter and dark energy**, which together make up most of the universe but remain shrouded in obscurity.

India and RADIO Astronomy:

- Radio astronomy is something in which India already has highly developed capabilities.
- **The Giant Meter Wave Radio Telescope (GMRT)** near **Pune** is one of the most advanced and sought-after facilities in the world, which has been producing remarkable scientific results.
- There are other similar facilities in **Ooty, Nainital and Bengaluru**.

How Radio Telescopes are Different from Optical Telescope?

Factors	Radio Telescopes	Optical Telescope
Wavelength of observation	Operate in the radio frequency (part of the electromagnetic spectrum), with wavelengths ranging from millimetres to meters.	Observe the visible light (part of the electromagnetic spectrum), which ranges from approximately 400 to 700 nanometres.
Detection Method	Unlike optical telescopes, radio telescopes use large parabolic dishes or arrays of antennas to collect and focus radio waves.	Use lenses or mirrors to collect and focus visible light.
Observation Limitations	Radio waves can penetrate dust and gas more effectively than visible light, allowing radio telescopes to observe objects that may be hidden from optical telescopes.	May face challenges in observing celestial objects obscured by dust or gas since visible light is affected by these materials.
Specific Utility	Particularly valuable for investigating objects and processes that emit radio waves , providing insights not easily obtained with optical telescopes.	Provide detailed images and spectral information about the composition and temperature of these objects .
Key Examples	Square Kilometre Array Observatory (SKAO), Atacama Large Millimetre Array (ALMA), Giant Microwave Radio Telescope (GMRT) etc.	Hubble Space Telescope (HST), European Southern Observatory's Very Large Telescope (VLT), Spitzer Space Telescope etc.

- **Common Application:** Used to study a variety of celestial phenomena, including pulsars, quasars, galaxies, and cosmic microwave background radiation.

ISROs POEM

- ISRO's space platform **POEM-3 (PSLV Orbital Experimental Module-3)** achieves all payload objectives, set to re-enter Earth.

About POEM (PSLV Orbital Experimental Module):

- It is a **platform** that will help perform **in-orbit experiments using the final**, and otherwise discarded, stage of ISRO's workhorse rocket, the Polar Satellite Launch Vehicle (PSLV).
- The **PSLV** is a **four-stage rocket** where the **first three** spent stages **fall back into the ocean**, and the **final stage** (PS4) after launching the satellite into orbit **ends up as space junk**.
- However, in **POEM mission**, the spent **final stage will be utilised as a "stabilised platform"** to perform experiments.
- **Another Purpose:** the **last stage** of the PSLV rocket is **made to enter the Earth's atmosphere and burn up within few days**. This will ensure that the mission leaves no debris.

How will ISRO keep POEM 'alive and stable' in orbit?

- POEM has a **dedicated Navigation Guidance and Control (NGC) system** for attitude stabilisation, which stands for controlling the orientation of any aerospace vehicle within permitted limits.
- The **NGC will act as the platform's brain** to stabilize it with specified accuracy.
- POEM **will derive its power from solar panels** mounted around the PS4 tank, **and a Li-Ion battery**. It will navigate using "four sun sensors, a magnetometer, gyros & NavIC".

Polymer Electrolyte Membrane Fuel Cell

- ISRO has successfully tested a 100 W class Polymer Electrolyte Membrane Fuel Cell based Power System (FCPS) in its orbital platform, POEM-3.

About Fuel Cell:

- A fuel cell is an **electrochemical device** that **converts the chemical energy of a fuel directly into electrical energy**. Unlike traditional combustion engines, **fuel cells operate without burning the fuel**, resulting in higher efficiency and lower emissions.

Basic Components of Fuel Cell:

- **Anode:** The anode is the **electrode where fuel is introduced (commonly hydrogen)**. At the anode, a fuel undergoes electrochemical oxidation, breaking down into protons and electrons.
- **Cathode:** The cathode is the **electrode where an oxidizing agent (typically oxygen from the air)** is introduced. At the cathode, the oxidizing agent combines with electrons and protons, often forming water or other byproducts.
- **Electrolyte:** The electrolyte is a substance that allows ions (charged particles) to move between the anode and cathode while preventing the mixing of fuel and oxidizer.

Types of Fuel Cells (Based on the types of electrolytes used):

- **Proton Exchange/Polymer Electrolyte Membrane Fuel Cell (PEMFC):** Uses a water-based acidic polymer membrane as the electrolyte and porous carbon electrodes containing a platinum catalyst. It uses **hydrogen as fuel** and **oxygen/air as oxidant**.
- **Alkaline Fuel Cell (AFC):** Also known as **Bacon fuel cell**, uses an alkaline solution like potassium hydroxide as the electrolyte and operates at 60-250°C. It is **one of the most developed fuel cell** technologies but is **sensitive to CO₂**.
- **Solid Oxide Fuel Cell (SOFC):** Employs a **hard, non-porous** ceramic compound as the electrolyte and **operates at 500-1000°C**.

Soil-based Microbial Fuel Cells (MFCs- first created in 1911):

- This fuel cell **generates power with the help of microbes in the soil** and can potentially be used in green infrastructure and precision agriculture applications.
- MFCs **mimic the natural process** of decomposition, **where microbes in the soil break down organic matter** (like sugars, proteins, and fats) and release electrons.
- They **have an anode, a cathode and electrolyte**. But instead of using chemicals to generate electricity, **they harvest electricity from bacteria** that naturally give out electrons to nearby conductors. These electrons from anode to cathode to create an electric circuit.

Amaterasu

- A cosmic ray '**Amaterasu**' appears to have **reached the earth from an empty part of the universe**.
- Amaterasu is **named after the sun goddess in Japanese mythology**.

About Amaterasu:

- It is the **second highest-energy cosmic ray ever detected** (surpassed only by the "Oh My God" particle discovered in 1991), with **energy levels of 240 exa-electron-volts (EeV)**.
- This is about **40 million times higher** than the **energy produced by the Large Hadron Collider** (the most powerful accelerator ever built).
- **The origin of the Amaterasu event remains unknown, likely originating from outside our galaxy** due to its immense energy.
- **Discovered in May 2021** by Dr. Toshihiro Fujii, while analysing data from the **Telescope Array Project in Utah**.

Cosmic Rays

- **Cosmic rays are high-energy charged particles** (move through space at nearly the speed of light), primarily protons and atomic nuclei, that **originate from various sources** in the universe.
- They **constantly bombard Earth's atmosphere** from outer space.
- The term "cosmic rays" is a **bit misleading, as they are not rays but rather fast-moving particles**.

Einstein Probe

- **China** has recently launched an **astronomical satellite** named **Einstein Probe**, designed to observe unique transient phenomena in the universe that flicker like fireworks.
- **Aim:** To **discover** and **study high-energy transients and variable objects in the X-ray band**, and **particularly focusing on phenomena like neutron star mergers and black hole activity**.
- **Lotus-Shaped Structure:** Weighing approximately **1.45 tonnes** and resembling a **full-size SUV**. It features **12 petals** and **two stamens**.
- **Benefit:** Unlike traditional X-ray telescopes, its distinctive design enables it to simultaneously observe nearly one-twelfth of the sky and identify new sources as they emit X-rays, facilitating in-depth studies of known and new celestial phenomena over extended time frames.

Asteroid 2024 BM

- **Asteroid 2024 BM** recently **passed by the earth** at a distance of approximately 3 million km.

About Asteroid 2024 BM:

- Approximately **150 feet** (45 meters) **in diameter**, roughly the size of an airplane.
- It is **travelling at 21,511 kilometers per hour** (13,369 miles per hour), which is similar to the speed of Intercontinental Ballistic Missiles (ICBMs).
- According to NASA's Center for Near-Earth Object Studies (CNEOS), Asteroid 2024 BM **poses no threat to Earth**. Its predicted path will not take it close enough to our planet to pose any danger.

Cold Dark Matter (CDM)

- Scientists have found a new approach to explore cold dark matter (CDM).
- Cold dark matter is a **hypothetical type of matter** that **constitutes about 27% of the universe's total mass** but **remains undetected directly**.

About CDM:

- It **moves slowly** compared to the speed of light, with velocities much lower than those observed in ordinary matter.
- **Weak interaction:** It **barely interacts** with electromagnetic radiation, **hence its invisible to telescopes** and other instruments that rely on light.
- **Massive:** Cold dark matter **contributes significantly to the universe's gravitational pull**, influencing the formation and evolution of galaxies and large-scale structures.

PM Modi Announces 4 Astronauts for Gaganyaan

- Prime Minister Modi announces the names of four astronauts: Prashanth Balakrishnan Nair, Angad Prathap, Ajit Krishnan, and Shubanshu Shukla.

Gaganyaan Indian Human Spaceflight Programme (IHSP)

- Initiated by ISRO in 2007 to develop technology for launching crewed orbital spacecraft into low Earth orbit.
- **Mission Objective:** Demonstrate India's human spaceflight capability by launching a crew of three members to a **400 km orbit for a three-day mission** and safely returning them to Earth.
- **Launch Vehicle:** Utilizes India's heaviest rocket, the **Launch Vehicle Mark-3 (LVM3/GSLV Mk3)**, configured to meet human rating requirements (Human Rated LVM3/HLVM3).
- **Gaganyaan Missions:** Includes both manned and unmanned missions.
 - First unmanned mission (Gaganyaan-1) scheduled for the end of 2024.
 - Manned mission to fly a three-member crew into a 400 km low-Earth orbit for three days.
- **Technology Development:** ISRO developing technology for human-space flight missions, including life support systems, crew emergency escape provision, and crew management aspects for training, recovery, and rehabilitation.

- **Astronaut Training:** Astronauts complete generic training at Russia's Yuri Gagarin Cosmonaut Training Centre and undergo additional training at ISRO's astronaut training facility in Bengaluru. One astronaut expected to receive training from NASA.

Lunar Nuclear Reactor Project (LNRP)

NASA recently announced that it is finishing the initial phase of its ambitious plan to build a small electricity generating nuclear reactor on the Moon.

Lunar Nuclear Reactor Project (Phase 1 Completed & Phase 2 Underway)

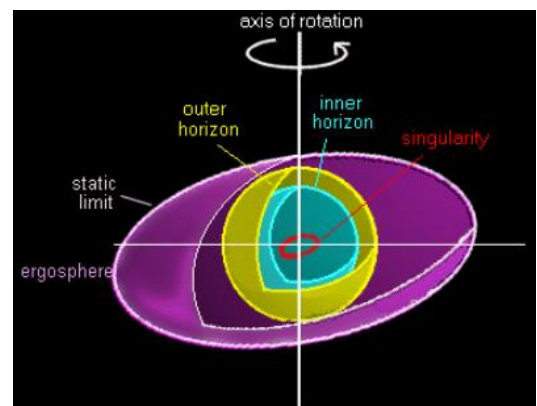
- The LNRP project **aims to provide reliable and long-term power for future lunar outposts and missions**, addressing the limitations of solar energy during lunar nights and enabling further exploration and scientific research.
- This nuclear reactor could play a crucial role in bolstering NASA's ambitions to establish a sustained human presence on the Moon for at least a decade.
- The project entails **designing a reactor, power conversion systems, heat rejection mechanisms, and power distribution systems.**
- The earliest **potential launch date for the reactor is estimated to be in the early 2030s**, contingent upon funding and development progress.

Zodiacal Light

- The **Physical Research Laboratory (PRL) in Ahmedabad** has observed the origin of interplanetary dust responsible for zodiacal light, focusing on **Mars' moons, Deimos and Phobos.**
- **Zodiacal light is a faint, diffuse glow of sunlight scattered by interplanetary dust particles in the solar system.**
- It is most **visible just after sunset or before sunrise** when the Sun is below the horizon, and the sky is dark enough to observe this faint illumination.
- The name "zodiacal light" comes from its **location along the zodiac, which is the band of the sky through which the Sun, Moon, and planets move** (It is not exclusive to any particular zodiacal constellation).
- **Origin:** Zodiacal light is produced by sunlight scattered by tiny dust particles that are distributed in the plane of the solar system. These particles are thought to be **remnants of comets and asteroids.**
- **Visibility:** It is most easily seen on **clear, moonless nights in areas with low light pollution.** The faintness of the zodiacal light makes it difficult to photograph, but it can be seen with the naked eye under the right conditions.
- **Study and Exploration:** Space missions, such as the **European Space Agency's IRAS (Infrared Astronomical Satellite)** and **NASA's COBE (Cosmic Background Explorer)**, have contributed valuable data on the infrared emission associated with zodiacal dust.

Kerr Black Hole

- Researchers at University of California & Cambridge recently carried out a theoretical study focusing on a class of black holes known as Kerr black holes.
- A **Kerr black hole (Rotating Black Hole)** is **theoretically predicted black hole that rotates at a constant rate**, based on the theory of massive high-spin particles.
- It was named after New Zealand mathematician Roy Kerr, who discovered the exact solution for its existence in 1963.
- Unlike a non-rotating black hole, which has a single spherical event horizon, **a Kerr black hole has two event horizons: 1. Inner event horizon 2. Outer event horizon**
- It also has two other interesting regions:



- **Ergosphere:** A region outside the event horizon where the rotation of spacetime is strong enough to drag along objects, including light.
- **Ring singularity:** This is the theoretical point of infinite density at the center of the black hole where all the matter that has fallen in is crushed.

Difference between Rotating & Non-rotating black hole (primary parameter is angular momentum)		
	Rotating (Kerr) black holes	Non-rotating (Schwarzschild) black holes
Angular Momentum	Have angular momentum due to their rotation.	Do not have angular momentum.
Event Horizon Shape	This rotation causes the black hole's event horizon to be oblate or flattened at the poles	They are spherically symmetric, and their event horizon is a perfect sphere .
Ergosphere	Have an ergosphere,	Do not have an ergosphere.
Type of Singularity	At the center of a Kerr black hole is a ring-shaped singularity rather than a point. This is a consequence of the black hole's rotation.	The singularity at the center of a Schwarzschild black hole is a point singularity .
Frame-Dragging	Exhibit frame-dragging, where the rotating spacetime "drags" nearby objects along with it.	Do not exhibit frame-dragging

INSAT-3DS Mission

- The Satellite INSAT-3DS on launch vehicle **GSLV-F14** was successfully launched by the ISRO.
- **Objective:**
 - To Augment the country's meteorological services by replacing the functions of INSAT-3D and INSAT-3DR.
 - To Enhance monitoring of Earth's surface, atmosphere, oceans, and environment, improving data collection and dissemination capabilities.
- **Features: Meteorological data utilized by MoES institutes: IMD, IITM, NIOT, and INCOIS.**
 - **Four payloads:** Imager, Sounder, Data Relay Transponder, and Satellite-Aided Search and Rescue Transponder.
- **Applications:** Facilitates short-range forecasts of extreme weather events like thunderstorms.
 - Provides visibility estimation for aviation.
 - Assists in studying forest fires, smoke, snow cover, and climate patterns.
- **Launch Details:** Launched by GSLV-F14 Rocket, a three-stage launch vehicle with a liftoff mass of 420 tonnes, measuring 51.7 meters in length.

GRAPES 3 Experiment

- The Tata Institute of Fundamental Research's GRAPES-3 experiment (in Ooty, India) has identified a novel characteristic in the cosmic-ray proton spectrum

About GRAPES 3 (Gamma Ray Astronomy PeV Energies phase-3 experiment)

- GRAPES 3 is a **Muon telescope facility to study cosmic rays**. It also investigates phenomena like solar modulations and geomagnetic effects on cosmic ray intensity.
- **Components:**
 - **Scintillator array:** 400 plastic scintillator detectors covering an area of approximately 50,000 square meters. These detectors record the charged particles produced when a cosmic ray interacts with the atmosphere.
 - **Muon detector:** Large area (560 m²) tracking muon detector to identify muons, secondary particles produced in cosmic ray interactions, and study their properties.

About Cosmic Rays

- Cosmic rays are **high-energy charged particles** that move through space at nearly the speed of light, primarily **protons and atomic nuclei**, that originate from various sources in the universe.
- They constantly bombard Earth's atmosphere from outer space producing particle showers.
- The term "cosmic rays" is a bit misleading, as they are not rays but rather fast-moving particles.
- The shower particles constitute electrons, photons, muons, protons, neutrons etc.

CE 20 Cryogenic Engine and Human Rating

- ISRO has successfully completed human rating of its CE20 cryogenic engine which will boost to Gagan Yaan mission.
- **Human Rating:** Refers to a comprehensive evaluation and verification process ensuring a cryogenic engine's suitability for crewed space missions. Involves assessing design, manufacturing, and operational capabilities to meet stringent safety requirements for human spaceflight.

LVM3 and CE 20 Cryogenic Engine

- Designed for the upper stage of the LVM3 launch vehicle (previously GSLV Mk III), featuring solid, liquid, and cryogenic stages.
- **Configuration:** Three-stage vehicle with two solid strap-on motors (S200), one liquid core stage (L110), and a high-thrust cryogenic upper stage (C25).
- **CE-20:** Utilizes a **gas-generator cycle** and a **combination of LOX and LH2 propellants**.
- **Payload Capacity:** Capable of delivering **4 tonnes to geosynchronous transfer orbit (GTO)** and **10 tonnes to low Earth orbit (LEO)**.

Blanets

- Blanets are a **theoretical class of exoplanets proposed in 2019**, characterized by their **unique orbit around supermassive black holes**.
- Unlike traditional planets that form from the swirling dust and gas surrounding young stars, blanets are believed to **originate from clouds of dust and debris within the accretion disk encircling supermassive black holes**.
- **Characteristics:**
 - Expected to be much **larger than typical planets**, sizes up to 10 times the mass of Earth.
 - They likely **experience extreme environments** due to their proximity to the black hole, potentially facing intense radiation and tidal forces.



Muons are elementary particles, meaning they are not composed of smaller constituents.



Mass and Charge

Muons have a mass of approximately 207 times that of an electron.



Lifetime

The average lifetime of a free muon at rest is about 2.2 microseconds.



Generation and Interaction

Muons are produced in various high-energy processes, such as the decay of ions in cosmic ray interactions with the Earth's atmosphere or in particle accelerators.



Cosmic Ray Detection

Muons are frequently used in the study of cosmic rays. When cosmic rays, which consist of high-energy particles from space, interact with the Earth's atmosphere, they produce showers of secondary particles, including muons.



Muon detectors

are used to study the properties and characteristics of these cosmic ray showers.



Applications

Muons are used in muon tomography, a technique that uses muons to create images of the interior of dense objects, such as volcanoes or archaeological structures.

- While the exact composition of planets is unknown, they are **expected to be predominantly ice and rock** due to the conditions in the accretion disk.
- **Evidences:**
 - **Microlensing observations:** Detecting the gravitational influence of a planet passing in front of a distant star.
 - **Direct imaging:** Using powerful telescopes to search for faint objects around black holes.
 - **Transiting exoplanet surveys:** Looking for dips in the brightness of stars as planets pass in front of them, although this method is less effective for planets due to their large orbital distances from the black hole.

New Space Facilities of ISRO

The Prime Minister dedicated the New Space Facilities of ISRO to the nation.

About New Facilities of ISRO	
PSLV Integration Facility (at the Satish Dhawan Space Centre in Sriharikota)	<ul style="list-style-type: none"> ● Objective of Increasing the launch frequency of the Polar Satellite Launch Vehicle (PSLV) from 6 to 15 launches per year. ● Designed to accommodate the integration and launch of other small launch vehicles, including the SSLV (Small Satellite Launch Vehicle) and future rockets designed by private space companies.
Semi-cryogenics Integrated Engine and Stage Test facility	<ul style="list-style-type: none"> ● This facility at IPRC (ISRO Propulsion Complex) Mahendragiri will enable development of semi cryogenic engines and stages which will increase the payload capability of the present launch vehicles. ● Equipped with liquid Oxygen & kerosene supply systems to test engines up to 200 tons of thrust.
Trisonic Wind Tunnel at Vikram Sarabhai Space Centre	<ul style="list-style-type: none"> ● Wind tunnels are essential for aerodynamic testing for characterisation of rockets and aircraft during flight in the atmospheric regime. ● A Trisonic Wind Tunnel (TWT) is a wind tunnel so named because it is capable of testing in three speed regimes – subsonic, transonic, and supersonic. ● Plays a crucial role in overseeing launches, and conducting system checks remotely for optimal mission performance.

Pushpak

- ISRO has successfully conducted the **Pushpak Reusable Landing Vehicle (RLV) LEX 02 landing experiment** at the Aeronautical Test Range (ATR) in Chitra Durga, Karnataka.
 - RLV-TD (technology demonstrator) is one of the most challenging endeavours of the Indian space agency towards developing essential technologies for a **fully reusable launch vehicle to enable low-cost access to space**.
 - The configuration of RLV-TD is similar to that of an aircraft and combines the complexity of both launch vehicles and aircraft.

About Pushpak (RLV-LEX or Reusable Launch Vehicle – Landing EXperiment)

- ISRO conducted the first landing experiment, RLV-LEX-01, with a scaled down version of the RLV technology demonstrator (RLV-TD) in 2023 on a Chinook Helicopter of the Indian Air Force. This mission focused on validating the autonomous landing capability of the RLV
- The second mission involved releasing the Pushpak RLV from a higher altitude and greater distance from the runway, simulating a more challenging re-entry scenario.

Design and features of Pushpak RLV

- Pushpak RLV is a delta-winged vehicle with a length of about 6.5 meters and a wingspan of around 3.2 meters.
- It features deployable landing gear and utilizes a parafoil deceleration system for landing .

- The vehicle is launched from a helicopter at high altitude and then performs a guided descent and lands on a runway, simulating the return of a reusable spacecraft from space.

Station Shiv Shakti

- The International Astronomical Union (IAU) working group for Planetary System Nomenclature has approved the name '**Station Shiv Shakti**' for the landing site of Chandrayaan-3's Vikram lander.
- IAU was established in 1919 with headquarters in Paris (France).
- The name reflects the duality of nature in Indian mythology, representing both masculine (Shiva) and feminine (Shakti) aspects.
- It aligns with IAU's guidelines, which prohibit names with political, military, or religious significance

START Programme

- ISRO has started the Space science and Technology Awareness Training (START) 2024 programme.
- It is a free online introductory-level awareness program.
- **Objectives:** To introduce participants to various aspects of space science and technology, including: Astronomy & Astrophysics, Heliophysics & Sun-Earth interaction, Instrumentation
- **Target Audience:** Postgraduate & final year undergraduate students in physical sciences & technology in India

MeerKAT Telescope

- Astronomers using the MeerKAT radio telescope, made a discovery by identifying 49 previously unknown galaxies.

About MeerKAT Telescope

- It is located in the Northern Cape region of South Africa, launched in 2018.
- The MeerKAT telescope holds significance among the key telescopes in the southern hemisphere, akin to the Giant Magellan telescope in Chile and the James Webb Space Telescope.
- MeerKAT consists of 64 individual radio dishes. The telescope operates in the frequency range of 580 MHz to 14.7 GHz, covering both the lower-frequency radio waves and the higher-frequency microwave bands.
- MeerKAT is also helpful to study hydrogen activity and pulsars and deepen an understanding of how the universe formed.

25 Years of International Space Station (ISS)

- ISS is a large spacecraft in Low Earth Orbit (LEO). It is habitable spacecraft that orbits Earth at an **average altitude of approximately 420 kilometres (260 miles)**. It serves as a unique and collaborative space laboratory, research facility, and living space for astronauts and cosmonauts from various countries.
 - In 1998, the **Zarya module**, which translates to "**sunrise**," was launched aboard a **Russian Proton rocket** from Kazakhstan. This module served as the cornerstone of the International Space Station (ISS).

Features of ISS:

- **Construction and Ownership**
 - The major partners include **NASA** (United States), **Roscosmos** (Russia), **ESA** (European Space Agency), **JAXA** (Japan Aerospace Exploration Agency), and **CSA** (Canadian Space Agency).
 - These agencies have contributed modules, components, and resources to construct and maintain the station.
 - The ISS's future operation is uncertain due to the Ukraine War 2022, as the European Space Agency withdrew collaborations with Russia.
 - Russia left the ISS to build its own space station, while the US and Europe remain committed until 2030.
 - Moreover, European Space Agency, Airbus, and Voyager Space have signed an agreement for the Starlab commercial space station launching in 2027.

- **Size and Structure:** The ISS is quite large, with a **mass of around 460 tons** and a habitable volume roughly equivalent to the interior of a Boeing 747 aircraft. It consists of various interconnected modules and components, including laboratories, living quarters, and docking ports.
 - **Orbit and Duration:** It travels at **8 kilometres per second**. This means it **orbits Earth every 90 minutes**. It passes over our heads 16 times every 24 hours. Missions typically last six months, although some crew members may stay for shorter or longer durations.
 - **International Crew:** The ISS is continuously inhabited by a rotating crew of astronauts and cosmonauts from different nations. These crew members live and work on the station for several months at a time, conducting experiments, maintaining systems, and performing various tasks necessary to keep the station operational.
- Japan, China, India, and the UAE are planning to establish their own space stations.
 - China's **Tiangong**, operational since late 2022, can accommodate up to three astronauts at an altitude of 450 km.
 - India plans to build its **Bhartiya Antriksh Station** by 2035, weighing 20 tonnes and positioned 400 km above Earth. The station could accommodate astronauts for 15-20 days.

Plasma Waves Detected on Mercury

- Recently, scientists have discovered enigmatic "singing" plasma waves around Mercury.
- **Plasma waves:** These waves are often **observed in the Earth's magnetosphere, a magnetic field cavity around the Earth**.
- In general, plasma waves are identified as the **short-time scale fluctuations in the electric and magnetic field observations**.
- These plasma waves play an important role in the **energization and transport of the charged particles in the Earth's magnetosphere**.
- Some of the plasma waves like electromagnetic ion cyclotron waves act as a cleaning agent for the Earth's radiation belt, which is hazardous to our satellites.
- Knowing this scenario, researchers are curious to understand the existence of various plasma waves in the vicinity of unmagnetized planets like Mercury, Mars.
- **The planet Mercury was supposed to have very weak magnetic field, but now it is believed to have a strong one, as indicated by these "whistling" sounds.**

Missions to Mercury	Launch	Agency
Mariner 10	1973	NASA
MESSENGER	2004	NASA
BepiColombo	2018	ESA/JAXA

SOFIA (Stratospheric Observatory for Infrared Astronomy)

- Scientists recently detected water molecules on the surface of two asteroids for the first time ever, using the data from NASA's now-retired SOFIA airborne observatory.
- SOFIA, which stands for Stratospheric Observatory for Infrared Astronomy, was a unique **airborne observatory mounted on a Boeing 747 SP aircraft**. It was a collaborative effort between **NASA and the German space agency, DLR** (Deutsches Zentrum für Luft- und Raumfahrt).
- **Purpose and Capabilities:** SOFIA's primary purpose was to study **infrared light emitted by celestial objects in the universe**, providing valuable insights into various astronomical phenomena. Equipped with a 2.7-meter telescope and a massive 20-ton mirror, SOFIA could observe the universe across a wide range of infrared wavelengths, offering complementary data to both space-based and ground-based telescopes.
- **Advantages of Airborne Observations:** Flying at altitudes of 38,000 to 45,000 feet (stratosphere), SOFIA soared above 99% of the Earth's infrared-blocking atmosphere, enabling astronomers to study celestial objects with unprecedented clarity and precision.

- **Mobility and Flexibility:** SOFIA's mobility, allowing for ten-hour flights, allows researchers to observe various astronomical events globally. Its flight ahead of sunrise ensures maximum darkness, essential for infrared observations, making it a valuable tool for researchers.
- **Scientific Contributions:** SOFIA made significant contributions to various fields of astronomy, including the study of the solar system, distant galaxies, and interstellar dust clouds. It played a vital role in studying **transient events**, such as eclipses and occultations, providing valuable data on objects like Pluto, Saturn's moon Titan, and the Kuiper Belt Object MU69.
- Despite its groundbreaking contributions, the SOFIA project was prematurely ended in 2022 after operating for 12 years.

Peregrine Mission 1 (Peregrine Lunar Lander)

- The Peregrine Lunar Lander was launched aboard the **United Launch Alliance's** Vulcan rocket to embark on its pioneering journey to explore the Moon.

Peregrine Lander	
About Lander	It is part of NASA's Commercial Lunar Payload Services effort , which partners with commercial firms to carry payloads to the moon.
Scientific Goals	Analyze lunar exosphere Assess thermal properties and hydrogen content of lunar regolith Study magnetic fields Examine radiation environment, test advanced solar arrays
Target Location	Sinus Viscositatis region (Bay of Stickiness) adjacent to Gruithuisen Domes near Oceanus Procellarum on the Moon
Payload Capacity	Approximately ten payloads, total mass capacity of 90 kilograms
Scientific Instruments	Laser Retro-Reflector Array (LRA) Linear Energy Transfer Spectrometer (LETS) Near-Infrared Volatile Spectrometer System (NIRVSS) PROSPECT Ion-Trap Mass Spectrometer (PITMS) Neutron Spectrometer System (NSS)

Sub-Neptunes

- Six sub-Neptune planets that were **orbiting a distant star, HD110067**, approximately 100 light-years away in the Coma Berenices constellation, were **identified in a unique situation termed orbital resonance**.
 - Orbital resonance occurs when **orbiting objects follow a consistent numerical ratio, resulting in a repeating pattern.**

About Sub-Neptune planets

- These are the most **commonly observed type of planet in our galaxy**. These planets **have radii between that of the Earth and Neptune**.
- They could be rocky worlds with thick atmospheres of hydrogen and helium gas, or perhaps composed of rock and ice with warm, water-rich atmospheres.

Aeronautical Society of India (AESI)

- The AeSI is organizing an International Conference-cum-Exhibition on 'Aerospace & Aviation in 2047' to commemorate 75 years of excellence.
- The **Aeronautical Society of India** is a professional organization **promoting the advancement of aeronautics and aerospace engineering in India**.
- The Society was founded in 1948 by Pt. Jawaharlal Nehru, the first Patron-in-Chief.
- The platform facilitates interaction between professionals from various aviation sectors, including manufacturing, training, and maintenance agencies, across civil and military aviation.

- **Membership:** AESI open to professionals, academics, students, and organizations interested in aeronautics and aerospace engineering, offering networking opportunities, technical resources, and professional development activities.

Atmospheric Wave Experiment (AWE) Mission

- The **National Aeronautics and Space Administration (NASA)** is set to launch the Atmospheric Waves Experiment (AWE) to study 'air glow' to understand space weather.
 - An atmospheric wave refers to a repeating disturbance in various atmospheric properties, such as surface pressure, geopotential height, temperature, and wind velocity. These waves can either travel through the atmosphere (propagating wave) or remain stationary (standing wave).
- It is a first-of-its-kind NASA experimental attempt **aimed at studying the interactions between terrestrial and Space weather.**
- Planned under **NASA's Helio-physics Explorers Program**, this mission will study the links between how waves in the lower layers of the atmosphere impact the upper atmosphere, and Space weather.
- It will be launched and mounted on the exterior of the Earth-orbiting International Space Station (ISS).
- From the vantage point, it will look down at the Earth and record the colourful light bands, commonly known as airglow.
- It will measure the airglow at mesopause (about 85 to 87 km above the Earth's surface), where the atmospheric temperatures dip to minus 100 degrees Celsius.
- At this altitude, it is possible to capture the faint airglow in the infrared bandwidth, which appears the brightest enabling easy detection.
- It will be able to resolve waves at finer horizontal scales than what satellites can usually see at those altitudes, which is part of what makes the mission unique.
- The health of the ionosphere, whose lower layers sit at the edge of Space, is important for maintaining seamless communication.

Air Glow

It is a faint luminescence of Earth's upper atmosphere that is caused by air molecules' and atoms' selective absorption of solar ultraviolet and X-radiation.

Environmental Control and Life Support System (ECLSS)

- ISRO plans to develop the environmental control and life support system (ECLSS) for the upcoming human space flight Mission Gaganyaan indigenously.
- **ECLSS is a vital component of space stations and spacecraft that are intended to support human life in the hostile environment of space.**
- The Environmental Control and Life Support System (ECLSS) is a crucial component of a ship's air management system, responsible for **maintaining air quality by removing carbon dioxide, controlling oxygen levels, and filtering out contaminants.**
- It also recycles water from various sources, including urine, sweat, and condensation, to ensure safety for drinking and other uses.
- The oxygen generation system, consisting of the oxygen generation assembly and carbon dioxide reduction assembly, produces oxygen for the crew to breathe.

Gaganyaan Mission

Aim: To showcase human spaceflight capability by launching a crew of three to a 400 km orbit for three days, safely returning to earth via Indian sea waters.

Launch Vehicle: LVM3 rocket which is India's heaviest rocket.

International Collaborations: ISRO has partnered with international agencies like Roscosmos for astronaut training and possibly other aspects like life support systems.

Osiris-Apex

- In an unprecedented extension of its celestial duties, the spacecraft that delivered asteroid samples from Bennu, OSIRIS-REx, has embarked on a new mission, and NASA has renamed it as OSIRIS-APEX.

- **OSIRIS-APEX** is a mission aiming to **study the physical changes to asteroid Apophis due to its close encounter with Earth in April 2029**, influenced by Earth's gravitational pull.
- That year, Apophis' orbit will bring it within 20,000 miles (32,000 kilometres) of Earth's surface — closer to Earth than our highest-altitude satellites.
- These changes could include alterations in the asteroid's orbit, rotation speed, and surface features such as quakes or landslides.
- Additionally, the OSIRIS-APEX spacecraft will dip toward the surface of Apophis.

Kilonova Explosion

- Recently, researchers have confirmed the **detection of a star system** that will one day end in a kilonova.
- A kilonova is a **cosmic event that occurs when a neutron star smashes into another neutron star or a black hole**.
- It releases **heavy metals like gold, silver, and selenium** into outer space at tremendous velocities, as well as radiation.
- A kilonova radiation also accompanies a gamma-ray burst, one of the most energetic cosmic events ever known.
 - **A neutron star is the incredibly dense core of a massive star** that has undergone a supernova explosion.
 - A neutron star forms when a star with a **mass over 1.44 times that of the Sun (Chandrasekhar Limit)** explodes in a supernova.

Comet P12/Pons-Brooks

- Astronomers from the Indian Institute of Astrophysics (IIA) have photographed the enigmatic Comet P12/Pons-Brooks by using the Himalayan Chandra Telescope (HCT) from the Indian Astronomical Observatory in Hanle, Ladakh.
- **Comet P12/Pons-Brooks** is a celestial object that has been playfully nicknamed the '**Devil Comet**' or the '**Millennium Falcon**' for its distinctive appearance.
- This comet, first discovered in the year 1812, completes an orbit around the Sun every 71 years. Its recent activity has been particularly striking, with multiple outbursts of gas and dust that have dramatically increased its brightness. The comet's atmosphere, visible as a spherical halo, spans an impressive 3,50,000 kilometres in diameter.

Himalayan Chandra Telescope

- It is a 2-meter optical-infrared telescope named after Nobel laureate **Subramaniam Chandrasekhar**.
- It is located at the Indian Astronomical Observatory (IAO) in Hanle, near Leh in Ladakh.
- Currently the tenth-highest optical telescope in the world, it is situated at an elevation of 4,500 meters.

GSAT-20

- The ISRO's commercial branch, **New Space India Ltd. (NSIL)**, will launch the GSAT-20 communication satellite aboard SpaceX's Falcon-9 rocket for the first time.
- **GSAT-20 (Renamed as GSAT-N2)**: The satellite is a **high-throughput Ka-band satellite** that **provides high-speed broadband internet connectivity** and digital video and audio transmission.
- **Funded by:** NewSpace India Ltd (NSIL)
- The NSIL has launched GSAT-N2 satellite, **weighing 4700 kg**, to meet the needs of remote and unconnected regions.
- The satellite is **heavier than capacity of the ISRO's LVM-3 rocket**, which can launch spacecraft up to 4000 kg into Geosynchronous Transfer Orbit.
- **GSAT-20 will be the second "demand-driven" satellite launch** enabled by NSIL, following its successful launch of GSAT-24 in 2020.

Falcon-9 Rocket

SpaceX has developed the world's **first orbital class reusable, two-stage rocket**, capable of safely transporting people and payloads into Earth orbit and beyond, with the ability to carry over 8,300 kg to Geosynchronous Transfer Orbit.

- **India's 2020 space sector reforms mandate NSIL to operate satellites in a "Demand-driven mode,"** with end customers known in advance.
- It replaces the previous "supply-driven" mode where capacity was leased post-launch. This shift aims to meet increasing demand for satellites.

Water on Asteroids

- Asteroids such as Iris and Massalia, known for their high silicate content, have been detected emitting a distinctive wavelength that unequivocally indicates the presence of water molecules.
- This breakthrough was achieved through the analysis of observations made by SOFIA, NASA's airborne astronomical observatory, which was retired in 2022.
- **Significance of Water on Asteroids:**
 - It can provide insights into the mechanisms by which water was transported to Earth.
 - The presence of water on asteroids may offer clues in the quest for extraterrestrial life.

Asteroids

Asteroids are small, rocky celestial bodies that orbit the Sun and are considerably smaller than planets.

YUVA VIGYANI KARYAKRAM (YUVIKA)

- The Indian Space Research Organisation (ISRO) has initiated a special program for school children known as the "Young Scientist Programme" or YUVIKA.

About Yuva Vigyani Karyakram (YUVIKA)

Organizer	Indian Space Research Organisation (ISRO)
Purpose	To impart basic knowledge on Space Science, Space Technology, and Space Applications to younger students and to encourage more students to pursue careers in Science, Technology, Engineering, and Mathematics (STEM) and engage in STEM-based research.
Program Components	Classroom training, practical demonstrations of experiments, model rocketry sessions, interactions with ISRO scientists, field visits
Eligibility	Students studying in Class 9 within India

De-orbiting of Cartosat-2

- ISRO has confirmed the successful de-orbiting and atmospheric re-entry of Cartosat-2, marking the end of its operational life cycle.
- **De-orbiting Process:**
 - ISRO utilized leftover fuel to lower Cartosat-2's perigee, adhering to international guidelines on space debris mitigation.
 - The de-orbiting of Cartosat-2 signifies a significant milestone for ISRO in ensuring the long-term sustainability of outer space activities.

Cartosat-2

- Launched in 2007, Cartosat-2 was placed in a Sun-synchronous orbit.
- It served as an advanced remote sensing satellite, capable of providing scene-specific spot imagery.

FEAST (Finite Element Analysis of Structures)

- ISRO and Vikram Sarabhai Space Centre (VSSC) have developed FEAST, a Finite Element Analysis (FEA) software for predicting product reactions to real-world forces.
- FEAST will be used to perform FEA on various structures like rockets, aircraft, satellites, and buildings. Previously, users relied on expensive software from foreign firms.
- VSSC, Thiruvananthapuram, is responsible for launch vehicle technology design and development.

Callisto

- An international team of scientists, including from India, has discovered strong evidence indicating the **presence of ozone on Jupiter's moon Callisto**.
- Callisto is **one of Jupiter's largest moons and the third-largest moon in the Solar System** after **Ganymede and Titan**.
- **Composition:** It is primarily **composed of water ice, rocky materials, sulphur dioxide, and** some organic compounds. These substances make the moon a potential candidate for supporting life in the Solar System beyond the earth.
- Its surface is **heavily cratered**, indicating a long history of being struck by asteroids and comets. It also **lacks the extensive seismic activity** seen on some of Jupiter's other moons, such as Io and Europa.

High Altitude Pseudo Satellite (HAPS)

- **CSIR-National Aerospace Laboratories (NAL)** has successfully conducted tests on an unmanned aerial vehicle (UAV) known as the High-Altitude Pseudo Satellite (HAPS).
- HAPS is a **solar-powered UAV positioned above 20 km altitude, in the stratosphere**, for extended flights lasting months or even years. These unmanned vehicles can be airplanes, airships, or balloons.
- **Capable of ascending to 23 km** and remaining airborne for a **minimum of 90 days**.
 - During these tests, the 5-meter-long system, with an 11-meter wingspan and weighing 23 kg, ascended to approximately 3 km and maintained position for around eight hours.

Advantages of HAPS:

- Acts as a vital connection between lower altitude UAVs and conventional satellites.
- **Utilized in various fields including telecommunications, emergency/public safety communications,** intelligent transportation systems, maritime surveillance, environmental monitoring, land border control, etc.
- Provides **extensive coverage with minimal interference**, surpassing ground-based communication networks.
- Facilitates **data transfer** by bridging satellites and ground-based telecom networks.
- **Cost-effective and simpler to launch** compared to traditional satellites, reducing complexity and expenses.

PRATUSH Telescope

- **Probing Reionization of the Universe using Signal from Hydrogen (PRATUSH)** is a radio telescope to be **sited on the moon's far side**.
- It is being built by the **Raman Research Institute (RRI) in Bengaluru** with active collaboration from the **Indian Space Research Organisation (ISRO)**.
- Initially, ISRO will place PRATUSH into orbit around the earth. After some fine-tuning, the space agency will launch it moonward.
- **Main roles:** It will **detect signals from the first stars and galaxies**, reveal the cosmic dawn of the universe, answering the question when the first stars formed, the nature of the first stars and what was the light from the first stars.
- It will carry a wideband frequency-independent antenna, a self-calibrating analog receiver and a digital correlator to catch radio noise in the all-important signal from the Dark Ages.

Mother of Dragons' Comet

- It is officially known as **Comet 12P/Pons-Brooks**. It is a **'Halley-type' comet** with an orbital period of roughly **71 years** and a nucleus approximately 30 km wide.
- It is composed of **ice, dust, and rocky material**. When it approaches the Sun, heat causes the ice inside the comet to turn from solid to gas.

Comets

- Comets are ancient cosmic icebergs.
- They are roughly 4.6 billion years old and formed at the same time as the Sun, Earth and the other planets.
- They are made of dust and ice, which partly goes from solid to gas when the comet is warmed by the Sun.

- It is classified as a **Jupiter-family comet**, meaning its orbit is influenced by Jupiter's gravitational pull.
- It typically reaches **perihelion** (closest approach to the Sun) around the orbit of Mars and can become visible to observers on Earth during its close approach.
- Its closest approach to Earth will occur in June 2024.

TSAT-1A

- TSAT-1A is an **optical sub-metre-resolution Earth observation satellite**. It was built by **Tata Advanced Systems Limited (TASL)** in collaboration with Latin American company **Satellogic Inc**, following a collaboration agreement between the two companies in late November 2023.
- TSAT-1A was assembled in TASL's Assembly, Integration, and Testing (AIT) plant at its Vemagal facility in Karnataka.
- It was **launched by SpaceX's Falcon 9 rocket** from the Kennedy Space Center, Florida, US.

Features:

- TSAT-1A is a **military-grade satellite** that captures sub-meter resolution imagery of Earth's surface using multispectral and hyperspectral imaging capabilities.
- It offers a **deeper understanding of land, water, and natural resources**. The satellite has greater collection capacity, a wider dynamic range, and low-latency data delivery.
- **It will be used by Indian defense forces to gather discreet information**, sharing it with friendly nations. This initiative marks the first of its kind in the private sector in Indian Space Sector.

Tidally locked Planet

- Recently, an international team of astronomers and astrophysicists has confirmed the **first known observance of a tidally locked super-Earth exoplanet**.
- A tidally-locked planet is a planet which **in its orbit around a star keeps the same face towards the star**. This happens when the **rotation period of the planet around its own axis becomes equal to its revolution period around the star**.
- On a tidally locked planet, one side is always facing a star while the other is cloaked in perpetual darkness. The dark side could be so cold that water and would-be atmospheric components (e.g., carbon dioxide, nitrogen, or methane) are frozen, certainly an inhospitable environment for life.

Examples of Tidal Locking:

- The **Moon** is tidally locked to the Earth because it rotates in exactly the same time as it takes to orbit the Earth. That is why we only see one side of the Moon.
- **Pluto-Charon system**: Both bodies are of comparable size and are close together, both bodies can be tidally locked to each other.

Coordinated Lunar Time (LTC)

- The US White House recently issued an official directive to the National Aeronautics and Space Administration (NASA) to establish a **standardized time system for the Moon, known as Coordinated Lunar Time (LTC)**.
- This time standard **will serve as a reference point for various international organizations** and private companies conducting activities on the lunar surface. Using this, they can coordinate their activities on the lunar surface.
- LTC will establish a **precise time-keeping framework for lunar spacecraft and satellites, ensuring accuracy in their missions**.
- It will also **synchronize communication between satellites, astronauts, lunar bases, and Earth**.
- A unified time standard is crucial for coordinating operations, ensuring transaction reliability, and managing the logistics of lunar commerce.

- The need for LTC arises from the difference in gravity between the Moon and Earth, causing **time to pass slightly faster on the lunar surface compared to Earth**.
 - Specifically, **an Earth-based clock on the Moon will appear to lose an average of 58.7 microseconds per Earth day**, with additional periodic variations.
 - This time differential can **pose challenges for spacecraft docking, data transfer timing**, communication, and navigation.

Queqiao-2 satellite

- China's Queqiao-2 (Magpie Bridge 2) satellite, launched by the **China National Space Administration**, is a relay satellite.
- It will serve as a **communications bridge between Earth's ground operations and upcoming lunar probe missions until at least 2030**.
- With a mass of **1,200 kilograms** and a large parabolic antenna, it will support China's Chang'e-6 lunar far-side sample return mission and future Chang'e-7 and -8 lunar missions.
- With a planned lifetime of over eight years, the **mission will also deploy two experimental CubeSats, Tiandu-1 and Tiandu-2**, to test navigation and communication technologies on the Moon.

Sungrazing Comets

- A tiny "sungrazer" comet was discovered, photographed and destroyed during the recent total solar eclipse.
- Sungrazing comets are a **special class of comets that come very close to the sun at their nearest approach, a point called perihelion**.
- To be considered a sungrazer, a comet needs to get **within about 850,000 miles from the sun at perihelion**. Many come even closer, even to within a few thousand miles.
- **Orbit:** Most of the sungrazing comets observed follow a similar orbit, called **the Kreutz Path**, a single orbit that takes **800 years to complete**.
 - They collectively belong to a population called the **Kreutz Group**.
 - These Kreutz comets are fragments from a single large comet that was shattered thousands of years ago.
 - The far end of the Kreutz path lies 160 times farther from the sun than the orbit of Earth.

What is a Comet?

- Comets are **frozen leftovers from the formation of the solar system**, composed of **dust, rock, and ice**.
- They orbit the sun in highly elliptical orbits that can take hundreds of thousands of years to complete.
- They range from a few miles to tens of miles wide, but as they orbit closer to the Sun, they heat up and spew gases and dust into a glowing head that can be larger than a planet.
- The dust and gases form a tail that stretches away from the Sun for millions of miles.

Hubble Tension

- The "Hubble tension" refers to a **discrepancy between the measurements of the rate of expansion of the universe, known as the Hubble constant**.
- The **Hubble constant, denoted as H_0** , describes the rate at which galaxies are moving away from each other due to the expansion of the universe.
- If a researcher wants to estimate the Hubble constant, they have two main avenues. These are the cosmic distance ladder and the cosmic microwave background (CMB).
- These measurements have yielded slightly different values for the Hubble constant. This discrepancy is known as the Hubble tension.

Cosmic Microwave Background (CMB)	Cosmic Distance Ladder
<ul style="list-style-type: none"> CMB consists of leftover photons from the Big Bang, spread throughout the universe as an afterglow. Scientists use complex trigonometry to analyze temperature fluctuations in the CMB and study its large-scale properties. Based on CMB studies, cosmologists estimate the universe's expansion rate to be around 68 km/s/Mpc. CMB provides insight into the early universe and its evolution. 	<ul style="list-style-type: none"> The Cosmic Distance Ladder uses various methods to measure distances to objects, including Cepheid variable stars. Cepheid variable stars are unique as their brightness changes predictably over time, allowing scientists to estimate their distance. Using Cepheid variables and other objects, scientists estimate the expansion rate to be 73 km/s/Mpc. The Cosmic Distance Ladder helps determine distances to celestial objects at different scales.

BIOLOGY AND BIOTECH

Non-Invasive Formaldehyde Sensor

- Scientists developed a new **low-cost sensor** which can **detect formalin adulteration in fishes** at room temperature **in a non-invasive way**.
- Formalin (formaldehyde solution)**: It is used to **preserve & extend the shelf life** of fish by inhibiting bacterial & fungal growth. However, the **use of formalin in food products is illegal** and poses significant **health risks to consumers**.
- Formaldehyde**: It's a colourless, pungent gas, lurks in various places like building materials, furniture, and even some food preservatives.
- Its exposure to high levels** can be **harmful**, causing respiratory problems, eye irritation, and even cancer.

About Sensor for Formalin Detection:

- These sensors **emit light at specific wavelengths** that **interact** with formaldehyde molecules.
- By **analysing the changes in the light signal**, the sensor can **detect the presence** and even the **concentration of formaldehyde** in the air or on surfaces, all **without touching a thing**.

Scrub Typhus

- Every **millimetre increase in rainfall** could lead to a **0.5 to 0.7 per cent rise** in monthly scrub typhus cases, according to a new study conducted in Tamil Nadu's Vellore.

About Scrub Typhus (Bush Typhus or Tsutsugamushi Disease):

- Cause**: It is an **infectious disease** caused by the bacteria *Orientia tsutsugamushi*.
- Transmission**: It is **transmitted to humans** through the **bites of infected larval mites** (chiggers) belonging to the Trombiculidae family. **These mites typically live in scrub vegetation** and feed on rodents, which serve as the natural reservoir for the bacteria.
- Symptoms**: **Fever and chills** (the first signs), Swollen lymph nodes, pneumonia, meningitis, and encephalitis etc.
- Treatment**: Antibiotic therapy, typically doxycycline or tetracycline, is highly effective if started early and supportive care, for symptoms like fever and pain.
- Prevention**: Wearing protective clothing and insect repellent when spending time in areas with scrub vegetation where chiggers are present, Reducing rodent populations etc.

Scrub Typhus in India:

- Endemic in many parts** of India particularly **in hilly & forested areas** in the north, east & south.
- Several outbreaks** have been reported in different regions of the country.

- The National Centre for Disease Control (NCDC) has resources and guidelines for healthcare professionals and the public regarding Scrub Typhus in India.

Zosurabalpin

- Researchers have identified a **new class of antibiotics** with the potential to **tackle a drug-resistant** bacterium, **Acinetobacter baumannii**.
- Zosurabalpin was **found to be effective** against **CRAB** (carbapenem-resistant Acinetobacter baumannii) induced pneumonia and sepsis in mouse models.
- It is an **experimental antibiotic** being **developed by Roche** and scientists from **Harvard University**.
- It has **successfully completed Phase I** clinical trials, showing promising safety and efficacy against CRAB in humans. **Phase II trials are ongoing** to further evaluate its effectiveness and dosage.
- It is **specifically designed to combat** carbapenem-resistant Acinetobacter baumannii (**CRAB**), a multi-drug resistant bacterium posing a major threat in healthcare settings.
- **Unlike traditional antibiotics** that target bacterial growth or replication, **zosurabalpin disrupts a unique process for building the bacteria's outer membrane**, rendering it vulnerable and enabling other antibiotics to work effectively.

Havisure: Hepatitis A vaccine

- Hyderabad-based **Indian Immunological Ltd (IIL)** launched **India's first indigenously developed Hepatitis A vaccine 'Havisure'**.
- IIL (a leading biopharmaceutical company in India) is a **wholly owned subsidiary of National Dairy Development Board (NDDB)**.

About Havisure Vaccine (prequalified by the World Health Organization):

- It was **launched in 2014** and is a **two-dose vaccine** recommended for children with routine immunizations starting at 12 months of age. While Havisure is marketed **primarily for children**, it **can also be administered to adults** who are at risk of Hepatitis A infection due to travel, occupation, or other factors.
- **Schedule:** Two doses, at least 6 months apart.
- It is **included** in India's **Universal Immunization Programme (UIP)**.

Telepathy: Neuralink Implants

- Elon Musk's startup Neuralink has implanted its **wireless brain chip** (called Telepathy) in a human for the first time.
- This chip will be **implanted in an area of the brain that controls neural impulses for movement**.
- Once inserted, this chip will **read and wirelessly transmit the brain's impulses to an app** placed in front of the patient, which will produce outputs based on a user's thoughts.
- This will be done by **decoding the instructions being sent by the brain and translating the neural impulses into action on the screen**.
- In the first trials, the firm will get people suffering from paralysis to move a cursor on a computer screen.

Working

- This technology is called a **brain computer interface (BCI)**. Researchers globally, including in India, are experimenting with both invasive and non-invasive BCIs.
- It includes **hairnet-like structures that have sensors and electrodes to recognize neural impulses from the brain**. Using these, they can stimulate parts of the brain.
- An early instance is a landmark 2011 clinical research in the US on depression patients.
- It proved that with correct stimulations, patients can augment what their nervous system is lacking—and show strong signs of improvement compared to traditional cures such as psychotherapy and drugs.

Electronic Soil (eSoil)

- Researchers have developed a **new electronics soil** that was found to increase the growth of barley seedlings by **50%** in a new study.
- **E soil** is an **electrically conductive cultivation substrate** designed **specifically for hydroponic systems**, where **plants grow in nutrient-rich water instead of traditional soil**.

About eSoil

- eSoil is made from a **blend of cellulose**, a natural biopolymer, and a **conductive polymer** called **PEDOT**.
- The conductive properties **allow eSoil to deliver low-power electrical currents to plant roots**.
- These currents **stimulate root growth** and **nutrient uptake**, leading to healthier plant development.

Benefits of eSoil

- Increased crop yields.
- Reduced water and resource usage.
- Improved efficiency in urban settings.

Thylakoid Membranes

- Researchers at the University of Liège, Belgium have identified thylakoid **microstructures in fossil cells that are 1.75 billion years old**.

About Thylakoid membranes:

- **Location:** Thylakoids are little pouches located in the chloroplasts of plants.
- **Function:** They store chlorophyll, the substance in plant that reacts to sunlight and triggers photosynthesis.
- **Overall,** thylakoid membranes are **critical components** of the photosynthetic machinery in plant cells, allowing them to harness light energy and convert it into chemical energy to fuel various cellular processes.

About Discovery:

- The recent discovery also raises the possibility of discovering thylakoids in even older cyanobacterial microfossils, and to test the hypothesis that the emergence of thylakoids may have played a major role in the so called '**Great Oxygenation**' of the early Earth **around 2.4 billion years ago**.

Tricholime

- The **Indian Institute of Spices Research (IISR) Kozhikode** have successfully developed a new granular lime-based Trichoderma formulation, "**Tricholime**".

About Tricholime:

- It **combines two powerful tools** for sustainable agriculture: **Trichoderma** – a beneficial fungus that acts as a biocontrol agent – **and lime** – which neutralizes soil acidity.

Functions:

- Tricholime effectively neutralizes soil acidity.
- The Trichoderma fungus present in Tricholime acts as a natural enemy to several soilborne pathogens that cause diseases in crops.
- Tricholime also promotes microbial activity in the soil, leading to better nutrient cycling.

Western Equine Encephalitis

Recently, Outbreak of Western Equine Encephalitis Virus occurred in **horses in Argentina and Uruguay**.

About Western Equine Encephalitis

Causative agent	Western Equine Encephalitis virus (WEEV)
Transmission	By mosquito bites, primarily of the Culex tarsalis and Aedes species
Affects	Horses (occasionally humans, with potential severity)
Symptoms	Fever, headache, nausea, vomiting, seizures, coma, and potentially death

Diagnosis	Blood tests, Spinal tap (lumbar puncture) to examine cerebrospinal fluid
Prevention	Use mosquito repellent containing DEET (N, N-Diethyl-meta-toluamide), Eliminate mosquito breeding sites, etc.

Large Multi-Modal Models (LMM) In Healthcare

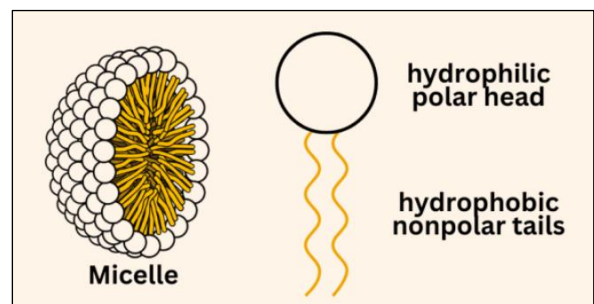
- The World Health Organization (WHO) has released comprehensive guidance on the ethical use and governance of large multi-modal models (LMM) in healthcare.

About Large Multi-Modal Models (LMMs)

- LMMs are a **type of artificial intelligence (AI) that can process and understand information** (deep learning models) from various sources, including text, images, audio, and video.
- This ability makes them particularly promising for healthcare, where data often comes in diverse formats like medical images, electronic health records (EHRs), and patient narratives.
- **Examples of LLM-guided Multimodal Model:** OpenFlamingo, MiniGPT-4, Otter, InstructBILP, BLIVA

Micellar Water

- Micellar Water has become a skincare staple and has received endorsements from dermatologists and makeup artists.
- **Composition:** Micellar water contains **tiny oil molecules called micelles suspended in soft water.**
- **Working Principle:**
 - Micelles have **oil-loving tails** that attract oil and dirt, and **water-loving heads** that dissolve in water.
 - This dual nature **allows micelles to effectively attract and trap impurities**, facilitating gentle cleansing without harsh rubbing.
- **Key Features:**
 - **Cleansing:** Suitable for all skin types, including sensitive skin, micellar water gently removes impurities without stripping natural oils.
 - **Makeup Removal:** Effective in breaking down and removing various types of makeup, including foundation, mascara, and lipstick.
 - **Multi-Purpose:** Some formulations serve multiple skincare purposes like cleansing, toning, and hydrating. These products may contain additional ingredients such as vitamins, minerals, or floral extracts.



3D Printed Brain Tissue

- Researchers have created the world's first 3D-printed brain tissue that behaves like natural brain tissue.
- **3D Printing Brain Tissue** refers to **bioprinting techniques that generate structures resembling real brain tissue.**
- This is achieved by **using specialized printers and "bioinks" containing living cells and supporting materials.** By carefully arranging these components, researchers can create structures with similar cellular composition and architecture to specific brain regions.
- It is a **low-cost medical technology** that could help with brain damage. The technology uses **human induced pluripotent stem cells (hiPSC)** to create young neurons of the cerebral cortex

Bioink (Specialized Type of Ink Used In 3D Bioprinting)

- It differs from traditional ink by incorporating living cells alongside biocompatible materials that support cell growth and function.
- It behaves like a "living ink" capable of building miniature versions of tissues and organs layer by layer.

- **Components of Bioink:** Living cells (stem cells, specialized cells like neurons or muscle cells), Biomaterials (hydrogels, alginates, and collagen), Growth factors and nutrients.

Obelisks

- Obelisks are a **recently discovered class of virus-like entities** found in the human body, comprising diverse RNAs.
- **Named after their rod-like structures**, their genetic sequences are **about 1,000 nucleotides long**, distinct from known biological agents. **Larger than plasmids**, they're **between viruses and viroids**.
- They are made of RNA and proteins which facilitates self-replication within bacterial cells. Obelisks rely on microbial host cells, possibly bacteria or fungi, for replication.
- They are capable of vertically propagating from parent to offspring cells.
- Hosts of obelisks, other than humans, remain unknown. Possibility exists that some obelisks may be found in bacteria.
- Different types of obelisks appear to be present in various areas of the human body.

Viroids

- Discovered in the 1971
- First discovered infectious agent consisting solely of naked, single-stranded RNA.
- Simplest known infectious agents; smaller and simpler than obelisks.
- Genome: Small, circular RNA molecules, typically 200-400 nucleotides long.
- Do not code for proteins and rely on their host's machinery for replication.
- Can cause diseases in plants and some animals.

Diverse Epigenetic Epidemiology Partnership (DEEP)

- The **CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB)**, Hyderabad, is set to be part of the Diverse Epigenetic Epidemiology Partnership (DEEP).
- **Diverse Epigenetic Epidemiology Partnership (DEEP)** is a ground-breaking **integrated genomics and epigenomics study to understand the genetics behind Non-Communicable Diseases (NCDs)** in diverse populations, including South Asians.
- The project is to **uncover the effects of genomic and environmental diversity in disease risk** observed in people across the world, including those in Asia, Africa and North and South America. It is a **five-year international project**.
- Researchers will be studying individuals representing diverse genetic and environmental contexts and learn which **DNA methylation patterns** contribute to their disease risk in each context.
 - DNA methylation is a process where chemical groups attach to DNA in order to help to turn genes on and off.
- The study will develop software and infrastructure and conduct advanced statistical analyses to build new resources.

- **Epigenetics** studies **how behaviors and environment can affect gene function**.
- **Epidemiology** examines **health and disease patterns in populations**, aiming to understand disease spread, identify risk factors, and develop prevention and control strategies.
- Epigenetic epidemiology combines both, **studying the effects of epigenetic changes on disease occurrence and distribution**. It aims to develop effective prevention and control strategies for diseases.

Council of Scientific and Industrial Research (CSIR)

Location	New Delhi, India
Establishment	1942
Affiliation	Autonomous body under the Ministry of Science and Technology
Core Areas of Expertise	Oceanography, geophysics, chemicals, drugs, genomics, aeronautics, biotechnology, nanotechnology, instrumentation, environmental engineering, information technology
Composition of CSIR	Prime Minister as President, Union Minister of Science and Technology, as ex-officio vice president, Director-General is the head of the governing body.

Functions	<ul style="list-style-type: none"> • Advise on the formulation of R&D programmes and future directions of activities of the laboratory keeping in view the national priorities and opportunity areas. • Suggest networking with other CSIR National Laboratories • Review R&D activities and research programs and advise on future directions. • Advise on fostering linkages between the Laboratory and Industry.
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Garbhini-GA2

- Researchers have recently created **Garbhini-GA2, a specialized AI model designed for India**, aimed at accurately **determining the gestational age (GA) of a fetus**.
- **Garbhini** was started in 2014 under Department of Biotechnology (DBT).
- It stands for **Interdisciplinary Group for Advanced Research in Birth outcomes, INdia Initiative**.

Key Features of Garbhini-GA2

- **Developed by:** Researchers at IIT Madras & Translational Health Science and Technology Institute (THSTI), Faridabad, funded by the Grand Challenges India program of BIRAC, DBT.
- **Specifically for the Indian population**, Garbhini-GA2 outperforms older formulas like Hadlock and INTERGROWTH.
- **Focuses on late trimesters**, addressing the inaccuracies of Western-based formulas.
- **Utilizes non-invasive parameters** like maternal weight, fundal height, and fetal biometry for accuracy.

Penicillin G

The production of Penicillin will be restarted by mid-2024 by Hyderabad-based Aurobindo pharma. It will be three decades after the country's last plant shut down

About Penicillin G (also known as benzylpenicillin)

Discovery and History	Discovered in 1928 by Alexander Fleming who observed that the fungus <i>Penicillium chrysogenum</i> produced a substance that inhibited the growth of bacteria, leading to the discovery of penicillin.
Mechanism of Action	It does not affect other healthy human cells, making penicillin G selectively toxic to bacteria. (Primarily active against gram-positive bacteria; not against gram-negative.)
Spectrum of Activity	Effective against a wide range of organisms, including <i>Streptococcus</i> , <i>Staphylococcus</i> , Pneumonia, Syphilis, Gonorrhoea, Meningitis & some strains of <i>Clostridium</i>
Today's Role	Despite its declining use due to resistance and the availability of other antibiotics, penicillin G remains an essential antibiotic in certain situations.

Lyme Disease

- Lyme disease a tick-borne disease was detected in man from Ernakulam(Kerala). Recently Lyme disease has caused a significant increase in the US to rise by almost 70%.

Caused By	Borrelia burgdorferi bacteria
Transmission	Spread by ticks of the Ixodes genus (<i>Ixodes scapularis</i> -blacklegged tick) in the US
Symptoms	bull's-eye rash, Fever, chills, headache, fatigue Muscle and joint aches & Swollen lymph nodes
Diagnosis	Laboratory tests such as ELISA and Western blot assays can be conducted to confirm the presence of antibodies against <i>Borrelia burgdorferi</i> in the blood.
Prevention	Wear clothing that covers your arms and legs,
Treatment	1) Antibiotics like doxycycline, cefuroxime or amoxicillin in the early stages. 2) Intravenous antibiotics may be required in later stages.

Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR)

- Food & Agricultural Organization (FAO) published an analytical report on the Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR) for 2019-22.

About INFAAR

- It was set up in August 2018 & led by **Indian Council of Agricultural Research (ICAR)**.
- INFAAR is a **network of laboratories across India, including ICAR research institutes, agricultural universities, and state veterinary universities.**
- Supported by **FAO** and the **United States Agency for International Development (USAID)**
- Its objective is to generate comprehensive national data on AMR (Anti-Microbial Resistance) trends in fisheries and animal agriculture.
- Anti-Microbial Resistance (AMR) refers to the ability of microorganisms (such as bacteria, viruses, fungi, and parasites) to resist the effects of antimicrobial drugs.

ANAGRANINF: Antibiotic Development Project

- The Technology Development Board (TDB) of the Department of Science & Technology has supported the project “**ANAGRANINF – Development of a Novel Class of Antibiotics Against Gram-Negative Bacterial-Infections**” through grant.

About ANAGRANINF

- **Aim:** To Develop a new class of antibiotics specifically designed to combat infections & resistance mechanisms caused by gram-negative bacteria.
- **Gram-Negative Bacteria** are **notorious for their ability to develop resistance** to existing antibiotics. They have an outer membrane that makes it difficult for antibiotics to penetrate and kill them.
- The project aims to **produce a series of compounds that not only exhibit enhanced efficacy** but also align with the rigorous criteria laid out by the World Health Organization (WHO) for tackling Antimicrobial Resistance (AMR) infections.
- The project could involve identifying and optimizing lead compounds with potent activity against these bacteria.

Organ and Tissue Transplantation

- Organ donation means giving part of the body (organ) to a person with end-stage organ disease who needs a transplant.
- In India, organ donations are **legal under the Transplantation of Human Organs Act (THOA), 1994**, which also legalizes the concept of ‘brain death’, the permanent cessation of all brain functions.
- Organ donation is a **voluntary process** wherein you can fill up a consent form to donate your organs in the event of your demise.

Types of Material Transplanted:

- **Organ Transplantation:** Involves transplanting whole organs from a donor to a recipient. Examples include heart, kidney, liver, lungs, pancreas, and intestines.
- **Tissue Transplantation:** Involves transplanting smaller, specialized groups of cells from a donor to a recipient. Examples include corneas, skin, heart valves, tendons, ligaments, bone, and bone marrow.

Types of organ donation:

Living Donor Organ Donation

- A person during his life can donate **one kidney, a portion of the pancreas, and a part of the liver.**
- A Living Donor is an **individual aged 18 or older** who **voluntarily consents** to the

Deceased Donor Organ Donation:

- **After brain-stem/cardiac death**, a person can donate **multiple organs and tissues**, ensuring that their organ continues to live in another person's body.
- Deceased Donor is **anyone, regardless of age**, who can become an organ and tissue donor after their death.

removal of their organ or tissue for therapeutic purposes during their lifetime.

- The donor can be a family member, relative, friend, neighbour, or in-law.

- Consent of a near relative or a person in lawful possession of the dead body is required.

Regulatory frameworks guiding the organ transplantation in India

• Legislation

- The **Transplantation of Human Organs Act (THOA)** was introduced in **1994** by the Indian government.
- It was amended in 1995 and 2014, expanding donation scope and allowing tissue transplantation.
- The act made **organ commercialization punishable** and legalized brain death, allowing deceased donation through brain stem-death donation.

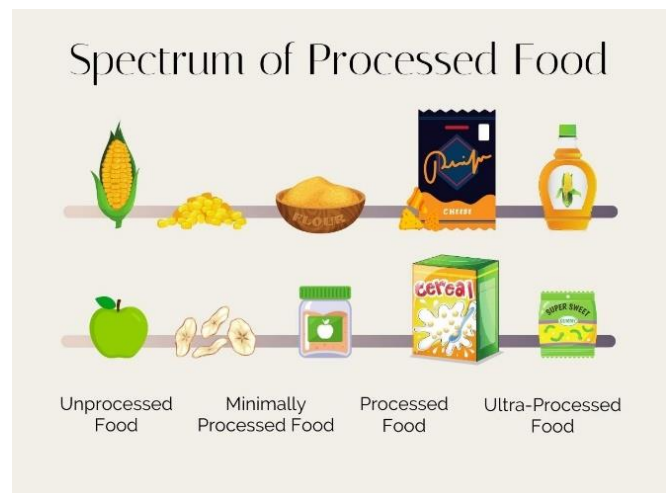
India has a Deceased Organ Donation rate of 0.52 donors per million population. Whereas, in countries like Spain this number is 49.61 per million.

• Institutions

- **National Organ and Tissue Transplant Organization (NOTTO)** is a national level organization set up under **Ministry of Health and Family Welfare**.
- Besides laying down policy guidelines and protocols for various functions, it **coordinates all the activities associated with organ donation at national level**.
- The **National Organ Transplant Programme** aims to establish and maintain a national registry for organ and tissue donation and transplantation, ensuring efficient procurement and distribution of organs and tissues. It has been extended from 2021-22 to 2025-26.

Ultra-Processed Food

- **Ultra-processed foods** are **processed products with artificial ingredients, additives, and preservatives, often containing sugar and unhealthy fats**.
- They are **low in essential nutrients** and have a long shelf life, but excessive consumption can lead to negative health effects.
- The consumption of **High Fat Sugar Salt (HFSS)** foods stands as a major contributor to a global health crisis, fuelling issues such as obesity, diabetes, and hypertension.
- **For example:** Packaged Snacks, Instant Noodles and Ready-to-Eat Meals etc.



Initiatives by FSSAI to Reduce Ultra Processed Foods

Cap on Trans-Fatty Acids	FSSAI capped trans-fatty acids in food at 2% or less from 2022.
Food Safety and Standards (Advertising and Claims) Regulations, 2018	Regulations hold food businesses accountable for claims and ads.
Food Safety and Standards (Safe Food and Healthy Diets for School Children) Regulations, 2020	Bans ads of ultra-processed foods in school areas to promote healthier diets.
'Eat Right India' Movement	Aims to cut salt, sugar, and saturated fats intake nationwide.
'Aaj Se Thoda Kam' Social Media Campaign	Nationwide campaign encouraging dietary changes to reduce salt, sugar, and fat intake.

Amyloidosis

- Recently, a **2D protein monolayer** was fabricated by scientists by **assembling lysozyme molecules -- model protein** in studying **diseases like Amyloidosis**.

- **Amyloidosis is a rare disease that occurs when an abnormal protein, called amyloid, builds up in one's organs, affecting their shape and functioning.**
- Amyloid deposits can build up in the heart, brain, kidneys, spleen and other parts of the body, leading to life-threatening conditions like organ failure.
- Some varieties of amyloidosis occur in association with other diseases.
- These types may improve with treatment of the underlying disease. Some varieties of amyloidosis may lead to life-threatening organ failure.
- The general signs or symptoms would include: Severe fatigue, Loss of weight, swelling in the belly, legs, ankles or feet, Numbness, pain or tingling in hands or feet and changes in skin colour.

WHO's GONE Initiative

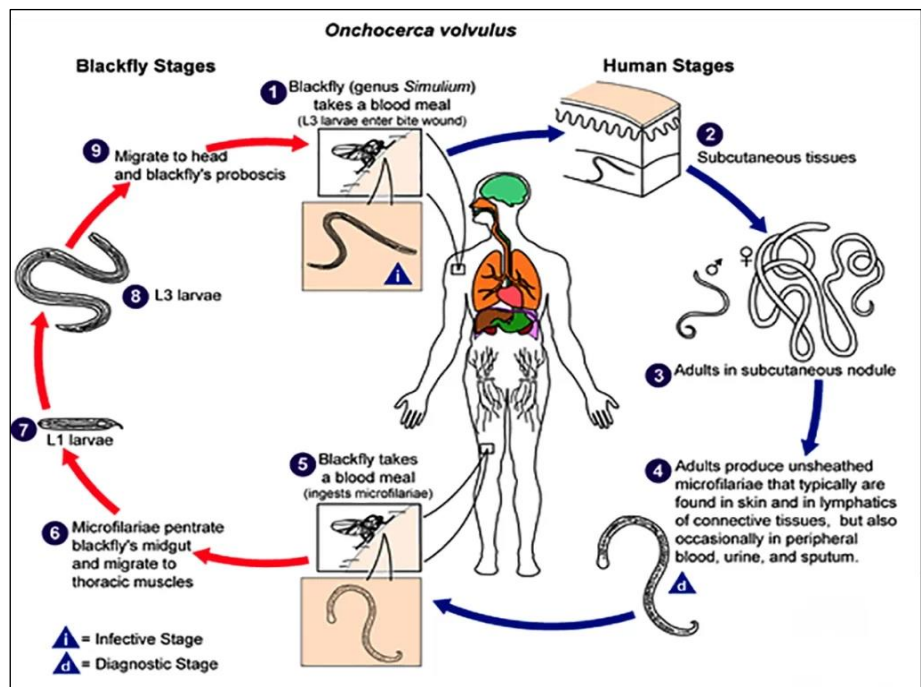
- In November 2023, over 150 partners, including health officials, experts, and organizations, convened in **Senegal** for the GONE initiative's inaugural meeting, aiming to enhance collaboration for onchocerciasis elimination.

GONE Initiative – Global Onchocerciasis Elimination Network

- **Launched in January 2023**, the initiative aims to enable nations to accelerate the eradication of **onchocerciasis**, ensuring a more efficient and effective approach.

About Onchocerciasis (River Blindness)

- Onchocerciasis, a **Neglected Tropical Disease (NTD)**, is the second leading cause of worldwide blindness, affecting isolated and underserved rural communities in poorer regions.
- It is **caused by parasitic worm**, *Onchocerca volvulus*, spreads by black flies near fast-flowing rivers
- It causes severe skin irritation, itching, and irreversible blindness.
- The disease affects **244 million** people globally, with **Africa bearing the most at 99%** and the border region between Brazil and Venezuela at 1%.
- The WHO confirmed that **Colombia, Ecuador, Guatemala, and Mexico** have eradicated the transmission.



WHO's International Classification of Diseases 11 (ICD11)

- World Health Organization's International Classification of Diseases (ICD) 11 TM Module 2, Morbidity Codes launch event was held in New Delhi in January, 2024.

About International Classification of Diseases

- ICD is developed by the World Health Organization (WHO) to classify diseases internationally.

- It is the **global standard** for systematic recording, reporting, analysis, interpretation, and comparison of mortality and morbidity data.
- It also includes a special chapter on traditional medicine.
- ICD-11 which was launched on January 2022, features a dedicated chapter **Module 1 on traditional medicine, originating from ancient China and now used in Japan and Korea.**
- **Central Bureau of Health Intelligence (CBHI)** is an agency under the Ministry of Health and Family Welfare that serves as the **WHO Collaboration Centre for ICD-related activities.** It facilitates the collection and dissemination of data on various diseases and mortality.

TM2 Module of ICD11

- The **Ministry of Ayush** has developed the Code for **Ayurveda, Siddha, and Unani** Medicine through the **National Ayush Morbidity and Standardised Electronic Portal (NAMASTE).**
- The Ministry of Ayush in collaboration with WHO has prepared a categorization of data and terminology related to diseases based on Ayush - Ayurveda, Siddha, and Unani systems under TM2 module of ICD11 series.
- The Ministry of AYUSH has also signed a Donor Agreement with the World Health Organization for the same.
- The list includes over **500 codes, including infectious diseases** like Malaria and lifestyle diseases like chronic insomnia.

Food Fortification

- FSSAI has operationalized provisions of the Draft Food Safety and Standards amendment regulations, which were notified under the Food Safety and Standards Act 2006.
- The amendment focuses on the limits of micronutrients in vitamin and mineral premix for fortified rice kernels manufacturing.
- Food Fortification is the practice of increasing the amount of micronutrients, like vitamins and minerals, in a food or condiment.
 - **Rice Fortification is the addition of Fortified Rice Kernels (FRK) containing prescribed micronutrients like Iron, Folic Acid, and Vitamin B12 to normal rice in a 1:100 ratio.**
 - This process is done in rice mills during milling and is considered a cost-effective and complementary strategy to increase vitamin and mineral content in diets. It offers a low turnaround time and is a step towards nutritional security.

Micronutrient	Composition (per 100g of Vitamin and mineral premix)
Iron	8-20g/100g
Vitamin B9 (Folic Acid)	45-55mg/100g
Vitamin B12 (Cyanocobalamin)	0.45-0.55mg/100g

Initiatives for Food Fortification In India	
Rice fortification under PDS	<ul style="list-style-type: none"> • Centrally sponsored scheme launched in 2019-20. • Aims to fortify and distribute rice through PDS for three years (until 2023). • Target: Improving nutritional status of vulnerable populations.
Wheat fortification under POSHAN Abhiyan	<ul style="list-style-type: none"> • Launched in 2018, Focuses on fortifying wheat flour in 12 specific states under POSHAN Abhiyan. • Target: Addressing micronutrient deficiencies among children, adolescents, pregnant, and lactating mothers.
Mandatory fortification of edible oil	<ul style="list-style-type: none"> • FSSAI made edible oil fortification mandatory nationwide in 2018. • Addressing vitamin A and D deficiencies.
Fortification of milk with Vitamin D	<ul style="list-style-type: none"> • NDDDB encouraging companies to add Vitamin D to milk since 2017. • Combatting vitamin D deficiency, especially prevalent in specific populations.

Double-fortified salt program	<ul style="list-style-type: none"> Initially implemented in Tamil Nadu. Focuses on distributing salt fortified with both iodine and iron. Target: Addressing iodine and iron deficiency, particularly among school children through mid-day meals.
'+F' logo	<ul style="list-style-type: none"> It has been designated by FSSAI to identify foods that have been fortified.

WHO Global Clinical Trials Forum

- The first ever WHO Global Clinical Trials Forum, held in November, 2023, attracted 130 experts from 43 countries.
- It discussed a global vision for sustainable clinical research infrastructure.**
- WHO Global Clinical Trials Forum aims to **enhance clinical research capabilities** in line with the World Health Assembly resolution.
- Clinical trials are research studies that assess the safety and effectiveness of medical treatments,** interventions, or drugs in humans, collecting data on their effectiveness and potential side effects, and contributing to the development of evidence-based medical practices.

Clinical Trials Registry - India

- The Indian national clinical trial registry, known as the Clinical Trials Registry - India (CTRI), was **established in 2007** and is hosted at the ICMR's National Institute of Medical Statistics.
- Every trial must be registered at CTRI prior to starting.

Revised Pharma Manufacturing Rules

- The Union Health Ministry has issued revised rules under **Schedule M of the Drugs and Cosmetics Rules, 1945**, aimed at ensuring robust quality control for pharmaceutical and biopharmaceutical products, ensuring the implementation of **Good Manufacturing Practices (GMP)**.

GMP for Pharma Companies in India

- GMP is mandatory standards** which builds and brings quality into a product by way of **control on materials, methods, machines, processes, personnel, and facility/environment, etc.**
- GMP was **first incorporated in Schedule M of the Drugs and Cosmetics Rules 1945** in the year 1988 and the last amendment was done in 2005.

Changes Introduced in the Revised Schedule M Drug Rules	
Revised Schedule M	The revised schedule consists of 13 parts, providing detailed guidelines for Good Manufacturing Practices (GMP) in pharmaceutical manufacturing.
Pharmaceutical Quality System (PQS)	Introduction of a system to ensure quality management throughout the pharmaceutical manufacturing process.
Quality Risk Management (QRM)	Implementation of a process to identify, assess, and control potential risks to the quality of pharmaceutical products.
Product Quality Review (PQR)	Requirement for manufacturers to conduct periodic reviews of product quality to ensure consistency and compliance with standards.
Qualification and Validation of Equipment	Mandate for the qualification and validation of manufacturing equipment to ensure reliability and accuracy in production processes.
Computerised Storage System	Introduction of a computerized system for the storage and retrieval of data related to drug products to enhance efficiency and accuracy.
Responsibility of Manufacturers	Manufacturers are required to ensure that pharmaceutical products are suitable for their intended use, comply with licensing requirements, and pose no risk to patients.
Testing and Sampling Requirements	Companies must conduct satisfactory tests on ingredients before marketing finished products and retain samples for verification purposes.
New Categories of Drugs	Addition of five new categories, including pharmaceuticals containing hazardous substances like sex hormones, steroids, cytotoxic substances, biological products, and radiopharmaceuticals.

Implementation Timeframe	6 months for large manufacturers (over Rs 250 crore turnover) and 12 months for MSMEs (less than Rs 250 crore turnover)
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Ayurveda Gyan Naipunya Initiative (AGNI)

- Recently, the **Central Council for Research in Ayurveda Sciences (CCRAS)**, Ministry of Ayush, has launched “Ayurveda Gyan Naipunya Initiative” (AGNI) **for physicians practicing in the field of Ayurveda.**
- Aim:** To advance pragmatic Ayurveda by facilitating scientific validation and evidence-based assessment.
- It offers Ayurveda practitioners a **platform to share innovative practices and experiences in treating different diseases.**
- These insights will be **documented and published by CCRAS** for educational purposes, in cooperation with **National Commission for Indian System of Medicine.**

Central Council for Research in Ayurveda Sciences (CCRAS)

- It is an apex autonomous body under the Ministry of AYUSH responsible for undertaking, coordinating, formulating, developing and promoting research on scientific lines in Ayurvedic Sciences.
- Headquarter: New Delhi**

About National Commission for Indian System of Medicine (NCISM)

Constitution	Statutory body established under NCISM Act, 2020
Composition	Consists of 29 members appointed by the central government
	A Search Committee recommends names for Chairperson, part-time members, and presidents of the four autonomous boards under NCISM- Board of Ayurveda and Unani, Siddha & Sowaigpa under Board of Unani, Siddha and Sowaigpa.
Functions	<ul style="list-style-type: none"> Framing policies for regulating medical institutions and professionals of Indian System of Medicine Assessing healthcare-related human resources and infrastructure needs Ensuring compliance of State Medical Councils of Indian System of Medicine with regulations under the Act Coordinating among the autonomous boards

U.S. Approves First Crispr Based Gene Therapies

- The US has granted approval for the first CRISPR-based gene therapies to treat patients with Sickle Cell Disease (SCD).
 - Casgevy and Lyfgenia are the first cell-based gene therapies sanctioned for treating SCD, an inherited blood disorder that can cause significant debilitation and premature death in patients aged 12 and above.
- CRISPR-Cas9 is utilized to modify gene function, change genetic codes, or edit DNA at specific locations.

Emmanuelle Charpentier and Jennifer A. Doudna were awarded the **Nobel Prize in Chemistry** in 2020 for their development of the CRISPR-Cas9 technique.

Working:

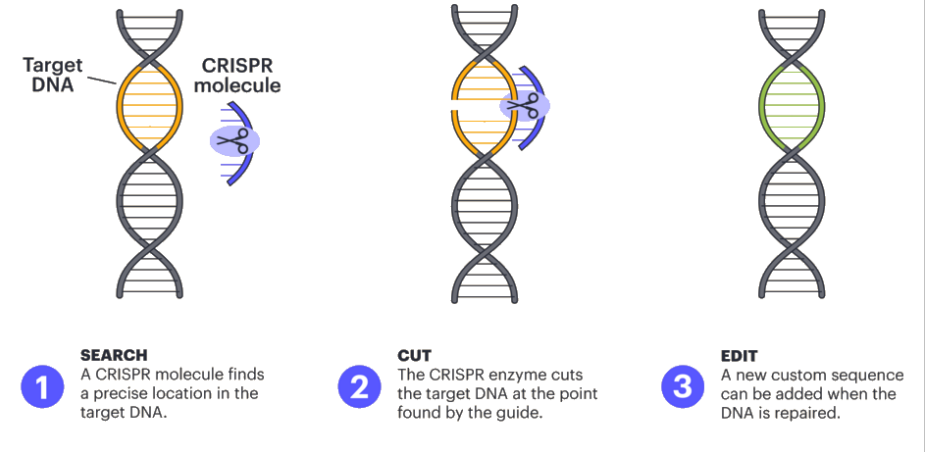
- It operates as a cut-and-paste mechanism on DNA strands, identifying genetic codes that require modification. It utilizes the **Cas9 protein as molecular scissors** to excise a portion of the strand.

- The **broken strand possesses a self-repairing tendency**, allowing damaged DNA strands to be removed, aiding the human body in restoring a healthy state.

Applications of CRISPR

- Genetic Medicine
- Cancer Treatment
- Infectious Disease Research
- Livestock Improvement
- Agricultural Biotechnology
- Biomedical Research
- Drug Discovery

How CRISPR Works



WHO Awards Countries for eliminating iTFA

- The World Health Organization (WHO) has initiated the awarding of countries for their progress in eliminating industrially produced trans-fatty acids (iTFA) for the first time.
- WHO has granted the first-ever validation certificates to **Denmark, Lithuania, Poland, Saudi Arabia, and Thailand** for successfully eliminating industrially-produced trans-fatty acids.
- Presently, 53 countries have implemented best practice policies to tackle iTFA in food, which enhances the food environment for approximately 46% of the world's population.
- Countries seeking validation for trans-fat elimination must demonstrate the existence of a best-practice iTFA elimination policy and have adequate monitoring and enforcement systems in place.
- **WHO's criteria for best practices in iTFA elimination policies include:**
 - Imposing a **mandatory national limit of 2 grams of iTFA per 100 grams** of total fat in all foods.
 - Enforcing a mandatory national ban on the production or use of Partially Hydrogenated Oils (PHO), a major source of trans-fat, as an ingredient in all foods.
 - Implementing a combination of PHO ban and iTFA 2% limit.

Trans-Fats

- Trans-fats are unsaturated fats derived from vegetable oils.
- They exist in two forms:
 - naturally occurring trans-fats found in dairy and meat products,
 - industrially produced trans-fat present in packaged foods and cooking oils.
- They are linked to non-communicable diseases and an increased risk of heart attacks.

Steps to Regulate TFA

India	<ul style="list-style-type: none"> • Implementation of the Eat Right India Movement by the Food Safety and Standards Authority of India (FSSAI). • FSSAI has mandated the declaration of Trans-Fatty Acid (TFA) content on nutrition labels.
WHO's REPLACE initiative	<ul style="list-style-type: none"> • Review dietary sources of industrially-produced trans-fat (iTFA). • Promote the replacement of iTFA. • Legislate to eliminate iTFA. • Assess trans-fat content in the food supply. • Create awareness of negative health impacts. • Enforce compliance with policies.

'Smart 2.0' For Ayurveda Teaching Professionals

- The **Central Council for Research in Ayurvedic Sciences (CCRAS)** along with **The Changes Introduced in the Revised Schedule M Drug Rules** has launched 'SMART 2.0' program.

SMART 2.0 program

- **Scope for Mainstreaming Ayurveda Research among Teaching professionals (SMART)** program promotes robust clinical studies in priority areas of Ayurveda with Ayurveda academic institutions/hospitals across the country through mutual collaboration.
- The objective of 'SMART 2.0' is **to generate tangible evidence to demonstrate efficacy and safety of Ayurveda interventions using interdisciplinary research methods** and translating it into public health care.
- In the 'SMART 1.0' initiative, approximately 10 diseases were addressed with the involvement of educators from 38 colleges.
- The study aims at **safety, tolerability and adherence to Ayurveda formulations in the priority research areas** of Bal Kasa, malnutrition, insufficient lactation, Abnormal Uterine Bleeding, Osteoporosis in post-menopausal women and Diabetes Mellitus (DM) II.

Disease X

- Recently, the World Health Organisation (WHO) emphasized the urgent need for global preparedness against a potential new pandemic, referred to as 'Disease X'.
 - It is referred to as a **hypothetical pathogen or threat that can cause a major pandemic in future.**
 - It could be a new agent, a virus, a bacterium, or a fungus without any known treatment.
- The term coined by scientists and the World Health Organization could be any of the 25 families of viruses that have the capability to cause illness in people.
- Disease X was **included in the WHO's updated Blueprint list** of diseases back in 2018.
- Scientists are of the opinion that **Disease X could be 20 times deadlier than SARS-Cov19** virus that caused pandemic recently.

New Treatment Regimen for Leprosy

- The Indian government has approved a new **three-drug (dapson, rifampicin and clofazimine)** treatment regimen for leprosy patients, aiming to eradicate the disease by 2027, with the **National Leprosy Eradication Programme** implementing this approach.

Leprosy	
Causative Agent	Hansen's disease (leprosy), is caused by slow-growing bacteria called <i>Mycobacterium leprae</i> .
Areas Affected	Leprosy can affect various parts of the body, including the nerves, skin, eyes, and the lining of the nose (nasal mucosa).
Mode of Transmission	Leprosy is transmitted through respiratory droplets from the nose and mouth of an infected individual.
Transmission Factors	Prolonged, close contact over months with untreated individuals is required. Casual contact or sharing meals does not transmit the disease.
Cessation of Transmission	Once treatment begins, the patient stops transmitting the disease, and it is not spread through casual contact such as shaking hands or hugging.
Symptoms	Symptoms of leprosy include skin ulcers, nerve damage, and muscle weakness . If left untreated, it can lead to severe disfigurement and disability.
Treatment	Early treatment is crucial as it can prevent additional tissue damage and halt the spread of the disease.
Government Steps	<ul style="list-style-type: none">• National Strategic Plan (NSP) & Roadmap for Leprosy (2023-27) to achieve zero transmission of leprosy by 2027.

	<ul style="list-style-type: none"> • National Leprosy Eradication Programme was introduced in 1983 as a centrally sponsored scheme under National Health Mission. • Nikusth 2.0 Portal: an integrated portal for leprosy case management.
Status of Leprosy in India	<ul style="list-style-type: none"> • In 2005, India eliminated leprosy as a public health problem at the national level, meeting WHO requirements of less than 1 case per 10,000 people. • The prevalence rate of leprosy has come down from 0.69 per 10,000 population in 2014-15 to 0.45 in 2021-22. • The annual new case detection rate per 100,000 population has come down to 5.52 (2021-22).

Bubble Baby Syndrome- Severe Combined Immunodeficiency (SCID)

- A two-month-old girl with bubble baby syndrome underwent bone marrow transplant (BMT) in Mumbai recently.
- '**Bubble baby syndrome**,' known medically as **Severe Combined Immunodeficiency (SCID)** is very rare genetic disorder that causes life-threatening problems with the immune system.
- It is a type of **primary immune deficiency**, a type of immune deficiency which is inherited, caused by genetic mutations present at birth.
- The disease is known as "**living in the bubble**" syndrome because living in a normal environment can be fatal to a child who has it.

Mechanism of SCID	SCID disrupts the development and function of key immune cells like white blood cells, B-cells and T-cells, crucial for fighting infections, resulting in susceptibility to severe and recurrent infections.
Causes of SCID	SCID is caused by inherited mutations in multiple genes, passed down from parents, impacting immune system function and leaving individuals vulnerable to infections.
Common Symptoms	SCID symptoms include chronic diarrhea, severe respiratory infections, oral thrush, and other serious infections, posing significant health risks to affected infants.
Treatment Approach	Urgent treatment with a stem cell transplant (bone marrow transplant) is critical to rebuild the immune system and improve survival chances for SCID patients.
Prognosis	Without prompt intervention, SCID patients face a high risk of mortality , typically succumbing to severe infections within the first year of life.

Ban on Cotton Candy Sales

- The sale of cotton candy has been prohibited in Tamil Nadu due to the discovery of toxic industrial dye, Rhodamine-B, used as an artificial coloring agent.
- The Food Safety and Standards Authority of India (FSSAI) prohibits the use of Rhodamine-B in the food industry.

Rhodamine-B	
About	It is an organic chloride salt commonly employed as a coloring agent in the textile, paper, leather, and paint industries.
Health Impacts	<ul style="list-style-type: none"> • Immediate effects of Rhodamine-B ingestion include stomach fullness, itching, and breathing problems. • Potential chronic health effects may include liver dysfunction, intestinal cancers, neurotoxicity, and kidney failure.

Guinea Worm Disease (GWD)

- According to the World Health Organization, the world is on the brink of eradicating Guinea Worm Disease (GWD).

About Guinea Worm Disease (GWD)

Infection Agent	Caused by the parasite <i>Dracunculus medinensis</i> .
Transmission	Through the consumption of water contaminated with Guinea worm larvae.
Affected Population	Predominantly affects people living in rural, deprived, and isolated communities.
Infection Sources	Individuals relying on open stagnant surface water sources like ponds are particularly susceptible.
Animal Infections	Infections in animals, especially dogs, have also been reported.
Prevention and Treatment	No vaccine or drug available for the prevention or treatment of GWD.
Eradication	GWD is categorized as one of the Neglected Tropical Diseases. India successfully eradicated GWD in 2000.

Kala Azar

- In 2023, India achieved its goal of eliminating Kala Azar for the first time, reporting fewer than one case per 10,000 population across all blocks.

About Kala Azar (Visceral Leishmaniasis)	
Infection Agent	It is a protozoan parasitic disease transmitted by infected female phlebotomine sandflies.
Symptoms	irregular fever, weight loss, enlargement of the spleen and liver, and anaemia.
Endemic Regions	Bihar, Jharkhand, Uttar Pradesh, and West Bengal regions of India.
Global Prevalence	In 2020, more than 90 per cent of new cases reported to WHO occurred in 10 countries: Brazil, China, Ethiopia, Eritrea, India, Kenya, Somalia, South Sudan, Sudan and Yemen.

Statins

- Administering ursodeoxycholic acid (UDCA) can stave off the tendency of statins to induce glucose intolerance and diabetes, a study by a group of researchers in China has found.

About Statins

- Statins are **prescription medications that people take to bring their cholesterol down to normal levels**.
- Statin drugs work by blocking the action of the liver enzyme that is responsible for producing cholesterol.
- Too much cholesterol in the blood can cause a buildup of plaque on the walls of the arteries. That buildup can eventually cause the arteries to narrow or harden. Sudden blood clots in these narrowed arteries can cause a heart attack or stroke.
- Some statins can decrease your LDL (low-density lipoprotein, or “bad”) cholesterol by 50% or more.** Providers often call LDL “bad” because it builds up inside your arteries, making it harder for blood to move through them.
- These medicines also have been linked to a **lower risk of heart disease and stroke**. Statins may also help reduce the risk of certain blood clots.
- Statins can sometimes interact with other medicines, increasing the risk of serious side effects, such as muscle damage.

Organic Electrochemical Transistor

- Researchers at Northwestern University recently outlined a new strategy to fabricate high-density and mechanically flexible Organic Electrochemical Transistor (OECTs).
- Organic Electrochemical Transistor is an **emerging class of transistor based on organic superconducting materials** known for their **ability to modulate electrical current in response to small changes** in the voltage applied to their gate electrode.

- It is a device **capable of simultaneously controlling the flow of electronic and ionic currents**.
- **Advantages:** Amplification and sensing capabilities, low power consumption, low driving voltages and a versatile structure.
- **Applications:** To create biosensors, wearable devices, and neuromorphic systems.

About Transistors

- It is a semiconductor device for amplifying, controlling, and generating electrical signals.
- It is the active components of integrated circuits, or “microchips,” which often contain billions of these minuscule devices etched into their shiny surfaces.

Types of Transistors

- **Bipolar Junction Transistor:** It is considered one of the most common types of transistors and it can be either NPN or PNP.
- **Field effect transistor:** It is a three-terminal semiconductor device. Its operation is based on a controlled input voltage.

Punnett squares

- Punnett squares are a **way to predict the possible genetic outcomes of the offspring when two individuals with known genotypes are crossed**.

○ The term "genotype" refers to the genetic makeup of an organism.

- The Punnett Square is named after **British geneticist Reginald Punnett**.

	R	r
R	RR	Rr
r	Rr	rr

How does it work?

- Along the top and side of the grid the possible genetic traits of one parent on one side and the other parent on the other side is listed.
- Then, you fill in the squares by combining the traits from each parent. Each square effectively represents a possible combination of traits that their offspring could inherit.
- It's a simple way to visualise the probabilities of different traits showing up in the offspring.

Application

- Punnett Squares are **commonly used in biology to understand inheritance patterns**.
- It is a useful tool that **helps predict the variations and probabilities resulting from cross-breeding**.
- It can also be used to understand the genetic traits in the offspring of animals, including humans.
- Researchers typically **use them together with Mendelian inheritance**.

Lumpy Skin Disease

- A team of Indian scientists has made progress in understanding the genetic makeup of the lumpy skin disease virus that led to the deaths of approximately 1 lakh cattle since May 2022.

Lumpy Skin Disease	
About	An infectious viral disease affecting cattle .
Causative Agent	<ul style="list-style-type: none"> • Lumpy skin disease virus (LSDV), belonging to the genus capripoxvirus in the poxviridae family. • Not zoonotic; does not spread to humans.
Geographical Distribution	<ul style="list-style-type: none"> • Endemic in most of Africa, parts of the Middle East, and Turkey. • Since 2015, spread to Balkan countries, Caucasus, and the Russian Federation. • Since 2019, several outbreaks of LSD have been reported by countries in Asia (Bangladesh, India, China, Nepal, Sri Lanka etc.)
Transmission	<ul style="list-style-type: none"> • Spread by blood-feeding insects like flies, mosquitoes, or ticks. • Also transmitted through oral and nasal secretions which may contaminate feeding and water troughs.

Symptoms	<ul style="list-style-type: none"> Enlarged lymph nodes causing lumps on the skin, particularly on the head, neck, limbs, udder, genitalia, and perineum. Other symptoms include fever, reduced milk yield, etc.
Host Specificity	<ul style="list-style-type: none"> Primarily affects cows, with lower impact on buffalo. Higher morbidity rate in cattle.
Treatment	<ul style="list-style-type: none"> No direct antiviral treatment. Supportive care with antibiotics, painkillers, and wound care. Vaccinations are used for disease control.

OptiDrop Platform

- Recently, the Centre for Cellular and Molecular Platforms (C-CAMP) in Bengaluru has developed a new platform called OptiDrop.
- OptiDrop Platform is an innovative microfluidic chip-based platform that simplifies and reduces the cost of studying single cells.**
- It employs a novel approach that enables precise and cost-effective **analysis of single cells encapsulated in droplets.**
- The platform's unique features include live data visualisation, a smaller data footprint, and a 'closed' system design that prevents external contamination.
- This research was **supported by the Biotechnology Industry Research Council (BIRAC)**, the Department of Science and Technology (**DST**), and the Ministry of Education

Centre for Cellular and Molecular Platforms

- The C-CAMP is an initiative supported by the Department of Biotechnology.
- It is a catalyst of cutting-edge research and innovation in the life sciences since 2009.
- It is mandated to promote entrepreneurship and innovation.

Applications:

- This technology has potential applications in diagnostics, therapeutics, agriculture, animal health.
- It helps in studying the impact on individual cells during a drug screen, environment control (water contamination), detection and sorting of CAR-T cells in immuno-oncotherapeutics, selection of CRISPR-modified single cells and selection of high-efficiency clones in single-cell genomics.

Nitrogen-Fixing Bacteria

- Recently, researchers have discovered nitrogen-fixing symbiotic organisms exhibiting behaviors similar to organelles.
- Nitrogen-Fixing Bacteria are **prokaryotic microorganisms** that are **capable of transforming nitrogen gas from the atmosphere into "fixed nitrogen" compounds, such as ammonia**, that are usable by plants.

	Types of Nitrogen-Fixing Bacteria	Examples
Symbiotic or mutualistic	<ul style="list-style-type: none"> These bacteria reside within the root nodules of specific plants, particularly those of the legume family. These plants, known as legumes, are significant hosts for nitrogen-fixing bacteria. 	<p>Rhizobium: Associated with plants in the pea family.</p> <p>Various Azospirillum species: Associated with cereal grasses.</p>
Free-living	<ul style="list-style-type: none"> This category includes nitrogen-fixing bacteria that are not reliant on a host organism. They are commonly found in soil or aquatic environments. 	<p>Cyanobacteria: Anabaena and Nostoc.</p> <p>Genera such as Azotobacter, Beijerinckia, and Clostridium.</p>

Electroencephalogram (EEG)

- The Electroencephalogram (EEG) is a **diagnostic tool that records brain activity, detecting abnormalities in brain waves or electrical activity.**
- Typically **lasting about 30 minutes**, the procedure **involves placing electrodes, consisting of small metal discs with thin wires, on the scalp.**
- These electrodes pick up **minuscule electrical charges** generated by brain cell activity. The recorded charges are then amplified and displayed as a graph on a computer screen or printed on paper.
- EEG is instrumental in diagnosing various brain disorders conducted by a **specialized clinical neurophysiologist.**
- For instance, epilepsy manifests as rapid spiking waves on the EEG, while brain lesions caused by tumors or strokes may produce slower EEG waves.
- Additionally, it **assesses overall brain electrical activity**, aiding in trauma evaluation, drug intoxication detection, and determining brain damage in comatose patients.
- Furthermore, the EEG can **monitor cerebral blood flow** during surgical procedures, enhancing surgical precision and patient safety.

Lab-grown Minibrains

- Mini Brains grown in the lab may help explain why concussions and other traumatic brain injuries (TBIs) raise people's risk of dementia.
- Lab-grown Minibrains are **scientifically known as brain organoids**, but often called "minibrains" and **serve as miniature, simplified models of full-size human brains.**
- Scientists typically **grow brain organoids from stem cells**, a type of immature cell that can give rise to any cell type, whether blood, skin, bowel or brain.
- The stem cells used to grow organoids can either come from adult human cells, or more rarely, human embryonic tissue.
- Scientists collect adult cells and then expose them to chemicals in order to revert them into a stem cell-like state. The resulting stem cells are called "induced pluripotent stem cells" (iPSC), which can be made to grow into any kind of tissue.
- To give rise to a minibrain, scientists embed these stem cells in a protein-rich matrix, a substance that supports the cells as they divide and form a 3D shape. Alternatively, the cells may be grown atop a physical, 3D scaffold.
- **Application:** Fundamental research, drug development and even computer science.

Glycaemic Index

- The findings of an international study suggest that consuming low glycaemic index and low glycaemic load diets might prevent the development of type 2 diabetes.
- Glycaemic Index **ranks carbohydrate-containing foods based on the blood glucose response** after a meal. The higher the blood sugar reading, the higher will be the GI.
- It shows how quickly each food affects your blood sugar (glucose) level when that food is eaten on its own.
- Foods are ranked on a scale of 0 to 100, with **pure glucose (sugar) given a value of 100.**
- The lower a food's glycemic index, the slower blood sugar rises after eating that food. In general, the more processed a food is, the higher its GI, and the more fiber or fat in a food, the lower it's GI.
- **Glycaemic load is both the quality and quantity of carbohydrate in a specific food** and is the product of the GI and the amount of carbohydrate available in a serving.

Organoid Neural Network (ONN)

- The Organoid Neural Network (ONN) is a type of artificial neural network **inspired by the structure and function of organoids**, which are miniature versions of organs grown in vitro from stem cells.
- Organoid Neural Networks **integrate organoids with neural network technology**. By interfacing brain organoids with microelectrode arrays (MEAs), researchers can **record and stimulate their electrical activity**.
- This electrical activity is then used to create a computational model of the organoid's neural network. This model can then be used for further experimentation and AI development.
- **Applications:** Understanding brain function, Drug discovery, Neuromorphic AI (AI systems that function closer to the principles of the brain)

Organoids

- They are **Miniature 3D structures grown from stem cells** (Cultivated in the lab under controlled conditions) that **resemble specific organs, in this case, the brain**.
- These Organoids Mimic the structure and function of certain brain regions to some extent.

About Neural Networks

- **Neural networks are a class of machine learning models inspired by the structure and functioning of the human brain.**
- They are composed of interconnected nodes, also known as neurons, organized into layers.
- These networks can learn from data, generalize patterns, and make predictions or decisions without being explicitly programmed for a particular task.
- **Deep Learning:** Neural networks with many hidden layers are referred to as deep neural networks. **Deep learning involves training these deep architectures to learn complex representations and features from data.** They are used in diverse applications, including image recognition, language processing, and robotics.

BharatGPT Group Unveils 'Hanooman'

- BharatGPT group, **led by IIT Bombay** and seven other Indian institutes, plans to launch its first ChatGPT-like service.
- The service 'Hanooman', will be launched in collaboration with **Seetha Mahalaxmi Healthcare**, supported by **Reliance Industries Ltd** and the **Department of Science and Technology**.
- Hanooman is a **series of large language models (LLMs)** designed to respond in 11 Indian languages, including Hindi, Tamil, and Marathi.
- It is designed for four fields: **healthcare, governance, financial services, and education**.
- Hanooman is **not just a chatbot but a multimodal AI tool** that generates text, speech, and videos in multiple languages.
- One of its **first customized versions is VizhyGPT, a healthcare-specific model** fine-tuned using medical data. The models range from 1.5 billion to 40 billion parameters.

Deep Tech Policy

- National Deep Tech Startup Policy (NDTSP) is Sent to Cabinet for Approval.

What is Deep Technology?

- It is a term used to describe a category of **innovations based on significant scientific or engineering advances**. These technologies often **address complex challenges**.
- **Deep tech start-ups** try to find **solutions of such complex challenges** through technologies and processes that typically require lengthy R&D cycles.
- Artificial Intelligence, blockchain, biotechnology etc. are the few fields of deep technology.

National Deep Tech Startup Policy (NDTSP) 2023:

- The PM's Science, Technology & Innovation Advisory Council (**PM-STIAC**) recommended in 2022 the creation of a **National Working Group to propose Deep Tech policy**.
- In 2023, The **Office of Principal Scientific Adviser** to the Government of India is entrusted with the formulation of this policy.
- The NDTSP lays the foundation for India's emerging Deep Tech Startup ecosystem.

Open AI: Sora

- Sora is an AI model that can create realistic and imaginative videos/scenes from text instructions.
- It is trained on a massive dataset of text and video and can generate videos up to 60 seconds long while “maintaining the visual quality and adherence to the user’s prompt.”
- **Working Mechanism:**
 - The model uses a transformer architecture that unlocks superior scaling performance much similar to ChatGPT models.
 - The AI model shows videos and images as collections of smaller units of data which are known as patches. Each of these patches are similar to tokens in GPT.
 - OpenAI's Sora builds on previous research on DALL-E and GPT Models, a text-to-image model that generates digital images from natural language descriptions. It borrows the recapturing technique from DALL-E 3, which includes generating descriptive captions for visual training data.
- **Application:** Complex Scene Generation, Realistic Reflection in the Real World, Language Understanding etc.

IndiaAI Mission

Union Cabinet approved the IndiaAI Mission with an outlay of Rs 10,372 crore for the next five years.

About IndiaAI Mission

- The PM of India at the **Global Partnership on Artificial Intelligence (GPAI) Summit 2023** (New Delhi) announced that India will launch AI mission.
- The IndiaAI mission will establish a comprehensive ecosystem catalyzing AI innovation through strategic programs and partnerships across the public and private sectors.
- The Mission will be **implemented by 'IndiaAI' Independent Business Division (IBD)** under Digital India Corporation (DIC), Meity
- **AI Curation Units (ACUs)** will also be developed in 50-line ministries and **AI marketplace** will be designed to offer **AI as a service** and **pre-trained model** to those working on AI applications.
- The implementation of this AI compute infrastructure will be done through a public-private partnership (PPP) model with 50% viability gap funding.

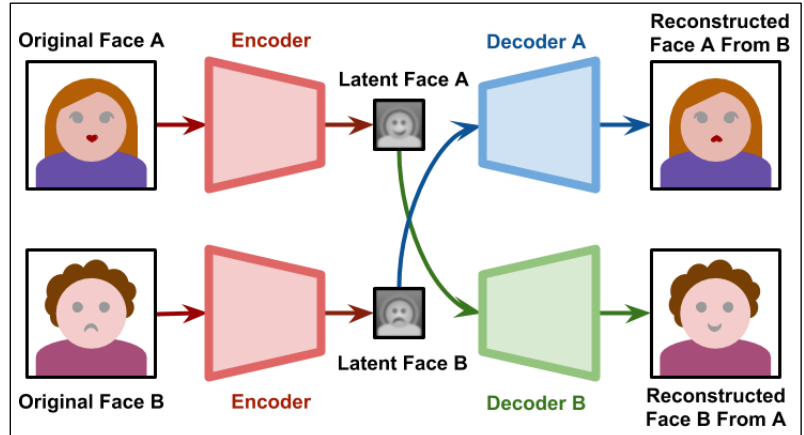
7 Components of IndiaAI Mission

- **IndiaAI Compute Capacity:** The ecosystem will comprise AI compute infrastructure of 10,000 or more Graphics Processing Units (GPUs), built through PPP. It will act as a one-stop solution for resources critical for AI innovation.
- **IndiaAI Innovation Centre (IAIC):** It will undertake the deployment of indigenous Large Multimodal Models (LMMs) and domain-specific foundational models in critical sectors.
- **IndiaAI Datasets Platform:** This unified data Platform will streamline access to quality non-personal datasets for AI Innovation to Indian Startups and Researchers.
- **IndiaAI Application Development Initiative:** This will promote AI applications in critical sectors for the problem statements sourced from Central Ministries, State Departments, and other institutions for catalyzing large scale socio-economic transformation.
- **IndiaAI Future Skills:** It is conceptualized to mitigate barriers to entry into AI programs and will increase **AI courses** in undergraduate, masters-level, and Ph.D. programs. Further, Data and AI Labs will be set-up in Tier 2 and Tier 3 cities across India to impart foundational level courses.

- **IndiaAI Startup Financing:** This pillar is conceptualized to support and accelerate deep-tech AI startups and provide them streamlined access to funding to enable futuristic AI Projects.
- **Safe & Trusted AI:** This pillar will enable the implementation of responsible AI projects including the development of indigenous tools and frameworks.

Deep Fakes

- Deep-fakes are a **compilation of artificial images and audio put together with machine-learning algorithms** to spread misinformation and replace a real person's appearance, voice, or both with similar artificial likenesses or voices.
- The term "**deep-fake**" combines the **deep learning concept with something fake**.
- It can create people who do not exist, and it can fake real people saying and doing things they did not say or do.



How Deep-fake works?

- Deep-fakes utilize **advanced technologies such as deep learning, AI, and GANs (Generative Adversarial Networks)** to create realistic images and videos.
- **GANs consist of generators**, which create new images from initial data sets, and **discriminators**, which evaluate the content for realism and refine it further.
- Additionally, deep-fakes employ variational **auto-encoders**, a type of artificial neural network typically used for facial recognition.
- These auto-encoders detect facial features, suppressing visual noise and non-face elements, enabling a versatile "face swap" model using shared features of different persons or images.

Legal Provisions to counter Deepfakes in India

Indian Copyright Act of 1957	Imposes penalties for copyright infringement, indirectly impacting deepfake-related violations.
Section 66D IT Act of 2000	Allows prosecution of individuals who maliciously use communication devices or computer resources to cheat or impersonate others.
Section 66E IT Act of 2000	Addresses privacy concerns by penalizing acts involving capturing, publishing, or transmitting a person's images in mass media.

Global Measures against Deepfakes

Bletchley Declaration	Involves over 25 major countries, including India, US, China, Japan, and UK, aiming to address the potential risks associated with AI, including those posed by deepfake technology.
Digital Services Act of EU	Requires social media platforms to fulfill labeling obligations, enhancing transparency and aiding users in verifying the authenticity of media content.
Google Tools	Google introduced tools such as watermarking to identify synthetically generated content, contributing to efforts against the proliferation of deepfake material.

IP/MPLS (Multiprotocol Label Switching)

- India's fastest and indigenously designed **IP/MPLS (Internet Protocol - Multiprotocol Label Switching)** router was launched recently. It is a networking technology that optimizes data traffic routing across networks.

What is MPLS?

- It is a data forwarding technique (optimizes data traffic) used in telecommunications networks to efficiently direct data packets along predetermined paths.
- It is widely deployed in large-scale networks, such as those operated by internet service providers (ISPs) and large enterprises, to improve performance, reliability, and manageability.
- **Applications:** VPNs (Virtual Private Networks); Traffic Engineering; Cloud Networking and Multiprotocol Support.

	Traditional Routing	MPLS (Multiprotocol Label Switching)
Forwarding Mechanism	based on the destination IP address of packets	based on labels attached to packets rather than examining the entire packet header
Efficiency	can result in slower forwarding decisions	offers faster forwarding
Traffic Engineering	provide limited capabilities for traffic engineering	enables sophisticated traffic engineering

iMPEL- AI

- **iCreate**, in collaboration with **Microsoft**, has initiated the **iMPEL-AI (iCreate-Microsoft Programme for Emerging Leaders in Artificial Intelligence)** under an MoU facilitated by the Ministry of Electronics & IT (MeitY).
- The iMPEL-AI programme aims to **foster AI innovation and product development by granting Indian innovators access to mentorship and technological infrastructure necessary for building globally successful AI ventures.**
- This initiative will **identify and screen 1100 AI innovators across India to become AI Most Valuable Players (MVPs)**, with a focus on sectors like healthcare, education, agriculture, smart cities, sustainability, and financial inclusion, aiming to scale approximately 100 startups nationwide.

iCreate

- It is a **joint venture between Gujarat Mineral Development Corporation Limited (GMDC) and Gujarat Entrepreneurship and Venture Promotion Foundation (GEVPF).**
- It serves as an independent center promoting the Start-up India scheme, providing technology and assistance to innovative entrepreneurs.

Application Programming Interface (API)

- CERT-In, along with Computer Security Incident Response Team-Finance Sector (CSIRT-Fin), issued a whitepaper on Application Programming Interface (API) security

About API

- A set of rules and protocols that allow software applications to talk to each other and exchange data, functionalities, and features.
- APIs define the methods and data formats that developers can use to request and exchange information between different systems or components.
- **Types:** Web APIs, RESTful APIs, SOAP APIs, GraphQL APIs
- **Real world examples:** Weather App, Social Media Logins, Online Payments

Benefits of APIs:

- **Faster development:** Developers can leverage existing functionalities offered by APIs instead of building everything from scratch.
- **Increased innovation:** APIs open doors for creative integration of features and data across different applications. APIs promote interoperability and integration between disparate systems.
- **Improved user experiences:** By combining functionalities, APIs can create more seamless and powerful user experiences.

National Quantum Mission

- The **Mission Governing Board (MGB) for the National Quantum Mission (NQM)** held its inaugural meeting, outlining the mission's implementation strategy and timelines.
 - Discussions also included the **establishment of the Mission Coordination Cell (MCC)**, which will serve as the **coordinating body for the NQM**, working closely with the Mission Secretariat at the Department of Science and Technology (DST).
 - The MCC will **operate under the guidance of the Mission Technology Research Council (MTRC)**, which provides direction and oversight for the NQM.

National Quantum Mission (NQM)

- The Union Cabinet had approved the National Quantum Mission (NQM) to **support scientific and industrial research in quantum technology**, with a cost of Rs. 6,003.65 crore from 2023-24 to 2030-31.
- It aims to place India among the top six leading nations after US, Austria, Finland, France and China.
- **Four thematic hubs, or T-Hubs**, with a focus on **(a) quantum computing, (b) communication, (c) sensing and metrology, and (d) materials and devices** will be established in India's leading academic and national R&D institutes.

National Quantum Mission

Deliverables

- » Developing intermediate scale quantum computers with 50-1000 physical qubits in 8 years in various platforms like superconducting and photonic technology
- » Satellite based secure quantum communications between ground stations over a range of 2000 kilometres within India
- » Long distance secure quantum communications with other countries
- » Inter-city quantum key distribution over 2000 km

What is Quantum Computing?

- It is an area of computer science focused on the development of technologies based on the principles of quantum theory.
- It uses the **unique behaviours of quantum physics to solve problems that are too complex for classical computing.**
- Classical computers today employ a stream of electrical impulses (1 and 0) in a binary manner to encode information in bits. This restricts their processing ability compared to quantum computing.
- Quantum computing uses subatomic particles, such as electrons or photons. **Quantum bits, or qubits, allow these particles to exist in more than one state (i.e., 1 and 0) at the same time.**
- Qubits can exploit the interference between their wave-like quantum states to perform calculations that might otherwise take millions of years.

PRINCIPLES UNDERLYING THE QUANTUM COMPUTING TECHNOLOGY

<p>SUPERPOSITION</p> <p>Superposition describes a particle's ability to exist across many possible states at the same time. So the state of a particle is best described as a "superposition" of all those possible states.</p>	<p>ENTANGLEMENT</p> <p>Quantum entanglement refers to a situation in which two or more particles are linked in such a way that it is impossible for them to be described independently even if separated by a large distance.</p>	<p>OBSERVATION</p> <p>Superposition and entanglement only exist as long as quantum particles are not observed or measured. "Observing" the quantum state yields information but results in the collapse of the system.</p>
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Quantum Technology and India:

- Professor Satyendra Nath Bose, Sir Chandrasekhara Venkata Raman and Professor Meghnad Saha are some stalwart Indian scientists that have contributed in the field of quantum technology.
- India is currently at the forefront of tapping the second quantum revolution through massive investments in the field.
- **Quantum technologies & applications is one of the 9 missions of national importance**, being driven by the **Prime Minister's Science and Technology Innovation Advisory Council (PM-STIAC) through the Principal Scientific Advisor's office**.
- **Applications:** In more reliable navigation and timing systems, more secure communications, more accurate healthcare imaging through quantum sensing (perform a measurement of a physical quantity), more powerful computing (Quantum computer), etc. Presently, R&D works in quantum technologies are underway in the US, Canada, France, Finland, China and Austria.

Private 5G

- According to the Global Mobile Suppliers Association (GSA), India is ranked 16th in terms of private 5G network adoption by enterprises.
- Private 5G, also known as **captive non-public network (CNPN)**, is a **network exclusively for a firm's use, not connected to any external public network**.
- **It uses 3GPP-based spectrum** for unified connectivity and secure communication within a specific area. Private 5G allows enterprises **to dedicate bandwidth for high-frequency, low-wavelength airwaves**.

Dark Fiber

- Dark fibres are **unused optical cables** that are not connected to any active equipment or have no traffic or service running on them. They are named dark due to **no light pulse being transmitted through them** and are still referred to as such even after being used.

Characteristics of Dark Fibres

Unutilized Capacity	Dark fibers are installed but unused fiber-optic cables within existing networks, providing a significant amount of untapped bandwidth capacity.
Scalability	Dark fiber networks offer scalability, enabling easy expansion and increased bandwidth to meet growing demands. Minimal additional investment is required for activation.
Security and Control	Organizations using dark fiber have enhanced control and security over their data transmission, allowing for customized security measures and greater privacy protection.
Low Latency	Dark fiber networks provide low latency and high-speed data transfer, making them ideal for real-time communication and high-performance applications.

Krutrim

- Ola has introduced Krutrim, a large language model (LLM) specifically designed for Indian languages, capable of understanding 22 languages and producing content in approximately 10 seconds.

Large Language Model (LLMs)

- A large language model (LLM) is a **type of artificial intelligence (AI) program that can recognize and generate text, among other tasks**. LLMs are trained on huge sets of data—hence the name "large."
- LLMs are **built on machine learning** specifically, a type of neural network called a transformer model. In simpler terms, an LLM is a **computer program that has been fed enough examples to be able to recognize and interpret human language or other types of complex data**.
- Many LLMs are trained on data that has been gathered from the Internet—thousands or millions of gigabytes' worth of text.
- LLMs use a type of machine learning called **deep learning** in order to understand how characters, words, and sentences function together.

- Deep learning involves the **probabilistic analysis of unstructured data**, which eventually enables the deep learning model to recognize distinctions between pieces of content without human intervention.
- LLMs are **trained through fine-tuning** to perform specific tasks like interpreting questions, generating responses, or translating text between languages, as per the programmer's specific requirements.

What are LLMs used for?

- LLMs can be trained to do a number of tasks. One of the most well-known uses is their application as **generative AI**: when given a prompt or asked a question, they can produce text in reply.
- The publicly available LLM ChatGPT, for instance, can generate essays, poems, and other textual forms in response to user inputs.

Wi-Fi 7 Technology

- Qualcomm, a U.S.-based company, has proposed that India adopt the latest Wi-Fi 7 technology.
 - **Wi-Fi (Wireless Fidelity) facilitates wireless internet connection and communication between devices using radio waves.** It operates through three mediums: base stations, routers, and accessing devices (phones and laptops).
- Wi-Fi 7 represents the upcoming generation of Wi-Fi standards, based on **IEEE 802.11be** (extremely high throughput or EHT).
 - **IEEE is a leading technical organization** focused on advancing technology for humanity's benefit.

Wi-Fi generations					
	Wi-Fi 4	Wi-Fi 5	Wi-Fi 6	Wi-Fi 6E	Wi-Fi 7 (expected)
Launch date	2007	2013	2019	2021	2024
IEEE standard	802.11n	802.11ac	802.11ax		802.11be
Max data rate	1.2 Gbps	3.5 Gbps	9.6 Gbps		46 Gbps
Bands	2.4 GHz and 5 GHz	5 GHz	2.4 GHz and 5 GHz	6 GHz	1–7.25 GHz (including 2.4 GHz, 5 GHz, 6 GHz bands)
Security	WPA 2	WPA 2	WPA 3		WPA3

Key Features of Wi-Fi 7:

- **Lower Latency:** Wi-Fi 7 **reduces latency, enhancing the speed of cloud-based operations** such as file transfers and gaming.
- **Backward Compatibility:** It can **connect with devices across 2.4GHz, 5GHz, and 6GHz bands** without necessitating new hardware. This flexibility allows it to utilize a mix of available spectrum frequencies for optimal performance.
- **Speed and Capacity:** The Wi-Fi 7 **could support bandwidths of up to 46 Gbps**, four times faster than Wi-Fi 6's maximum speed.
- **Multi-Link Operation (MLO):** By combining multiple channels on different frequencies, Wi-Fi 7 **improves network performance**.

Benefits for India:

- **Enhanced User Experiences:** Facilitates seamless streaming of high-res content like 8K videos and improves performance in cloud gaming, AR/VR, and data-intensive activities.
- **Medical Advancements:** Enables tele-diagnostics and telesurgery in the medical field.
- **Rapid Tech Adoption:** Supports India's quick integration of cloud-based and wireless apps, aligning with security and privacy initiatives.
- **Tech Advancements:** Complements digital transformations in enterprises, fixed wireless connectivity, smartphone tech, and Edge AI.
- **Meeting Emerging Tech Demands:** Addresses the surge in IoT devices, from smart home gadgets to industrial applications.

Direct-To-Cell

- **SpaceX** has launched the first batch of **Starlink** satellites with "Direct-to-Cell" capabilities, featuring an advanced **eNodeB modem** that acts as a cell phone tower in space.
- This allows Starlink to **deliver direct satellite broadband connectivity on smartphones anywhere on Earth and connect Internet of Things (IoT) devices with common LTE standards.**
- Direct-To-Cell enables data collection and sharing between physical devices embedded with sensors and software.

Chameleon Trojan

- The Chameleon Trojan is a stealthy **malware targeting Android devices, capable of disabling biometric authentication like fingerprint and face unlock to gain access to sensitive data.**
- It disguises itself within legitimate apps like Google Chrome, avoiding immediate detection.
- The Trojan adapts its methods based on Android versions, stealing on-screen content and capturing PINs and passwords. It collects user data and launches attacks when devices are least likely to be in use.
- To protect against it, users should avoid installing apps from unofficial sources and refrain from enabling 'Accessibility service' for unknown apps.

Hume AI- First conversational AI with emotional intelligence

- Recently, a New York-based research lab and technology company Hume, has introduced what can be called the **'first conversational AI with emotional intelligence'**.
- Hume AI is the **world's first emotionally intelligent voice AI.** It accepts **live audio input** and **returns both generated audio and transcripts** augmented with measures of vocal expression.
- It is essentially an **API** that is powered by its proprietary **empathic large language model (eLLM).**
 - This eLLM reportedly **understands and emulates tones of voices,** and word emphasis to optimise human-AI conversations.
- It is **trained on human reactions** to optimize for positive expressions like happiness and satisfaction. EVI will continue to learn from users' reactions.
- By processing the tune, rhythm, and timbre of speech, EVI unlocks a variety of new capabilities, like knowing when to speak and generating more empathic language with the right tone of voice.

Shallowfakes

- Like deepfake, shallowfake is also an **act of morphing people's pictures and using them for malicious activities.** But unlike deepfake, which is created by using advanced artificial intelligence (AI) software, **shallowfake can be created by simply using basic editing software.**
- They are **made with existing technologies**—for example, a conventional edit on a photo, slowing-down a video to change the speech patterns of an individual or more often, relying on mis-captioning or mis-contextualising an existing image or video, claiming it is from a time or place which it is not from.
- Because of this easier way to create them, many experts consider shallowfakes to be bigger threats than deepfakes.

Smart AI Resource Assistant for Health (S.A.R.A.H.)

- Recently, the World Health Organization (WHO) announced the launch of S.A.R.A.H., a digital health promoter prototype.
- Smart AI Resource Assistant for Health (S.A.R.A.H.) is a **digital health promoter prototype with enhanced empathetic response powered by generative artificial intelligence (AI).**
- It **aims to provide an additional tool for people to realize their rights to health, wherever they are.**
- S.A.R.A.H. is trained to provide information on major health topics, such as healthy habits and mental health, and helps people understand risk factors for leading causes of death like cancer and heart disease.

- It can also provide up-to-date information on quitting tobacco, being active, eating a healthy diet, and de-stressing.
- S.A.R.A.H. can engage users 24 hours a day in 8 languages on multiple health topics on any device, powered by generative AI for more accurate responses in real-time.

GPT-4V

- OpenAI's ChatGPT has recently announced API access to GPT-4 with Vision, known as GPT-4V.
- This advancement **allows users to utilize GPT-4 for analyzing image inputs**, marking a significant step towards multimodal AI.
- GPT-4V enables **visual question answering (VQA)**, where users can upload images and ask questions about them.
- It is a Large Multimodal Model (LMM), capable of processing both text and images, enhancing its response generation.
- **Key Features:**
 - Processing visual content such as photographs, screenshots, and documents, identifying objects in images, and interpreting data from graphs and charts.
 - Decipher handwritten and printed text within images, bridging the gap between visual understanding and textual analysis.
- **Potential Applications**
 - **Researchers** can benefit from interpreting historical documents
 - **Developers can generate website code from visual designs.**
 - Additionally, the model aids in data interpretation, unlocking insights from visuals and graphics.

World Cybercrime Index

- World Cybercrime Index **identifies the globe's major cybercrime hotspots by ranking** the most significant sources of cybercrime at a national level.
- It has been developed as a joint partnership between the **University of Oxford and UNSW Canberra.**
- The data that underpins the index was gathered through **a survey of 92 leading cybercrime experts** from around the world who are involved in cybercrime intelligence gathering and investigations.
- It ranks roughly 100 countries and identifies key hotspots according to various categories of cybercrime, including ransomware, credit card theft, and scams.

Key Findings:

- A relatively small number of countries house the greatest cybercriminal threat. **Russia** tops the list, followed by Ukraine, China, the USA, Nigeria, and Romania.
- **India** captured the number **10 spot** in the rankings.

MISCELLANEOUS

ANEEL (Advanced Nuclear Energy for Enriched Life)

- Clean Core Thorium Energy (a US-based company) developed **a new type of nuclear fuel** named Advanced Nuclear Energy for Enriched Life (ANEEL).
- ANEEL is **named after** India's scientist, **Dr Anil Kakodkar** (an Indian nuclear scientist who served as the Chairman of the Atomic Energy Commission of India from 2000 to 2009 and has made significant contributions to the development of **India's pressurized heavy water reactors.**

What is ANEEL?

- It is a **fuel that combines Thorium and High Assay Low Enriched Uranium (HALEU).**

- ANEEL can be used in the existing Pressurized Heavy-Water Reactors (PHWRs), an indigenous reactor system that is the **workhorse of India's nuclear fleet**.
- According to the World Nuclear Association, **most of the current reactors run on uranium fuel** enriched up to 5% Uranium-235. **HALEU is Uranium enriched to more than 5% but less than 20%**.

Advantages:

- ANEEL fuel **can stay in a reactor for much longer** than traditional fuel, producing more energy from the same amount of material.
- ANEEL fuel **produces less radioactive waste** than traditional fuel, making it a **more environmentally friendly** option.

Challenges:

- The fuel needs to be able to withstand the high temperatures and pressures inside a reactor.
- ANEEL fuel needs to be approved by regulators before it can be used in commercial reactors.

Prithvi Vigyan (PRITHVI) Programme

- Cabinet clears PRITHVI initiative for ease of research in earth sciences.

About Programme (Scheme of the Ministry of Earth Sciences (MoES) for the period 2021 - 2026):

- Under PRITHVI initiative, **earth system sciences** will be **seen as one unit**, instead of separate verticals such as atmosphere, cryosphere, geosphere, ocean science.
- **It including following five ongoing sub- schemes of MoES):**
 - **Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS):** For Research and Development (R&D) of dynamical models and providing forecast services.
 - **Ocean Services, Modelling Application, Resources and Technology (O-SMART):** For technology development for oceanic applications, services and R&D activities in the marine and coastal environment.
 - **Polar Science and Cryosphere Research (PACER):** Comprising the Antarctic program, Indian Arctic program, Southern Ocean program, and Cryosphere and Climate program.
 - **Seismology and Geosciences (SAGE):** Encompasses 6 activities including Seismological monitoring and micro zonation and setting up a facility for geochronology.
 - **Research, Education, Training and Outreach (REACHOUT):** Incorporating R&D in Earth System Science (RDESS), developing Skilled manpower in Earth System Sciences, etc

Samavesha Project

- **I-STEM** (Indian Science, Technology, and Engineering facilities Map) is **launching the Samavesha project at IISc, Bengaluru**.

About Project:

- **Increased research collaboration:** The project aims to improve accessibility to facilities and labs by connecting researchers and industries with institutions that have the required equipment.
- **Reduced costs & Improved efficiency:** This can help to save capital expenditure for researchers, industries, and startups, and prevent duplication of resources at the national level.

About I-STEM:

- **I-STEM, an initiative of the Office of Principal Scientific Advisor, Government of India.** It is planning to **conduct around 50 Samavesha** across India in 2024.
- It is developed with the **concept "One Nation One Portal"** for the scientific community, aimed at **"Linking Researchers and Resources"**.

India's First Graphene Centre

- The **India's first Graphene Centre** named India Innovation Centre for Graphene (IICG) has been established in **Kerala (At Makers Village, Kochi)**.
- It should also be noted that, **Centre of Excellence (CoE) in Intelligent Internet of Things (IIoT) Sensors** also established in Kerala.

About India Innovation Centre for Graphene (IICG):

- **Focus:** R&D, incubation, innovation, skilling, capacity building, testing, and certification related to graphene and 2D materials.
- **Partners:** MeitY (Ministry of Electronics and Information Technology), **Government of Kerala**, and **Tata Steel Limited**.

Mpemba Effect

- Scientists remain fascinated by the **interplay of physical mechanisms** observed in the **Mpemba Effect**.

What is Mpemba Effect?

- The Mpemba effect is the **observation that hot water can sometimes freeze faster than cold water** under certain conditions.
- The effect has been **observed in a variety of liquids**, including water, ethanol, and glycerine.
- The effect is **most likely to occur when the hot water is cooled quickly**.
- The effect is **most likely to be observed in small samples of water**.
- The Mpemba effect has some **potential applications**. For example, it could be used to speed up the freezing of food or other liquids.
- One of the **challenges** with it is **its inconsistency**; it doesn't occur in all situations.

CERN Scientists Carry Out Laser Cooling of Positronium

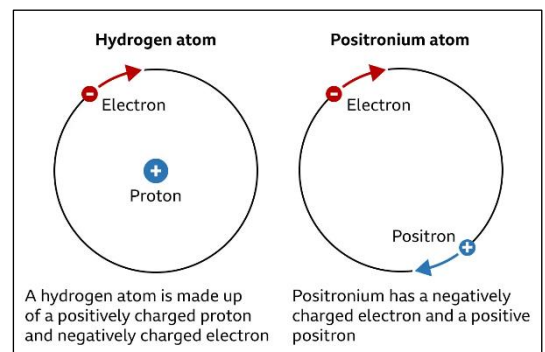
- A team of international researchers have successfully demonstrated **laser cooling of Positronium** for the first time, using a specialized laser system to cool atoms from 380 Kelvin to 170 Kelvin.
- The breakthrough experiment was carried out by the **Antihydrogen Experiment: Gravity, Interferometry, Spectroscopy (AEGIS) collaboration at CERN**.

Antihydrogen Experiment: Gravity, Interferometry, Spectroscopy (AEGIS)

- AEGIS is an experiment at CERN that **aims to measure the gravitational acceleration of Earth on antihydrogen, the antimatter counterpart to hydrogen**.
- The experiment, a **collaboration between physicists from Europe and India**, aims to explain the matter-antimatter asymmetry in the visible universe.
- Antimatter is stable as long as it doesn't come into contact with matter, but only lasts a fraction of a second on Earth without special precautions.
- AEGIS is located at the Antiproton Decelerator facility at CERN and achieved its first achievement in 2018 by demonstrating the pulsed production of antihydrogen atoms.

Positronium

- Positronium is a **fundamental atomic system consisting of an electron and its antimatter equivalent, a positron**.
- It was **first detected in the US in 1951** and has a **half-life of 142 nano-seconds**.
- Its **mass is twice the electron mass and is a pure leptonic atom**.
- This hydrogen-like system, with halved frequencies for excitation, makes it a great contender for attempting laser



cooling and testing fundamental physics theories. Cooling Positronium slows down atoms, making it easier for scientists to study.

Homosep Atom

- The technology called Homosep Atom is developed by the startup incubated in the Department of Science and Technology (DST)-Technology Business Incubator (TBI) of IIT Madras.
- Homosep Atom offers a **cost-effective solution for cleaning septic tanks**, potentially reducing the need for manual labor and frequent cleaning.
- This innovative robot is **capable of breaking down and homogenizing hard sludge into a slurry**, thereby facilitating easier pumping out of the tank.
- Equipped with a grabber attachment, the robot can effectively remove solid waste, including plastics, from the septic tank.
- By eliminating the need for human entry into septic tanks, Homosep Atom significantly **improves worker safety** during the cleaning process.

Anusandhan National Research Foundation

- The Anusandhan National Research Foundation Act, 2023, establishes the Anusandhan National Research Foundation (NRF) as the apex body for research and development (R&D) in India.
- The Science and Engineering Research Board (SERB), previously established by an act of Parliament in 2008, is repealed and subsumed into NRF.

Anusandhan National Research Foundation (ANRF)

- **Objective:** ANRF aims to provide strategic direction and funding for research initiatives across various disciplines in accordance with the recommendations of the National Education Policy (NEP).
- **Operationalization:** **ANRF was set up in 2023** and operationalized by the **Department of Science & Technology (DST)**.
- **Promotion of Research and Innovation:** ANRF endeavors to promote a culture of research and innovation in India's universities, colleges, research institutions, and R&D laboratories. It also aims to give impetus to Clean Energy research in India and Mission Innovation.
- **Leadership:** The **Prime Minister of India serves as the Chairman of the Executive Council of ANRF**. The Central Government has appointed the Secretary, Department of Science and Technology (DST), as the interim Chief Executive Officer of ANRF.
- **Functions:** ANRF's functions include providing funding for research projects through grants, fellowships, and other instruments, establishing and managing research facilities and infrastructure, promoting collaboration between Indian and international researchers, disseminating research findings, and enhancing public understanding of science.

Frozen Smoke (Aerogel)

- Aerogel is a synthetic material with an extremely low density and high porosity. Aerogels are solid materials primarily composed of air, with a gel-like structure replacing the liquid component of a gel with a gas.
- **Appearance:** Aerogels are **translucent** and have a **hazy or smoke-like appearance**, earning them the nickname "frozen smoke." Other nicknames include "solid smoke/air," "solid cloud," and "blue smoke."
- **Properties:** Remarkable properties include being **incredibly lightweight**, making them one of the lightest solid materials. They are excellent thermal insulators and possess high surface areas despite their low density.
- **Applications:** Aerogels find applications in various scientific and industrial fields:
 - **Insulation for Spacecraft:** Due to their excellent thermal insulating properties, aerogels are used to insulate spacecraft.

- **Oil Spill Cleanup:** Aerogels are utilized in oil spill clean-up efforts due to their ability to absorb and trap oil.
- **Capturing Stardust in Space Missions:** Aerogels serve as a medium for capturing stardust in space missions, allowing scientists to study extraterrestrial materials.
- **Strength despite Low Density:** Despite their delicate appearance, aerogels are surprisingly strong and can support heavy loads despite their extremely low density.

Formaldehyde

- It is a colourless, pungent gas and the simplest aldehyde (with the chemical formula CH_2O). It is an important industrial chemical with a wide variety of uses.
- It is a flammable gas with a boiling point of -19°C and a melting point of -118°C . It is soluble in water and many other organic solvents
- It is a common Volatile organic compound (VOC).
- It is a strong irritant to the skin, eyes, and respiratory system and carcinogen.

India's First Hypervelocity Expansion Tunnel Test Facility

- The Indian Institute of Technology Kanpur (IITK) has successfully built and tested **India's first hypervelocity expansion tunnel test facility** putting the country among handful of nations with this advanced hypersonic testing capability.
- **Development:** Developed by the **Hypersonic Experimental Aerodynamics Laboratory (HEAL) within the Department of Aerospace Engineering at IIT Kanpur.**
- **Funding and Support:** **Indigenously designed** and developed with funding and support from the **Aeronautical Research and Development Board (ARDB)**, the Department of Science and Technology (DST), and IIT Kanpur.
- It is a **24-meter-long** facility capable of generating hypersonic speeds ranging from 3 to 10 kilometers per second.
- It **simulates hypersonic conditions** encountered during various scenarios such as **atmospheric entry of vehicles, asteroid entry, scramjet flights, and ballistic missiles.**
- **Alternate Names:** Also referred to as **S2** and nicknamed **Jigarthanda.**
- **Test and Establishment:** Successfully established and tested in 2023.

Frontier Technology Labs (FTLs)

- Atal Innovation Mission (AIM), NITI Aayog, and Meta have announced the launch of Frontier Technology Labs (FTLs) to democratize future technologies and empower youth to innovate.
- Frontier technology refers to cutting-edge or emerging technologies that are at the forefront of innovation and have the potential to significantly impact various aspects of society and industry.

About FTLs:

- Funded by Meta, with Atal Innovation Mission as the knowledge partner, FTLs represent an **advanced version of Atal Tinkering Labs (ATLs).**
- They **aim to provide state-of-the-art infrastructure for students** to engage with technologies such as AI, Augmented & Virtual Reality, Blockchain, Cybersecurity, Robotics, 3D Printing, and the Internet of Things.
- These labs will be managed by Meta's partner 1M1B (One Million for One Billion).

EV-to-Grid Charging

- **EV-to-Grid (V2G)** is a charging technology that **enables electric vehicles (EVs) to consume and return stored energy to the grid**, offering benefits like grid stabilization, demand response, and potential cost savings for EV owners and utilities.

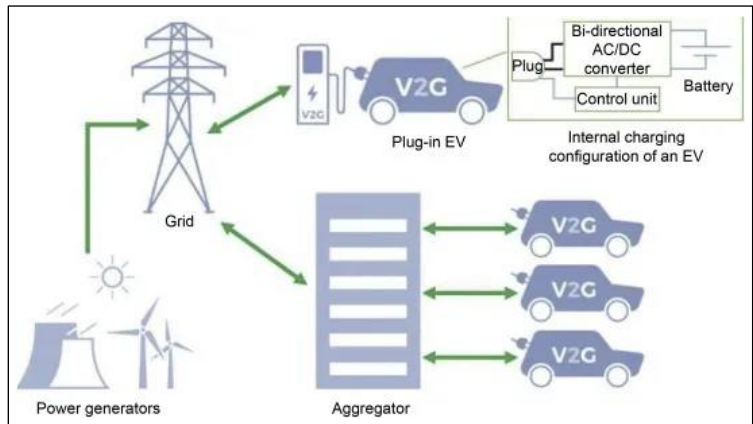
Working Principle

- EV-to-Grid charging is **a system where an electric vehicle's battery acts as a mobile energy storage system**, storing excess energy from renewable sources or charging during off-peak hours when electricity demand is low and prices are cheaper.

- This stored energy can then be discharged back into the grid during peak demand or when additional support is needed.

Process typically involves following Steps

- **Charging:** EVs are plugged into charging stations, either at home, work, or public charging points, to charge their batteries from the grid. During this phase, electricity flows from the grid to the vehicle's battery.
- **Discharging:** When a vehicle is disconnected from the grid or participates in V2G programs, its battery can discharge energy back into the grid, necessitating specialized charging infrastructure and communication protocols for safe and efficient operation.



Pine Needles-based fuel making technology

- An MoU was signed between **CSIR-Indian Institute of Petroleum**, Dehradun and **Uttarakhand State Council for Science & Technology (UCOST)** for deploying the technology of making fuel from pine needles under the aegis of the **Adarsh Champawat mission**.
- The Council of Scientific and Industrial Research (CSIR) is India's largest research and development (R&D) organization, with over 38 laboratories throughout the nation.

About Pine Needles-based fuel making Technology

- It involves **Briquetting (compaction/ densification of Pine Needles)** or the process of converting biomass residues into a fuel.
- The Centre has come up with a unique machine that can produce briquettes and pellets from pine needles as the pine needles are harmful (due to forest fire) to the ecology, diversity, and economy in the Himalayan region.
- The briquetting unit will have a capacity of producing 50 kilograms per hour using Pine Needles as raw material.

Application

- The biomass cookstove works with Pine Needles briquettes at an energy efficiency of 35% and reduces household pollution by 70%.
- The Pine Needle briquettes and pellets can replace coal and protect the environment.
- The briquettes can be used for domestic cooking and as direct or co-firing fuel in brick kilns and thermal power plants.

About Pine Trees (native primarily to northern temperate regions)

- Pine trees are evergreen coniferous trees which are the most widely distributed tree species globally and are known for their distinct needle-like leaves, conical shape, and resinous wood.
- They are particularly abundant in North America, Europe, Asia, and parts of Africa.
- Different species of pine trees (grow up to 260 feet tall) have adapted to various climatic conditions, including cold winters and dry summers.

Atmospheric Research Testbed in Central India (ART-CI)

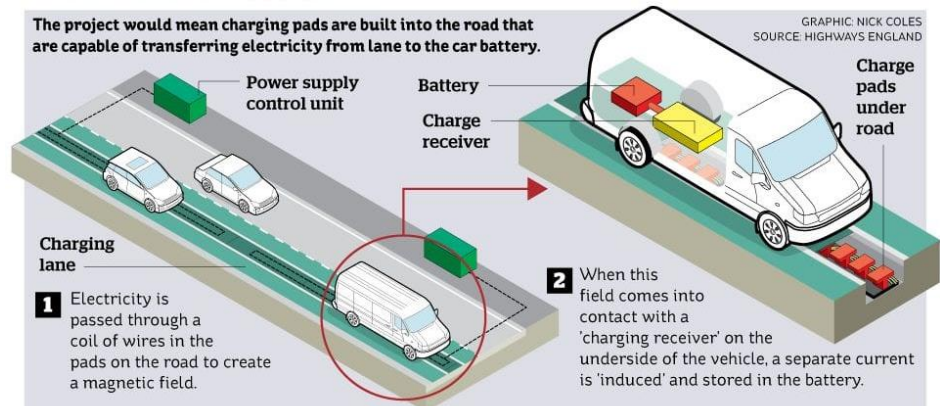
The first phase of the Atmospheric Research Testbed in Central India (ART-CI) was inaugurated by Ministry of Earth Sciences (MoES) in Silkhedha (Sehore district of Madhya Pradesh).

About ART-CI

- The **Indian Institute of Tropical Meteorology (IITM), Pune** leads ART-CI, operating under the Ministry of Earth Sciences (MoES).
- The ART is an open-field, focused observational and analytical research programme
- The facility aims to **conduct ground-based observations** of weather parameters like temperature, wind speeds, etc.
- It will also observe **in-situ (on-site) transient synoptic systems** – like low-pressure areas & depressions that form in the Bay of Bengal – during the southwest monsoon season from June to September. (particularly over the Monsoon Core Zone (MCZ))

Induction Charging

- India plans to transform the Golden Quadrilateral into an EV-ready network using **induction charging technology** to enhance e-mobility.
- Induction charging, also known as wireless charging, is a **technology that enables the charging of electronic devices without the need for physical connections**



between the device and the power source. It relies on the principle of electromagnetic induction to transfer energy wirelessly from a charging station to the device.

Working Principle

- Induction charging operates on **Faraday's law of electromagnetic induction**, where electric current flows through a wire coil, creating a magnetic field that induces an electric current in a nearby coil, provided they are in close proximity and properly aligned. This current can be used to charge a battery or power a device.
- Induction charging systems involve two coils: a transmitter coil in the charging station and a receiver coil in the device being charged. When the transmitter coil is charged with AC, a magnetic field generates an alternating current in the receiver coil, which is converted into DC for charging the device's battery.

Types

- **Qi Wireless Charging:** Qi (pronounced "chee") is a wireless charging standard **developed by the Wireless Power Consortium**, operates on electromagnetic induction and is widely used in smartphones, smartwatches, and other consumer electronics. Qi-compatible devices can be charged on any Qi-certified pad or stand.
- **Resonant Inductive Coupling:** It is a type of wireless charging, uses resonant inductive coupling to transfer energy between transmitter and receiver coils, operating at higher frequencies and enabling simultaneous charging of multiple devices.

Subsurface Water Ice Mapping (SWIM) Project

- NASA's SWIM project (led by University of Arizona) recently unveiled its fourth set of maps, **aiming to pinpoint optimal locations for accessing water ice beneath Mars' surface.**
- These maps, the most detailed and accurate to date since the project began in 2017, **utilize data from various NASA missions, including the Mars Reconnaissance Orbiter (MRO) and Mars Global Surveyor.**
- SWIM incorporated data from MRO's Context Camera to enhance maps of the Northern Hemisphere and, for the first time, utilized HiRISE (High-Resolution Imaging Science Experiment) data to provide detailed views near the equator.

- **The project's first phase, completed in 2019, focused on the northern hemisphere**, while the second phase, completed in 2020, covered the southern hemisphere. Notably, the new **maps reveal "polygon terrain," indicating subsurface ice through seasonal ground cracks.**
- It should be noted that Mars has both **water ice** and dry ice (carbon dioxide).

Green Leaf Volatiles (GLVs)

- Recently, for the first time, scientists were able to visualise plants sensing compounds called green leaf volatiles (GLVs) released by other plants in danger.
- GLVs are a **group of plant volatiles consisting of six carbon compounds** which are **released from almost every plant.**
- The release of GLVs is **caused by mechanical damage or herbivore infestation by fungal/bacteria.**
- Plants have two major defence mechanisms, involving a chain of molecular reactions. These reactions are triggered when a plant is damaged and GLVs are released as by-products.
- GLVs also possess antibacterial properties, helping to prevent infection at the injury site. This process enables other plants to make themselves less palatable or even indigestible to insect predators.

Volatiles

- Volatiles are elements or compounds that change from solid or liquid state into vapour at relatively low temperatures.
- The most common volatiles are carbon dioxide, nitrogen, ammonia, hydrogen, methane, sulphur dioxide, and water, which are abundant in nature and necessary for living organisms.

AKTOCYTE

- AKTOCYTE, a type of **nutraceutical tablet**, has shown significant **improvements in the quality of life for cancer patients**, reducing the side effects of radiotherapy, a treatment that uses high doses of radiation to kill cancer cells and shrink tumor.
- It is **developed by the Department of Atomic Energy** in tandem with a private pharmaceutical business. The Food Safety and Standards Authority of India (FSSAI) **has authorized it.**

Hydrogen for Heritage Scheme

- Indian Railways is exploring the possibility of manufacturing hydrogen-powered trains using indigenously developed technology.
- Currently, only Germany operates hydrogen-powered trains, with the US, UK, France, and Japan testing them.
- The '**Hydrogen for Heritage**' scheme, announced in February 2023 (Budget 2023-24), **aims to deploy hydrogen-powered trains on environmentally sensitive heritage and hilly routes.** The first prototype will operate on the Jind-Sonapat section in Haryana.
- The scheme **aims to operate 35 hydrogen trains**, each costing Rs 80 crore, with an additional Rs 70 crore allocated for ground infrastructure per route.
- Besides, Indian Railways has also awarded a pilot project for retro fitment of Hydrogen Fuel cell on existing Diesel Electric Multiple Unit (DEMU) rake.

Seed Fund Scheme

- The Seed Fund Scheme, **initiated by In-Space**, **aims to bolster start-ups in their endeavours to create and expand solutions in urban development and disaster management sectors through the application of space technology.**
- **Announced in March 2023**, this scheme is geared towards promoting space technology and fostering innovation in this domain.
- Its primary **objective is to provide support to space start-ups**, enabling them to develop groundbreaking space products and services that can enhance the quality of life for people in India and beyond.
- Under this scheme, start-ups will **receive various forms of assistance, including access to funding, mentorship, training, and networking opportunities.**

- In-Space periodically identifies and announces sector-specific opportunities for applicants to explore.

Major Indian Space Tech Startups	
Agnikul Cosmos	<ul style="list-style-type: none"> • It is developing a launch-on-demand orbital-class rocket capable of carrying 100kgs to Low Earth Orbit. • Signed an agreement with ISRO under IN-SPACe, the first Indian company to do so.
Bellatrix Aerospace	<ul style="list-style-type: none"> • Tested India's first privately developed Hall Effect Thruster, Arka, and introduced the nation's initial High-Performance Green Propulsion system, Rudra. • Both were onboard ISRO's PSLV-C58 mission (POEM-3)
Dhruva Space	<ul style="list-style-type: none"> • National Award-winning space technology company focused on building full-stack space engineering solutions.
Pixxel	<ul style="list-style-type: none"> • Developing a network of hyperspectral earth imaging satellites. Received funding from Alphabet Inc's Google.
SatSure	<ul style="list-style-type: none"> • Specializes in providing remote sensing, machine learning, and data analytics solutions for agriculture, banking, and financial service sectors.
Skyroot Aerospace	<ul style="list-style-type: none"> • First Indian startup to launch a private rocket from India.

E-Ink Technology

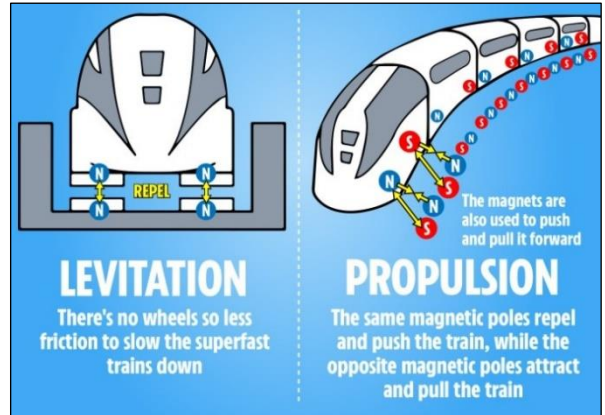
- E-Ink, also known as electrophoretic ink, is a **type of E Paper display**, which falls under the broader category of electronic paper **designed to replicate the appearance of real paper**.
- It utilizes ink similar to that used in the printing industry and **mimics the appearance of ordinary ink on paper**.
- Originally, E-Ink was only available in monochrome, but **colour E-Ink became available in 2010**.
- **Function:**
 - These displays function by employing **tiny microcapsules containing positively charged white particles and negatively charged black ones suspended in fluid within the display**.
 - By applying positive or negative electrical charges to different areas of the screen, the white or black particles can be made to rise to the surface, thereby creating text and images on the display.
- E-Ink technology was **initially developed in the 1990s at MIT** and is currently owned by the E Ink Corporation.
- It finds applications in various devices such as cell phones, signs, and e-readers like the Amazon Kindle.

Major Display Technologies Used	
Liquid Crystal Display	An LCD comprises liquid crystals arranged between two transparent electrodes. When an electric current is applied, the crystals align to regulate the passage of light, forming the image.
Light-emitting Diode	LEDs are semiconductor devices that emit light when an electric current is passed through them.
Organic LED	OLEDs utilize organic thin films between two conductors. Similar to LEDs, they emit light when current passes through. However, OLED panels can produce their own light, whereas LED panels require a separate backlighting setup.

Advantages of E-Ink Display	Limitations of E-Ink Display
<ul style="list-style-type: none"> • Eye Comfort: Reflects light like paper, reducing eye strain during extended reading sessions. • Outdoor Visibility: Easier to read in bright sunlight, unlike LCD/LED displays which suffer from glare. • Long Battery Life: Requires minimal power, as no backlight is needed, leading to longer battery life. 	<ul style="list-style-type: none"> • Low Refresh Rates: Typically refresh at 1 Hz or less, resulting in slower display updates. • Expensive: Manufacturing challenges and patent/licensing costs contribute to higher prices. • Niche-Specific: Primarily used in e-readers, smartwatches, and electronic shelf labels, limiting broader application. • Color Limitation: Limited color options due to orientation of pigments, making it less suitable for animations and videos

Maglev Trains

- In a remarkable achievement, China's maglev train has broken its previous speed record of 623 km/h.
- **Maglev**, short for **magnetic levitation**, is a system where the **vehicle travels suspended above the guideway**, unlike conventional railways where trains run on tracks.
- **Key features of Maglev:**
 - Utilization of superconducting magnets to suspend the train above a U-shaped concrete guideway.
 - The magnetic repulsion between matching poles of the magnets keeps the train levitated.
- **Advantages of Maglev trains:**
 - Zero emissions as they operate without engines.
 - Absence of friction between wheels and rails allows for higher speeds.
 - Prevents the risk of collision between trains traveling the same route, as they cannot catch up to each other.
- **Issues with Maglev Trains:**
 - Expensive tracks compared to conventional railroad tracks leading to high initial setup costs.
 - While Maglev trains are considered relatively safe, accidents could be more severe due to their detached nature. Without attachment to the tracks, the train lacks support in case of malfunction.



Proton Improvement Plan (PIP-II) Project

- India's Department of Atomic Energy (DAE) has initiated the construction phase to contribute to the Proton Improvement Plan (PIP-II) project.

About Proton Improvement Plan (PIP-II) Project

- PIP-II marks the **first particle accelerator on U.S. soil, situated at Fermilab, to be constructed with substantial support from international partners.**
- Institutions from **India, France, Italy, Poland, and the UK** are collaborating on this endeavor, with India providing components valued at \$140 million.
- PIP-II will facilitate the **generation of the world's most high-energy neutrino beam** for the Deep Underground Neutrino Experiment (DUNE) at the Long-Baseline Neutrino Facility (LBNF), currently under construction.

About Particle Accelerators

- Particle accelerators propel charged particles, such as protons, atomic nuclei, and electrons, to velocities approaching the speed of light.
- These accelerators comprise **four primary components**: a particle source, a device to accelerate particles, metallic tubes within a vacuum to enable unimpeded particle movement, and electromagnets for particle beam steering.
- **Notable Large Particle Accelerators:**
 - **Large Hadron Collider (LHC):** Situated at CERN in Geneva, the LHC stands as the most powerful accelerator globally, credited with significant achievements such as the discovery of the Higgs Boson and previously unknown hadrons.
 - **Stanford Linear Accelerator Centre (SLAC), USA:** Recognized as the world's longest linear particle accelerator, SLAC has contributed to significant discoveries, including the identification of quarks and tau leptons.
 - **European Synchrotron Radiation Facility (ESRF):** Based in Grenoble, France, ESRF hosts the most intense hard x-ray source worldwide, facilitating groundbreaking research in various scientific disciplines.

Satyendra Nath Bose

- S.N. Bose, a renowned physicist, was commemorated on his 50th death anniversary.

Scientific Contributions of S.N Bose:

- **Bose-Einstein Condensates (BEC):**

- Satyendra Nath Bose, along with Albert Einstein in 1925, predicted this quantum phenomenon.
- It is a state of matter which occurs when particles are cooled to near absolute zero (-273.15 degrees Celsius/0 Kelvin).
- At this temperature, atoms merge into a single entity, exhibiting quantum properties where they function collectively as a wave of matter.
- It's recognized as the '**fifth state of matter**' and was experimentally confirmed by Weimann, Cornell, and Ketterle, earning them the Nobel Prize in 2001.
- **Properties of BEC:**
 - **Superfluidity:** BEC displays zero viscosity, allowing it to flow without resistance.
 - **Superconductivity:** Zero resistance enables optimal conductivity.
 - **Coherence:** All particles within BEC share the same quantum state, acting as a unified entity.
 - **Macroscopic Occupation:** Numerous particles occupy the same quantum state, resulting in a macroscopic wave function.

S. N. Bose (1894-1974)

- Bose is known as the "Father of the God Particle," with bosons named after him.
- He received the Padma Vibhushan in 1954 and was honored by Rabindranath Tagore in his book "Vishwa Parichay."
- Bose served as Vice-Chancellor of Visva-Bharati (1956-58).
- The S. N. Bose National Centre for Basic Sciences in Kolkata was established in his memory in 1986.

- **Bose-Einstein Statistics:**

- Bose proposed this statistical method in 1924 for counting potential states of a quantum system composed of identical particles with integer spin, initially for light quanta. Einstein later extended this concept to gas molecules.
- Particles adhering to Bose-Einstein Statistics are known as "Bosons," which include particles with integer spin such as photons (light), gluons (force carriers in the nucleus), the Higgs boson, and the W and Z bosons.

- **X-ray diffraction cameras:** Bose designed and built X-ray diffraction cameras, particularly for rotation and powder photography purposes.

Leap Second

- A recent study highlighted that due to factors like climate change and geological shifts, Earth's speeding rotation may prompt clocks to skip a second, potentially necessitating a "negative leap second" around 2029.
- **Leap Second is used as a measure to combat the long-term slowdown in the Earth's rotation which is caused by the constant melting and refreezing of ice caps.**
 - It is **added** every now and then to **Coordinated Universal Time (UTC)** in order to synchronize a clock worldwide with the Earth's ever slowing rotation.
- The **system of leap seconds was introduced in the early 1970s**. So far, 27 positive leap seconds have been added.
- UTC consists of a time scale that combines the output of more than 300 highly precise Atomic clocks worldwide.

Negative Leap Second

- It is a **second that is subtracted from our clocks to keep them in sync with the Earth's rotation**.
- **Till date no negative leap second was introduced** because, in the last few decades the Earth's rotation has generally been a bit slow.
- The **International Earth Rotation and Reference Systems Service (IERS)** monitors the Earth's rotation and takes decisions on when to add or subtract a leap second.

- On the other hand, the Astronomical Time [Universal Time (UT1)] refers to the Earth's rotation around its own axis and determines the length of a day.
 - The Earth's rotation around its own axis is not regular, as sometimes it speeds up and sometimes it slows down, due to various factors including the moon's gravitational force that often results in ocean tides.
- As a result, **Astronomical Time (UT1) gradually falls out of sync with Atomic time (UTC)**, and as and when the difference between UTC and UT1 approaches 0.9 seconds, a **"Leap Second" is added to UTC** through Atomic clocks worldwide.
- **A leap second is normally inserted either on June 30 or December 31.**

White Rabbit Collaboration

- **CERN (European Organization for Nuclear Research)** recently initiated the White Rabbit Collaboration, a venture aimed at **advancing a unique technology known as White Rabbit (WR).**

White Rabbit

- White Rabbit is a **technology devised at CERN**, developed in collaboration with various institutions and companies.
- Its **primary purpose is to synchronize devices within particle accelerators with extreme precision, down to sub-nanoseconds.**
- This capability addresses the challenge of establishing a unified time reference across a network.
- **White Rabbit Switches**, a component of this technology, **offer sub-nanosecond synchronization accuracy**, a feat previously achievable only through specialized hard-wired timing systems.
- However, White Rabbit achieves this accuracy within the flexibility and modularity of **real-time Ethernet networks.**
- An essential aspect of White Rabbit is its **open-source nature and adherence to standards.** This allows companies and institutions to customize it to their requirements and incorporate it into their products and systems.

White Rabbit Collaboration

- The White Rabbit Collaboration is a **membership-based global community** established to nurture and enhance this open-source technology.
- Its goals include **providing dedicated support and training, facilitating collaborative research** and development projects among entities with shared interests and complementary expertise.

Applications

- Originally deployed in 2012, White Rabbit's application has **expanded beyond particle physics.**
- In 2020, it was **integrated into the Precision Time Protocol (PTP)**, a global industry standard overseen by the Institute of Electrical and Electronics Engineers (IEEE).
- White Rabbit finds utility not only in the finance sector but also in various research infrastructures.
- It is currently under evaluation for potential use in the **emerging field of quantum internet.**
- Moreover, the technology could significantly **impact global time dissemination systems**, which presently heavily rely on satellite-based solutions.

Bridge Fuel

- **Natural gas has been called a 'bridge fuel'** for countries looking to transition away from coal and oil dependency, and as they pursue a pathway towards renewables and electrification.
- Bridge fuel is a commonly-used term for a **fuel that will power society with the least environmental cost while we deploy non-polluting, renewable energy.**

Natural Gas

- It is a fossil fuel and thus, a non-renewable resource.
- It is a mixture of gases which are rich in hydrocarbons.
- It is a colourless and odourless gas composed of 70-90% methane (CH₄). Its other ingredients include ethane (C₂ H₆) and propane (C₃ H₈).
- Possible impurities include carbon dioxide (CO₂), hydrogen sulphide (H₂S), and nitrogen (N).

- The goal of using a bridge fuel is to **replace the bulk of today's fossil-fuel-dependent energy sources as we transition** to a cleaner and more renewable energy economy that is free of greenhouse gas emissions.
- Many people consider natural gas a bridge fuel because **it produces less greenhouse gas during the combustion process.**

C-bot

- The CSIR- National Institute of Oceanography, based in Goa, has introduced an autonomous underwater vehicle (robot) named C-bot.
- C-bot features advanced **capabilities aimed at enhancing surveillance of coral reefs.** It possesses the capability to dive to depths of up to 200 meters underwater.
- The Indian Navy will utilize C-bot to **conduct bathymetry studies,** aiding in the mapping of the sea floor and the plotting of navigation channels.
- Additionally, it will assist in **locating active hydrothermal vents,** where geothermally heated water emerges from deep beneath the ocean floor.

Carbon Fibre

- India is planning to manufacture carbon fibre for use in aerospace, civil engineering and defence as an alternative to metal.
- It is a material consisting of **thin, strong crystalline filaments of carbon,** essentially carbon atoms bonded together in long chains.
- **Currently, India does not produce any carbon fibre,** relying entirely on imports from countries such as the US, France, Japan and Germany.

Applications

- It is essential for various applications such as fighter planes' noses, civilian airplanes, drone frames, car chassis and fire-resistant building material.
- It is a critical material in technical textiles and is known for its high strength and lightweight properties.

Properties

- High stiffness and stiffness-to-weight ratio.
- High tensile strength and strength-to-weight ratio.
- High-temperature tolerance with special resins.
- Low thermal expansion.
- High chemical resistance.
- The fibers are extremely stiff, strong, and light, and are used in many processes to create excellent structural materials.

Wigner Crystal

- Scientists have achieved a groundbreaking milestone by successfully visualizing the enigmatic Wigner crystal, an unusual form of matter composed entirely of electrons.
- A Wigner crystal is the **solid phase of electrons,** first predicted by Eugene Wigner in 1934. It is one of the very first proposed many-body phases stabilized by the electron-electron interaction.
- **Formation:**
 - Interaction among electrons could lead to their spontaneous arrangement into a crystal-like configuration, or lattice, of closely packed electrons.
 - This could only occur because of their mutual repulsion and under conditions of low densities and extremely cold temperatures.
 - This is because the potential energy dominates the kinetic energy at low densities, so the detailed spatial arrangement of the electrons becomes important.
 - To minimize the potential energy, electrons form a crystal-like configuration.
- A true Wigner crystal, instead of following the familiar laws of physics, would follow the laws of **quantum physics,** in which the electrons would act not like individual particles but more like a single wave.
- Wigner crystal is stable at **extremely low densities.** If the density increases, the kinetic energy becomes important, and eventually the crystal melts.
- Wigner crystal is very **difficult to observe experimentally.** The reason is that it is very fragile with respect to the environment.

DEFENCE AND SECURITY

Defence Technology Council

- The 9-member expert committee headed by the former principal scientific advisor Prof K Vijay Raghavan has recommended that a top body- the **Defence Technology Council**, should determine the country's defence technology roadmap and decide on major projects and their execution.

Vijay Raghavan Committee

- It was set up by the government last year to **review the functioning of the Defence Research and Development Organisation (DRDO)** as several of its projects suffering from huge delays.
- The committee has observed that the DRDO should focus on its original goal of research and development for defence and should refrain from involving itself in productization, production cycles, and product management, tasks that are more suitable for the private sector.
- A defence Technology Council should be constituted that will play a pivotal role in identifying the right players for specific defence technologies.

Defence Technology Council

- Should be **chaired by the Prime Minister**, with the **Defence Minister** and the **National Security Advisor** as its Vice Presidents.
- It is proposed to have an **executive committee chaired by the Chief of Defence Staff. The Principal Scientific Advisor**, along with the **three service chiefs and their vice chiefs**, will also be its **members**.
- Furthermore, it will include representation from academia and industry, with two members from each sector.

Line of Actual Control (LAC)

- The LAC is the **demarcation that separates Indian-controlled territory from Chinese-controlled territory**.
- The LAC is only a concept **not agreed upon by the two countries**, neither delineated on a map or demarcated on the ground.
- India considers the LAC to be 3,488 km long, while the Chinese consider it to be only around 2,000 km.
- It is divided into three sectors: the eastern sector which spans Arunachal Pradesh and Sikkim, the middle sector in Uttarakhand and Himachal Pradesh, and the western sector in Ladakh.
- India's claim** line is the line seen in the official boundary marked on the maps as released by the Survey of India, including both Aksai Chin and Gilgit-Baltistan. This means **LAC is not the claim line** for India.
- In **China's case, LAC is the claim line** except in the eastern sector, where it claims the entire Arunachal Pradesh as South Tibet.
- Under the **Vibrant Villages programmes**, India plans to develop **663 border villages** into modern villages with all amenities in the first phase.
 - Of them, at least 17 along the borders with China in **Ladakh, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh**, have been selected for development as a pilot project under the programme.
- Also, **three major highways** are at different stages of construction in Arunachal Pradesh: the Trans-Arunachal Highway; the Frontier Highway; and the East-West Industrial Corridor Highway.



Bru Refugees & Their Rehabilitation

- The Tripura government has allocated land for the rehabilitation of the last batch of Mizoram Bru refugees.
- These refugees were granted permanent settlement in Tripura through a Home Ministry-initiated quadripartite agreement signed in January 2020.

Bru Refugees:

- **Brus**, also referred to as **Reangs**, are a tribal community **indigenous to northeast India**.
- They have historically **resided** in parts of **Mizoram, Tripura, and Assam**.
- In the state of **Tripura**, the **Brus** are a **designated Particularly Vulnerable Tribal Group (PVTG)**.
- While many **Brus of Assam and Tripura are Hindu**, the **Brus of Mizoram** converted to **Christianity** over the years.

Bru-Reang Refugee Crisis:

- Most Brus residing in Tripura today have suffered more than two decades of internal displacement. They were **forced to leave their homes** due to ethnic persecution, mainly **from Mizoram**.
- It all started in **1995**, when different groups in Mizoram demanded that Brus be eliminated from Mizoram's electoral rolls as they were not indigenous inhabitants.
- Today, **roughly 35,000 Reangs** continue to reside in north Tripura's Kanchanpur camp **as refugees**, as per Home Ministry estimates.

Overhaul of Cybersecurity Framework

- As per various reports, the government has drawn up a **guiding policy** called the **National Cybersecurity Reference Framework (NCRF)** to help manage cybersecurity better.

About National Cybersecurity Reference Framework:

- NCRF is a **framework** that sets the standard for cybersecurity in India. It focuses on critical sectors and provides guidelines to help organizations develop strong cybersecurity systems.
- The NCRF **can serve as a template** for critical sector entities to develop their own governance and management systems.
- The government has identified telecom, power, transportation, finance, strategic entities, government entities and health as critical sectors.
- **Institutions involved:** The framework has been drawn up by the **National Critical Information Infrastructure Protection Centre (NCIIPC)** with support from the **National Cybersecurity Coordinator (NCSC)**.
- **NCRF is a guideline**, meaning that its recommendations will **not be binding**.
- **It recommends** that enterprises allocate at least 10 per cent of their total IT budget towards cybersecurity.

About National Critical Information Infrastructure Protection Centre (NCIIPC):

- NCIIPC is a **government organization** that protects critical information infrastructure for the public. It was **established in 2014** and is **based in New Delhi**.
- **Mission:** To protect critical information infrastructure from unauthorized access, modification, use, disclosure, disruption, incapacitation, or destruction.
- The **NCIIPC** defines **critical information infrastructure (CII)** as computer resources whose incapacitation or destruction would have a debilitating impact on national security, economy, public health, or safety.

About National Cybersecurity Coordinator (NCSC):

- The **NCSC provides guidance** and support to state governments and private industry to help formulate policies. It also provides guidance on internet governance, network management, and response strategies for cyberattacks.
- It **works under National Security Council Secretariat (NSCS)** and coordinates with different agencies at the national level for cyber security matters.

Operation Sadbhavana

- The **Indian Army** has adopted Topa Pir village in Poonch district as a model village under the Sadbhavana scheme.
- **Operation Sadbhavana (Goodwill)** launched in **February 2023** is a unique humane initiative undertaken by **Indian Army in Ladakh** to address aspirations of people affected by terrorism.
- Under this, **Indian Army** is undertaking multiple **welfare activities** such as running of Army Goodwill Schools, Infrastructure Development Projects and Education Tours etc.
- **The objectives** achieved through this scheme are national integration tours, women empowerment, employment generation, education and development activities towards nation building.

Union Home Ministry Extends Z+ Security to Kerala Governor

Union Home Ministry has extended Z+ Security cover of CRPF to Governor of Kerala after Students' Federation of India (SFI) activists allegedly tried to hit his vehicle when he held a sit-in in front of a roadside shop in Kollam district.

Different Types of Security Cover: There are six kinds of security covers

- **X:** It has a security cover of 2 personnel (No Commando, Only Armed Police Personnel)
- **Y:** It has a security cover of 11 personnel (Including 1 or 2 Commando) + (Police Personnel). Only one personnel for mobile security.
- **Y plus:** It has a security cover of 11+ personnel (Including 1 or 2 Commando) + (Police Personnel). Two personnel for mobile security.
- **Z:** It has a security cover of 22 personnel (Including 4 or 5 NSG Commando) + (Police Personnel)
- **Z plus:** It has a security cover of 55 personnel (Including 10+ NSG Commando) + (Police Personnel). Protectees under his category get a bullet proof car, escort in three shifts and additional security when required.
- **Special Protection Group (SPG)** – SPG protects only the Prime Minister.

Defence Acquisition Council (DAC)

- **Headed by Defence Minister**, DAC is the **highest decision-making body in the Ministry of Defence** on new policies and capital acquisitions for the Indian military, including the Army, Navy, Air Force, and the Indian Coast Guard.
- It is **responsible for procurement and acquisition of weapons and equipment** for the Indian military.
- The DAC approves projects in three ways:
 - **Buy projects:** An outright purchase
 - **Buy and make projects:** A purchase followed by licensed production or indigenous development
 - **Make projects:** Indigenous production and R&D

Defence Acquisition Procedure (DAP) 2020

- The DAP 2020 has been established as a potential **catalyst for the Atmanirbhar Bharat Abhiyaan, in the sector of defence manufacturing.**
- It focuses on **simplifying the defence acquisition and institutionalising monitoring mechanism** for selection of best equipment in a transparent and competitive manner.

About 'Make' Category

- The 'Make' category of capital acquisition seeks to build indigenous capabilities through the involvement of both public and private sector.
- **'Make-I'** refers to **government-funded projects** while **'Make-II'** covers **industry-funded projects.**
- **'Make-III'** covers military hardware that **may not be designed and developed indigenously** but can be **manufactured in the country for import substitution.** Indian firms may manufacture these in collaboration with foreign partners.

Cyber Kidnapping

- Cyber kidnapping is a **criminal act wherein the perpetrators manipulate their victim into concealing their whereabouts and subsequently reach out to their relatives or loved ones to demand ransom.**
- The victim is coerced into sending images depicting a simulated state of captivity, often showing them bound or gagged, which are then shared with their family members.
- The **threat of harm to the victim** is used as leverage to compel compliance with the kidnappers' demands.
- Despite their physical absence, the perpetrators surveil the victim's online activities through video-call platforms.

Green Propulsion System

- Under the **DRDO's Technology Development Fund (TDF) program**, a Green Propulsion System was developed and successfully demonstrated in-orbit capability on a payload launched by the PSLV C-58 mission.
 - **TDF is a flagship programme of Ministry of Defence** executed by DRDO under the 'Make in India' initiative for funding innovation in defense and aerospace, especially to start-ups and MSMEs.
- **Green Propulsion System is a type of rocket engine that uses non-toxic and environmentally friendly propellants.**
- These propellants are **typically less hazardous** to handle and produce fewer harmful emissions than traditional propellants such as hydrazine (alternative to chemical propulsion systems).

Electric Propulsion System (EPS)

- ISRO is also working on an Electric Propulsion System (EPS) that can reduce the dependence on chemical propellant.
- The EPS system was first flown on South Asia Satellite (SAS) – GSAT-9 launched in 2017 and is working satisfactorily.
- With the help of EPS, satellite weight can be reduced, as the chemical propellants are replaced by electrical system, the weight of which is not so significant compared to chemical propellant.

Different types of green propellants under development:

- **Ionic liquids:** These are salts that are liquid at room temperature, and they can be used as both fuel and oxidizer in a rocket engine.
- **High-test peroxide (HTP):** This is a concentrated form of hydrogen peroxide that can be used as an oxidizer in a rocket engine.
- **Methanol and ethanol:** These are simple alcohols that can be used as fuels in a rocket engine.
- **Biopropellants:** These are propellants derived from biomass, such as vegetable oils or algae.

NIA Builds Its Own Database of Terrorists

- The **National Investigation Agency (NIA)** has for the **first time** collected details of all terrorists and uploaded them **in one common server** at its headquarters in Delhi.
- Known as the **National Terrorism Data Fusion & Analysis Centre (NTDFAC)**, it is modelled **along the lines** of the **Global Terrorism Database of the US.**
- The details of the terrorists and their associates, including their **case history, fingerprints, videos, social media profiles** etc. have been compiled.
- The NTDFAC will also **have a face recognition system**, which will help them scan pictures of suspects from any CCTV footage.

Kendriya Grihmantri Dakshata Padak

- The Union Ministry of Home Affairs (MHA) has introduced a new medal, **Kendriya Grihmantri Dakshata Padak, after merging four existing medals.** These existing medals were:
 - Union Home Minister's Special Operation Medal,
 - Union Home Minister's Medal for Excellence in Investigation,

- Asadharan Aasuchana Kushalata Padak and
- Union Home Minister's Awards for Meritorious Service in Forensic Science.
- The award will be in the form of a medal, styled and designated as the Kendriya Grihmantri Dakshata Padak.

DRDO Anti-Drone Tech

- DRDO has completed its counter-drone system and handed over the Transfer of Technology to private industries.
- **The private industries include:** Bharat Electronics Limited (BEL), Adani, Larsen & Toubro (L&T)
- DRDO's anti-drone technology can **detect, identify, and neutralize** different types of drones, including micro drones.
- The technology has the capability of **counter attack, soft kill and hard kill**.

58th All India Conference of Director Generals/Inspector Generals

- Prime Minister Modi attended the All-India Conference of Directors General and Inspectors General of Police 2023 in Jaipur, Rajasthan.
- It was **hosted by the Intelligence Bureau** at the Rajasthan International Centre in Jhalana.
- The **three-day Conference**, from January 5 to 7, 2023, was held in **hybrid format**.

India's Indigenous 5th Gen Fighter Jet AMCA

- The Cabinet Committee on Security (CCS) has cleared a Rs 15,000 crore project to design and develop the Advanced Medium Combat Aircraft (AMCA), India's fifth-generation multirole fighter jet.

The indigenous Light Combat Aircraft (LCA) Tejas is a **4.5-generation single-engine multirole aircraft**.

Advanced Medium Combat Aircraft (AMCA)

- This aircraft will be bigger than other fighters in the Indian Air Force inventory. The aircraft will put India in a select group of nations that have their own fifth-generation fighter aircraft.
- **Organisations:** The Aeronautical Development Agency (ADA) under DRDO will be the nodal agency for executing the programme and designing the aircraft. It will be manufactured by state-owned Hindustan Aeronautics Limited (HAL).
- **Features**
 - **Stealth:** The 25-tonne twin-engine aircraft will have advanced stealth features to avoid detection by enemy radar.
 - **Fuel & Weapons:** The aircraft will have a large, concealed internal fuel tank of 6.5-tonne capacity, and an internal weapons bay for a range of weapons, including indigenous weapons, to be buried in its belly.
 - **Engine:** AMCA Mk1 variant will have US-built GE414 engine of the 90 kilonewton (kN) class. The more advanced AMCA Mk2 will fly on the more powerful 110kN engine which will be developed indigenously by DRDO's Gas Turbine Research Establishment (GTRE).

Cabinet Committee on Security (CCS)

- CCS is a **cabinet committee of the GoI** that acts as the **apex body when it comes to the appointments of the officials in the national security bodies**.
- It also makes all the **important decisions on defence policy and expenditure** and, generally, all matters of India's security.
- The Committee is **chaired by the Prime Minister of India**, with members - Minister of Defence, Minister of Home Affairs, Minister of Finance and Corporate Affairs, Minister of External Affairs
- The CCS **deals with all the issues related to the law & order, defence & security of India**.
- It also deals with **policy matters of foreign affairs** which may have a bearing on internal or external security implications, including cases relating to agreements with other countries on security-related issues.
- The Committee **discusses the political issues which can impact the security of our nation**.

Fifth-Generation Fighter Jets

- These are **designed to carry out a range of missions, such as air-to-air combat and ground attack.**
- They have plain surfaces, specially shaped exhaust nozzles, and engines located in the plane's body to hide heat signatures. They also have special radars to detect the aircraft's own radar emissions.
- The list of the aircraft currently in service includes the F-22 Raptor and F-35A Lightning II of the US, the Chinese J-20 Mighty Dragon, and the Russian Sukhoi Su-57.

SIPRI Report

- The latest data on international arms transfers has been released by the Stockholm International Peace Research Institute (SIPRI).

Key Findings of Report

- As per this report, India was the world's top arms importer between 2019-2023.
- Russia has historically been India's primary weapons supplier, accounting for 36% of its arms imports.
- France and the United States are emerging as key suppliers to India, collectively accounting for 46% of India's arms imports.
- **Top importers:** India is followed by Saudi Arabia, Qatar, Ukraine, Pakistan, Japan, Egypt, Australia, South Korea, and China.
- **Top exporters:** United States leads with a 42% share, followed by France and Russia.

Stockholm International Peace Research Institute (SIPRI)

- SIPRI is an independent international institute dedicated to research into security, conflict, armaments, arms control and disarmament.
- Established in 1966, SIPRI is based in Stockholm, Sweden. It is regularly ranked among the most respected think tanks worldwide.

INS Jatayu base in Lakshadweep Islands

- The Indian Navy has commissioned its new base "**INS Jatayu**" at **Minicoy in Lakshadweep islands.**
- INS Jatayu is the **second naval base in Lakshadweep after INS Dweeprakshak in Kavaratti.**
 - Minicoy is the southernmost island of Lakshadweep, 215 nautical miles southwest of Kochi.
- The base is located on Minicoy and overlooks vital Sea Lines of Communications (SLOCs), including the Eight Degree Channel and the Nine Degree Channel.
- This location enhances India's operational reach and helps to counter growing Chinese influence in the Indian Ocean.
- INS Jatayu also bolsters the Indian Navy's capabilities for anti-piracy, anti-narcotics, and surveillance operations.

'Group of Friends' and Database of crimes against UN peacekeepers

- At the second meeting of the India-led Group of Friends (GOF), India introduced a new database aimed at recording crimes against UN peacekeepers.
- **Purpose of the Database:** The database serves as an online repository where the Secretariat, UN missions, and member countries can document and address cases of intentional harm to peacekeepers.

Group of Friends

- The Group of Friends comprises **40-member states, with India, Bangladesh, Egypt, France, Morocco, and Nepal serving as co-chairs.**
- The Group of Friends **advocates for accountability for crimes against Peacekeepers**, aligning with the principles outlined in U.N. Security Council resolution 2589.
 - This resolution, adopted in August 2021 under India's leadership in the Council, **urges countries hosting or having hosted UN peacekeeping missions to take decisive action against individuals who harm or kill UN staff.**

- **Sponsorship and Hosting: Sponsored by India**, the database is **hosted on the Unite Aware platform**, which is a technology platform jointly created by India and the UN.
 - Unite Aware enhances the safety of peacekeepers globally and supports conflict-ridden nations in establishing conditions for lasting peace.

CBI, Europol sign Working Arrangement for cooperative relations

- CBI and the **European Union Agency for Law Enforcement Cooperation (Europol)** has signed a Working Arrangement.
- It will promote direct cooperation between both organisations to build on their respective mandates, strategies and to explore the potential for synergies.
- The cooperation, in addition to exchange of information, may include the exchange of specialist knowledge, general situation reports etc.

About European Union Agency for Law Enforcement Cooperation (Europol)

- Founded in 1998, Europol is **headquartered in The Hague**, Netherlands.
- It serves as the **central hub for coordinating criminal intelligence and supporting law enforcement efforts across EU member states**.
- It focuses on preventing and combating serious international crime, including terrorism, human trafficking, drug trafficking, cybercrime, and more.

Space Warfare

- **China has established the world's first 'near-space command'**, equipped with powerful hypersonic weapons, as its 5th force.
- Near space refers to the area in Earth's atmosphere, approximately 20 to 100 kilometers from the Earth's surface, **where thin air prevents military aircraft from flying and satellites cannot be placed** due to strong gravity, creating a No-Man's land region.

About Space Warfare

- Space warfare refers to military operations conducted in outer space or directed from space against targets on Earth or in space.
- Space warfare began in 1962 when the US exploded a ground-based nuclear weapon in space, leading to the Outer Space Treaty of 1967.

Earth-to-Space	<ul style="list-style-type: none"> • Weapons launched from Earth targeting objects in space. • This category includes direct-ascent anti-satellite weapons, such as missiles, as well as directed-energy lasers and jammers. • These systems, tested by countries like the United States, China, India, and Russia.
Space-to-Space	<ul style="list-style-type: none"> • Systems deployed in space to target or disrupt other satellites. • They can employ kinetic impact, directed energy, or high-frequency methods to interfere with adversary satellites. • Examples: Debris-creating, co-orbital ASAT weapons
Space-to-Earth	<ul style="list-style-type: none"> • Assets orbiting in space with the capability to attack or disrupt targets on Earth. • These weapons, whether kinetic or non-kinetic, pose significant challenges and are less likely to be pursued in the near future due to technical complexities and international legal considerations.

The United Nations Treaties on Outer Space

Outer Space Treaty (1967)	This is the foundation of international space law, outlining principles for exploring and using outer space, including the Moon. It prohibits the use of weapons of mass destruction and mandates peaceful space activities. India is a signatory to this treaty and ratified it in 1982.
Rescue Agreement (1968)	The agreement outlines procedures for the rescue and return of astronauts and objects launched into outer space. It ensures cooperation among nations to assist astronauts in distress and recover space objects.
Liability Convention (1972)	It addresses international liability for damage caused by space objects. It establishes rules regarding compensation for harm resulting from space activities and assigns responsibility to launching states for damages caused by their objects.
Registration Convention (1976)	Also known as "Convention on Registration of Objects Launched into Outer Space". This convention requires space-faring nations to register their space objects with the United Nations. It enhances

	transparency and accountability in space operations by maintaining a registry of objects launched into outer space.
Moon Agreement (1984)	It governs the activities of states on the Moon and other celestial bodies. It promotes the peaceful exploration and use of lunar resources while prohibiting their harmful exploitation. Notably, major space-faring nations like the United States, Russia, India and China have not ratified this agreement.
Partial Test Ban Treaty (1963)	It forbids the use of nuclear weapons in any form in space.

India and Space Warfare

Defence Space Agency	Established in 2019, it is supported by the Defence Space Research Organization and is responsible for operating India's space warfare and satellite intelligence assets. The DSRO facilitates the development of civilian space technology for military purposes.
Mission Shakti 2019	Mission Shakti marked India's successful demonstration of its capability to interdict and intercept a satellite in outer space using indigenous technology.
IndSpaceEx	India's first-ever simulated space warfare exercise, conducted in 2019. It aimed to assess the necessary space and counter-space capabilities required to protect India's national security interests.
Mission DefSpace	It was launched to make India self-reliant (Atmanirbhar) in defence technologies in the space domain.

Grey-zone Warfare

- During discussions on informal warfare at the 9th edition of the Raisina Dialogue, India's Chief of Defence Staff emphasized the significance of Grey Zone Warfare.
- Grey zone warfare generally means a **middle, unclear space that exists between direct conflict and peace in international relations.**
- It can be broadly defined as the **exploitation of operational space between peace and war to change the status quo** through the **use of coercive actions** which remain below a threshold that, in most cases, would prompt a conventional military response.
 - For instance, China's "Salami slicing" tactic gradually captures territory, testing opponents' boundaries without triggering significant resistance.
- The effects of grey-zone actions may only become apparent over time. It can potentially escalate tensions across multiple dimensions, leading to unintended consequences.
- Activities in this warfare include a spectrum, from **proxy engagements and territorial coercion to cyberattacks, economic pressures, disinformation, election interference, and exploiting migrants** for strategic ends.

Key Activities	Description	Example
Cyber Operations	Involves hacking, data theft, corruption of data, dissemination of disinformation, and cyber espionage. Disrupts critical infrastructure, political systems, or economy.	Cyber-attack on the power grid in Maharashtra.
Information Warfare	Utilizes psychological operations to shape public opinion, sow divisions, and undermine trust in institutions.	Propaganda, fake news, social media manipulation.
Support to Proxy Forces	Provides assistance to non-state actors, insurgents, or militias, enabling adversaries to achieve objectives without direct conflict.	Insurgent groups in India receiving support from foreign agencies.
Economic Coercion	Imposes sanctions, trade restrictions, or manipulates financial markets to undermine the target nation's economy or coerce policy changes.	China imposing trade restrictions on Australia as punitive action.

Political Subversion	Undermines political and administrative systems through covert means to influence elections or manipulate political processes.	Alleged involvement of Russia in the US Presidential election.
Other	Includes irregular warfare like guerrilla tactics, legal and diplomatic manoeuvres, and military intimidation.	Various tactics employed in unconventional warfare scenarios.

Nuclear Treaties

Russia is reportedly revoking its ratification of the Comprehensive Nuclear Test Ban Treaty (CTBT) following President Putin's potential resumption of nuclear testing.

Comprehensive Nuclear Test Ban Treaty (CTBT)

- The Comprehensive Test Ban Treaty prohibits “any nuclear weapon test explosion or any other nuclear explosion” anywhere in the world.
- The treaty was opened for signature in September **1996** and has been signed by 187 nations and ratified by 178.
- The treaty cannot formally enter into force until it is ratified by 44 specific nations, eight of which have yet to do so: **India, China, Pakistan, North Korea, Israel, Iran, Egypt, and the United States.**
- India refuses to sign CTBT due to its discriminatory nature but maintains a voluntary moratorium on nuclear testing.

Non-Proliferation Treaty (NPT)

- The Non-Proliferation Treaty (NPT) of **1968** aims to curb the spread of nuclear weapons by focusing on non-proliferation, disarmament, and the peaceful utilization of nuclear energy.
- **India, South Sudan, Israel, and Pakistan have never signed the Treaty**, while North Korea withdrew in 2003.
- India's decision was influenced by its objection to the treaty's perceived bias, which categorized nations into "nuclear haves" and "nuclear have-nots."
- Verification duties under the NPT are assigned to the International Atomic Energy Agency (IAEA).

International Atomic Energy Agency (IAEA)

Origin	1957 as an autonomous organization
About	Promotes the peaceful use of nuclear energy and inhibits its use for military purposes.
Functions	<ul style="list-style-type: none"> • Develops and implements safeguards against nuclear weapons proliferation. • Provides technical assistance to member states for peaceful nuclear use. • Promotes nuclear safety and security. • Conducts research and development in nuclear science and technology.
HQ	Vienna, Austria
Membership	178 Member States, including India

Treaty on the Prohibition of Nuclear Weapons (TPNW)

- The Treaty on the Prohibition of Nuclear Weapons (TPNW), also known as the Nuclear Weapon Ban Treaty, is **the first legally binding** international agreement aimed at eliminating nuclear weapons.
- It prohibits nuclear weapons development, testing, production, possession, stockpiling, use, and support, and their deployment on a state's territory. Additional provisions focus on aiding victims, remediating environmental damage, and facilitating regular meetings among state parties.
- The TPNW entered into force in January 2021. As of February 23, 2024, was signed by 93 countries, with 70 being states parties. India

Treaty	Region	Year
Antarctic	Antarctica	1961
Space	Outer space	1967
Tlatelolco	Latin America	1969
Seabed	Seabed	1972
Rarotonga	South Pacific	1986
Bangkok	ASEAN	1997
Semei	Central Asia	2009
Pelindaba	Africa	2009

did not sign the treaty due to concerns about its lack of customary international law or new norms.

Nuclear Weapon Free zone (NWFZ)

- A nuclear-weapon-free zone (NWFZ) is a regional agreement that prohibits the development, testing, and possession of nuclear weapons in a specific area.
- Five such zones currently cover continental or subcontinental countries, including territorial waters and airspace, while three govern Antarctica, the seabed, and outer space, which are not part of any state.

Other Regimes	Key Points
Nuclear Supplier Groups (NSG)	<ul style="list-style-type: none"> • Established after India's nuclear test in 1974 • NSG has 48 members and aims to prevent nuclear exports for commercial and peaceful purposes from being used to make nuclear weapons • India seeks NSG membership to enhance its nuclear power capacity and access to raw nuclear materials.
Missile Technology Control Regime (MTCR)	<ul style="list-style-type: none"> • Aims to limit proliferation risks of weapons of mass destruction (WMD) by controlling exports of goods and technologies contributing to delivery systems. India is a member.
Wassenaar Arrangement	<ul style="list-style-type: none"> • It aims to enhance transparency and responsibility in the export of conventional arms, dual-use goods, and technologies, including those potentially contributing to weapons of mass destruction, by requiring member countries to maintain control lists and exchange information.
Australia Group	<ul style="list-style-type: none"> • Australia Group aims to curb the spread of chemical and biological weapons by regulating the trade and transfer of dual-use chemicals, biological agents, and related equipment and technologies.
Fissile Material Cut-off Treaty (FMCT)	<ul style="list-style-type: none"> • It is a proposed international agreement that would prohibit the production of fissile materials (highly-enriched uranium (HEU) and plutonium) for nuclear weapons and other explosive devices. • India is in support of a non-discriminatory FMCT.

Yard 12706 (INS Imphal)

- The Indian Ministry of Defence unveiled Yard 12706 (INS Imphal), the third in the series of four **Project 15B stealth guided missile destroyers**.
- The other two destroyers of this Project are **INS Visakhapatnam (2021)** and **INS Mormugao (2022)**.
- This vessel, built by the Indian Navy's **Warship Design Bureau and Mazagon Dock Shipbuilders Limited**, features advanced weaponry and sensor technology, including surface-to-air missiles, anti-ship missiles, and torpedoes.
- **Project 15B** follows the successful lineage of the Kolkata class (Project 15A) and Delhi class (Project 15) destroyers, which were commissioned in the previous decade.

Project Kusha

- The Defence Ministry has granted the approval for the development of **India's indigenous Long-Range Surface-to-Air Missiles (LR-SAM) defence system, Project Kusha**.
- The project, under the **Defence Research and Development Organization (DRDO)**, aims to **operationalize by 2028-29**.
- India currently has Russia's S-400 air defence systems, but the LR-SAM system aims to detect and destroy various threats, including stealth fighters, aircraft, drones, and cruise

What is Iron Dome?

- It is Israel's air missile defense system that can defend against short-range rockets, intercepting them in the air above the state.
- It is capable of successfully handling multiple rockets at a time.
- Developed by Rafael Advanced Defense Systems and Israel Aerospace Industries, the system became operational in March 2011.

missiles, Interceptor missiles, with ranges of 150 km, 200 km, and 350 km

- Comprising **three layers of surface-to-air missiles**, each tailored to engage targets at different ranges, Project Kusha represents a significant step towards bolstering India's defence capabilities.
- The system reportedly has a single-shot kill chance of at least 80% and over 90% when two missiles are fired after each other.

MAHASAGAR

- The Indian Navy has launched **MAHASAGAR (Maritime Heads for Active Security and Growth for All in the Region)**, a virtual interaction initiative aimed at promoting active security and growth for all in the **Indian Ocean Region**.
- The first edition of MAHASAGAR was hosted by the Indian Navy in November 2023.
- Chief of the Naval Staff Adm R Hari Kumar, along with Heads of Navies/Maritime Agencies and Senior Leadership from various **IOR littorals** including **Bangladesh, Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, and Tanzania**.
- The interaction emphasized the need for **harmonising and collaborating capacities in the IOR**, aligning with the Indian Government's vision of SAGAR - Security and Growth for All in the Region.



Southeast Asia Opium Survey 2023

- The report titled "**Southeast Asia Opium Survey 2023: Cultivation, Production, and Implications**" published by the **United Nations Office on Drugs and Crime (UNODC)** evaluates opium poppy cultivation in Southeast Asia.
- The **Golden Triangle** includes illicit opium production areas spanning **Myanmar, Thailand, and Laos**, while the **Golden Crescent** comprises similar regions in **Iran, Afghanistan, and Pakistan**.

Key Findings from the Report:

- The opium economy in the Golden Triangle exhibited **steady growth in 2023**.
- **Myanmar has emerged as the world's primary source of opium** following the decline in Afghanistan.
- A focused assessment revealed **significant opium cultivation in Sagaing**, along Myanmar's border with India.

United Nations Office on Drugs and Crime (UNODC)

Established	1997 (merger of United Nations Drug Control Programme and Centre for International Crime Prevention)
Headquarters	Vienna, Austria
Functions	<ul style="list-style-type: none"> • Educates worldwide about drug abuse dangers • Strengthens international action against drug production, trafficking, and related crime • Enhances crime prevention and assists with criminal justice reform • Focuses on combating transnational organized crime and corruption • Oversees Terrorism Prevention Branch activities
Working	<ul style="list-style-type: none"> • Operates 20 field offices across 150+ countries • Collaborates with governments and NGOs to develop and implement tailored programs
Funding	Relies on voluntary contributions, mainly from governments

About Opium

Scientific Name	Papaver somniferum
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Origin	Native to the Mediterranean region and western Asia; cultivated worldwide.
Description	<ul style="list-style-type: none"> • An annual flowering plant reaching heights of 1-5 meters. • Features lobed or toothed silver-green leaves. • Produces large, colorful flowers in white, purple, or red hues.
Uses	<ul style="list-style-type: none"> • Medicinal: Opium extracted from unripe seed pods contains alkaloids like morphine and codeine for pain relief. • Culinary: Mature seeds used in foods like poppy seed oil and toppings for baked goods. • Ornamental: Cultivated varieties appreciated for their decorative blooms in gardens.
Global Use	<ul style="list-style-type: none"> • India is the only country authorised by the United Nations Single Convention on Narcotic Drugs (1961) to produce gum opium. • Eleven other countries, i.e, Australia, Austria, France, China, Hungary, the Netherlands, Poland, Slovenia, Spain Turkey and Czech Republic cultivate opium poppy, with the method of concentrate of poppy straw process (CPS),

International Police Organisation (Interpol)

- The 100th anniversary of Interpol was commemorated during recently concluded 91st General Assembly in Vienna, Austria.
- Established in **1923**, the **International Criminal Police Commission (ICPC)** was renamed **ICPO – INTERPOL in 1956** due to a revised constitution. Its **headquarters** are situated in **Lyon**, France. India joined INTERPOL in 1949.
- **Mandate:** It is an international organization facilitating international police cooperation against cross-border terrorism, trafficking, and other crime.
- **Governance:** All decisions regarding the activities of INTERPOL are made by the General Assembly which is the supreme governing body which meets annually.
- **Status:** It is NOT a unit or part of united nation system. It is an independent international organization.
- **National Central Bureau (NCB)**
 - It has a National Central Bureau (NCB) in each member country, which is the central point of contact for both the general secretariat and the other NCBs around the world.
 - Each NCB is run by police officials of that country, and usually sits in the government ministry responsible for policing. (Union Home Ministry in India.)
 - **Central Bureau of Investigation (CBI)** represents Interpol in India as the country's national central bureau.
 - India also hosted the 90th INTERPOL General Assembly in New Delhi in 2022 in which CBI Academy joined the INTERPOL global academy network.
- **Outcomes of 91st General Assembly: Vienna Declaration**, which aimed to challenge the rise of transnational organized crime, and India's call for "concerted action" through INTERPOL to combat transnational crimes like terrorism, online radicalization, and cyber-enabled financial fraud.
- INTERPOL has made significant contributions worldwide:
 - Provides a **secure communications system called I-24/7**, which allows all 196-member countries to share police information globally
 - Established the **INTERPOL Financial Crime and Anti-Corruption Centre (IFCACC)** to combat transnational financial crimes, aiding in the interception of nearly \$200 million in criminal proceeds from cyber-enabled fraud in 2022.
 - Conducted operations like **Operation Lionfish** targeting drug trafficking, resulting in seizures in India.

- Partnered with the **UN Counter-Terrorism Centre (UNCCT)** to address terrorism challenges through technology adoption.
- Introduced **Innovation-as-a-Service (INaaS)** to offer member countries strategic insights for future readiness.
- India hosted the 90th INTERPOL General Assembly in 2022, which resulted in the release of the first global crime trend report and the launch of INTERPOL's **Metaverse** presence.



Indian Ocean Naval Symposium

- The Royal Thai Navy held the 8th IONS Conclave of Chiefs in Bangkok, Thailand, with the Republic of Korea Navy as the latest 'Observer'. The collective strength of IONS has increased to 34 (25 Members & 09 Observers)
- The 'Indian Ocean Naval Symposium' (IONS) is a voluntary initiative that seeks to **increase maritime cooperation among navies of the littoral states of the Indian Ocean Region** by providing an open and inclusive forum for discussion of regionally relevant maritime issues.
- It was conceived by the **Indian Navy in 2008** as a forum which seeks to enhance maritime cooperation among Navies of the littoral states of the Indian Ocean Region.
- The **first edition of IONS was held in Feb 2008** at New Delhi, with the **Indian Navy as the Chair for two years (2008 - 2010)**.
- Last year, IONS held its inaugural edition of the maritime exercise, IMEX-22.
- It endeavours to generate a flow of information between naval professionals that would lead to common understanding and possibly cooperative solutions on the way ahead.

Military Drones in India

- India is rapidly developing its capabilities in the field of defence drones, recognizing their growing importance in modern warfare.

Foreign Acquisitions of Drones:

- To meet immediate requirements, India has also procured armed drones from foreign countries including the US and Israel.
- Among these acquisitions are the **Heron Mark-II drones from Israel**, utilized by the Indian Air Force for surveillance along the Northern borders with Pakistan and China.
- In February 2024, the **US State Department** approved the potential sale of 31 **MQ-9B armed drones** to India for an estimated cost of \$4 billion.
- Additionally, the Indian Army and Navy employ the **Searcher Mk II** drones, developed by **Israel Aerospace Industries**, for reconnaissance purposes.

Indigenous UAV systems

- DRDO has been actively involved in developing indigenous UAV systems, including:

Lakshya

A target drone for aerial reconnaissance and target acquisition, propelled by a solid propellant rocket motor and sustained by a turbojet engine during flight.

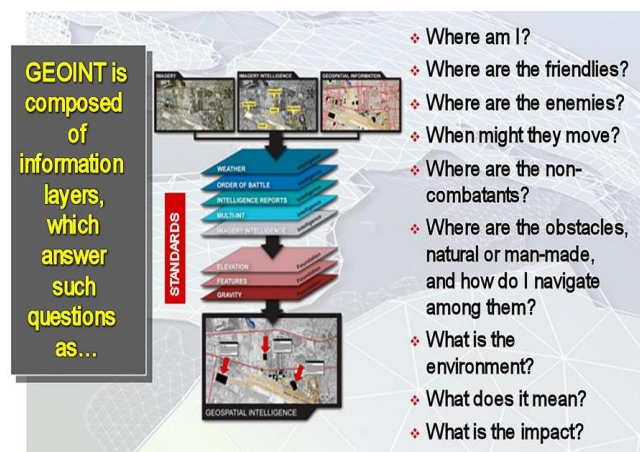
Nishant	A multi-mission UAV with day/night capability, launched using a Mobile Hydro Pneumatic Launcher, used for battlefield surveillance, reconnaissance, and artillery fire correction, and inducted in the Indian Army.
Micro UAVs	Developed by Aeronautical Development Establishment (ADE) and the CSIR's NAL, Three MAVs namely Black Kite, Golden Hawk and Pushpak have been designed and developed. These are fully autonomous air vehicles.
Mini UAVs	Namely, Imperial Eagle and Slybird, developed by ADE along with CSIR-NAL.
RUSTOM-1	An all-composite, 800 kg class Short Range Remotely Piloted Aircraft System (SR-RPAS) with intelligence, surveillance, reconnaissance, target acquisition/tracking, and image exploitation capabilities.
TAPAS/ Rustom-2	A Medium Altitude Long Endurance (MALE) unmanned aerial vehicle designed for Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) applications, currently undergoing advanced developmental trials.
Archer	A Short Range-Unmanned Aerial Vehicle-Weaponised (SR-UAV-W) being developed for reconnaissance, surveillance, and low-intensity conflict situations.
Drishti 10 Starliner	Adani Defence and Aerospace developed an indigenously manufactured Unmanned Aerial Vehicle (UAV) with 36 hours endurance and a 450 kg payload capacity, offering advanced intelligence, surveillance, and reconnaissance capabilities.

Geospatial Intelligence (GEOINT)

- ISRO has unveiled plans to launch 50 satellites over the next 5 years, aimed at bolstering intelligence gathering capabilities. These satellites will be positioned in various orbits to enable comprehensive tracking of troop movements and high-resolution imaging of vast geographical areas.
- Geospatial Intelligence is an intelligence discipline that **uses geospatial data to understand and visually depict human activity at specific geographic locations.**
- It uses imagery to survey and assess human activity and physical geography on Earth.
- Geospatial intelligence collects and integrates data from various technologies, such as satellites, mobile sensors, ground-control stations, and aerial images, to produce real-time maps and simulations to identify potential threats like disasters, wildfires, and hybrid warfare.

India's Geospatial Intelligence Strategy

- **National Geospatial Policy 2022:** Aims to transform Indian innovation by 2035 by promoting geospatial data industry and developing a national framework.
- **Geospatial Guidelines, Drone Rules, and Remote Sensing Policy:** Proposals to liberalize geospatial data collection and distribution and leverage geospatial technologies for urban management.
- **NavIC (Navigation with Indian Constellation):** India's indigenous navigation system designed to provide accurate position information service.
- **Bhuvan Portal:** National Geo-portal developed and hosted by ISRO for providing visualization of Satellite Imagery and Maps.
- **National Spatial Data Infrastructure:** A network of spatial data nodes established in various data-providing agencies in central and state governments to improve access to geospatial data.



ABHYAS - High-Speed Expendable Aerial Target (HEAT)

- Flight trials of ABHYAS-HEAT were successfully conducted by the **Defence Research & Development Organisation (DRDO)**.
- **Key Features of ABHYAS-HEAT:**
 - Designed for autonomous flight with auto-pilot assistance.
 - Developed domestically by **DRDO's Aeronautical Development Establishment (ADE)**.
 - Equipped with Radar Cross Section, Visual, and Infrared augmentation systems for weapon practice.
 - Includes a laptop-based Ground Control System.
- ABHYAS offers **minimal logistics requirements and is cost-effective** compared to imported alternatives.

INS Sandhayak

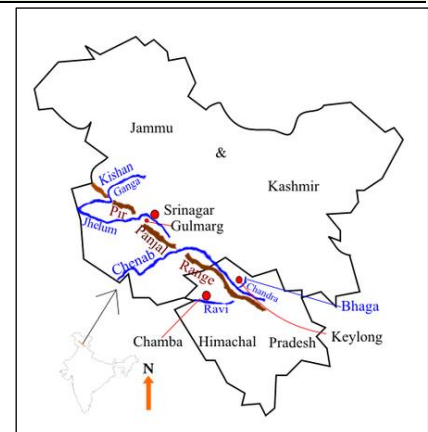
- The Indian Navy commissioned INS Sandhayak, the first **Survey Vessel Large (SVL) Ship**, in Visakhapatnam.

About INS Sandhayak:

- First of a series of four SVL ships.
- Incorporates over 80% indigenous content by cost.
- Can provide limited defense capabilities and function as a hospital ship during wartime or emergencies.
- Equipped with advanced hydrographic equipment, including Deep & Shallow Water Multi-Beam Echo-Sounders and Autonomous Underwater Vehicles.

Operation Sarvashakti

- The **Indian Army** initiated Operation Sarvashakti with the strategic objective of **neutralizing terrorists on both sides of Pir Panjal in Jammu and Kashmir**.
- The **Chinar Corps** based in Srinagar and the **White Knight Corps** stationed in Nagrota will coordinate simultaneously under this initiative. Apart from that, Jammu and Kashmir Police, CRPF, Special Operations Group, and intelligence agencies will also cooperate.
- Drawing parallels to **Operation Sarpvinash** conducted in **2003** against terrorists south of the **Pir Panjal range**, which lasted three months and led to the elimination of nearly 100 terrorists, Operation Sarvashakti follows a similar trajectory.



About Pir Panjal Range

Location	The Pir Panjal Range separates the Jammu Hills to the south from the Valley of Kashmir, beyond which lie the Great Himalayas. It forms a divide between the Beas and Ravi rivers on one side and the Chenab on the other.
Peaks	Deo Tibba (6,001m) and Indrasan (6,221m) stand as the highest peaks of the range
Passes	Banihal Pass, Peer Panjal, Sinthan pass, Saach Pass, Rohtang Pass
Rivers	Spanning from the Jhelum to the Chenab, the Pir Panjal Range includes regions like Rajouri, Budhal, and Poonch

Sainik Schools

- The Defence Ministry has stated that the selection process for new Sainik Schools is well-thought-out and does not rely on the political affiliation of the applicant institution.

About Sainik Schools

- These are **residential schools for students, providing Public School Education** which are **affiliated to Central Board of Secondary Education (CBSE), New Delhi**.
- **Funding:** These schools are **funded by Central and State governments**.

- The scheme to establish Sainik Schools was introduced in 1961 with the primary **aim of preparing students academically, physically and mentally for entry into the National Defence Academy.**
- These schools are under the **overall governance of Sainik Schools Society (registered under Societies Registration Act XXI of 1860) Ministry of Defence.** It is established with the primary aim of preparing boys academically, physically and mentally for entry into the National Defence Academy.
- At present, there are 33 Sainik Schools located in various parts of the country. Girls cadets have also been given admission in Sainik School, from the academic session 2021-22.

Recent initiative

- Government of India has approved an initiative for **setting up of 100 new Sainik Schools** under Sainik Schools Society, Ministry of Defence in partnership with NGOs/Private Schools and State Govt.

Strategic Forces Command

- The SFC, also known as the **Strategic Nuclear Command**, is a vital **component of India's Nuclear Command Authority (NCA)**, entrusted with critical decisions concerning the nation's nuclear weapons program.
- Formed on January 4, 2003, the SFC is tasked with overseeing both tactical and strategic nuclear weapons within India's arsenal.
- **Responsibilities of the SFC:** Under the **leadership of a Commander-in-Chief**, typically a Senior Officer, the SFC **executes the directives of the NCA**, including the initiation of nuclear weapon deployment after obtaining explicit approval.
- **Organizational Structure:** Comprising personnel from the Indian Army, Indian Air Force (IAF), and Indian Navy.
- **The Commander-in-Chief**, a 3-star General, is appointed on a rotational basis from the three services.

About Nuclear Command Authority (NCA)	
About	The NCA is tasked with overseeing command, control, and operational decisions concerning India's nuclear weapons program.
Components	The NCA consists of two main bodies: Political Council and Executive Council.
Leadership	The Political Council, chaired by the Prime Minister , is the supreme authority with the sole power to authorize the use of nuclear weapons.
	The Executive Council, chaired by the National Security Advisor , offers insights for NCA decision-making and implements directives issued by the Political Council.

Project Akashteer

- Project Akashteer is an **initiative developed by Bharat Electronics Limited** under the 'Atmanirbhar Bharat' scheme.
- It **aims to automate air defense control and reporting processes.**
- It **enhances situational awareness and control**, monitoring **low-level airspace in Indian Army battle areas.**
- The system's **mobile control centers** ensure operational capabilities in challenging environments.
- By **integrating radar and communication systems**, Akashteer provides unprecedented situational awareness, enabling effective detection and engagement of hostile targets.
- It significantly boosts India's air defense capabilities through efficiency, integration, and automation, marking a leap forward in air defense operations.

Exo-Atmospheric missiles

- Recently, Israel said its air-defence system involving exo-atmospheric interceptors destroyed '99% of missiles' fired by the Iran.
- Exo-Atmospheric missiles (**anti-ballistic missiles (ABMs)**) are **surface-to-air missiles designed to counter incoming ballistic missiles**, specifically Intercontinental Ballistic Missiles (ICBMs).

- These missiles **operate beyond Earth's atmosphere** and are equipped with advanced technology such as infrared sensors and radar systems to detect and track incoming missiles.
- They travel at **hypersonic speeds and use an inertial navigation system** to accurately manoeuvre and intercept targets.
- The missiles use a three-stage solid rocket booster to propel themselves out of Earth's atmosphere at near-hypersonic speed.
- After reaching space, the ABM activates its sensors to identify and track the incoming target, with an inbuilt rocket motor for exceptional accuracy.

Operation Meghdoot

- It was the code-name for the **Indian Armed Forces operation to capture the Siachen Glacier**, a strategically crucial region dominating Northern Ladakh.
- Siachen has been a bone of contention between India and Pakistan ever since the **Karachi Agreement of 1949**, when the area was left undivided due to the hostile terrain and extremely rough weather.
- Operation Meghdoot was India's bold military response to **Pakistan's "cartographic aggression"** in the uncharted territory of Ladakh, north of map reference **NJ9842**, where New Delhi and Islamabad had agreed the Line of Control (LoC) ran up to.
- **The primary objective** behind this operation was to pre-empt the seizure of Sia La and Bilafond La passes by the Pakistan Army.
- **Launched on April 13, 1984**, this military operation was unique as the first assault launched on the world's highest battlefield.
- It was launched under the **leadership of Lieutenant General Manohar Lal Chibber**, Lieutenant General PN Hoon, and Major General Shiv Sharma.
- It is distinguished by being one of the greatest **examples of seamless coordination and synergy between the Indian Army and the Air Force**. The military action resulted in Indian troops gaining control of the entire Siachen Glacier.

Strategic Importance of the Siachen

- Located at a height of around 20,000 feet in the Karakoram Mountain range, the Siachen Glacier is known as the **highest militarised zone around the world**.
- It is located so strategically that while it **dominates Shaksgam Valley** (ceded to China by Pakistan in 1963) in the north, controls the routes coming from Gilgit Baltistan to Leh from the west, and at the same time, it dominates the ancient Karakoram Pass in the eastern side too.



C-Dome

- Israel recently deployed its ship-mounted defense system, known as the C-Dome, for the first time.
- The C-Dome serves as a **naval version of Israel's Iron Dome air defense system**, providing protection against rocket and missile attacks.
- The C-Dome, unveiled in 2014 and declared operational in November 2022, **operates similarly but is mounted on ships**.
- Specifically installed on **Sa'ar 6-class corvettes** (German-made warships) the C-Dome utilizes the **same interceptor technology as the Iron Dome**.
- The C-Dome integrates with the ship's radar system to detect incoming threats.

- Offering full-circular vessel protection and high kill probability against a wide range of modern maritime and coastal threats, the C-Dome enhances Israel's defense capabilities at sea.

Key Facts about Iron Dome:

- Israel's air missile defense system designed to intercept short-range rockets, neutralizing them in the airspace above the country.
- Capable of handling multiple rocket threats simultaneously with an **effectiveness of about 90%**.
- Developed by **Rafael Advanced Defense Systems and Israel Aerospace Industries**, the Iron Dome became operational in March 2011.

Patriot Air Defense Missile System

- The **Patriot (MIM-104)**, acronym for **Phased Array Tracking Radar Intercept on Target**, represents the most advanced air defense system in the **U.S. Army's** arsenal.
- **Developed by Raytheon**, an American multinational aerospace and defense conglomerate, it serves as an **all-weather surface-to-air missile defense system** capable of countering tactical ballistic missiles, cruise missiles, and advanced aircraft.
- The system saw its first combat use during the 1991 Gulf War, where it protected Saudi Arabia, Kuwait, and Israel. It was subsequently utilized during the U.S. invasion of Iraq in 2003.
- **It is in service with the US and allied countries**, including Germany, Greece, Israel, Japan, Kuwait, the Netherlands, Saudi Arabia, South Korea, Poland, Sweden, Qatar, the United Arab Emirates, Romania, Spain, and Taiwan
- It is equipped with powerful radar, a control station, a power generator, a launch station. Its radar can track up to 50 targets and engage five of them at once.

Exercises/ Conferences

Exercise Bharat Shakti	<ul style="list-style-type: none"> • The Bharat Shakti exercise is a fire power demonstration that showcases the indigenous defense equipment of the Indian Army, Navy, and Air Force. • Recently, the exercise took place at the Pokhran firing range in Rajasthan and featured an array of indigenous weapons systems and platforms.
Naval Commanders' Conference 2024	<ul style="list-style-type: none"> • The first edition of the Biannual Naval Commanders' Conference 2024 was conducted. • The inaugural session of the Conference was held onboard the aircraft carrier INS Vikramaditya.
Tiger Triumph-24	<ul style="list-style-type: none"> • The bilateral tri-service exercise 'Tiger Triumph-24' between India and the US was held in Visakhapatnam and Kakinada, Andhra Pradesh. • It focused on enhancing interoperability for humanitarian assistance and disaster relief (HADR) operations.
Maritime Security Belt – 2024	<ul style="list-style-type: none"> • The navies of China, Iran and Russia have begun joint drills in the Gulf of Oman, their fifth common military exercise in recent years. • The drills come as a United States-led naval coalition has been operating in Red Sea waters since December 2023 trying to counter the Houthi attacks.

Armed Forces Exercises

Exercise Name	Participating Forces/Nations
Vayu Shakti- 2024	<ul style="list-style-type: none"> • The Indian Air Force (IAF) conducted Exercise Vayu Shakti-2024 in February 2024 at the Pokhran firing range in Rajasthan. • Ex Vayu Shakti is a triennial exercise, conducted once every three years.

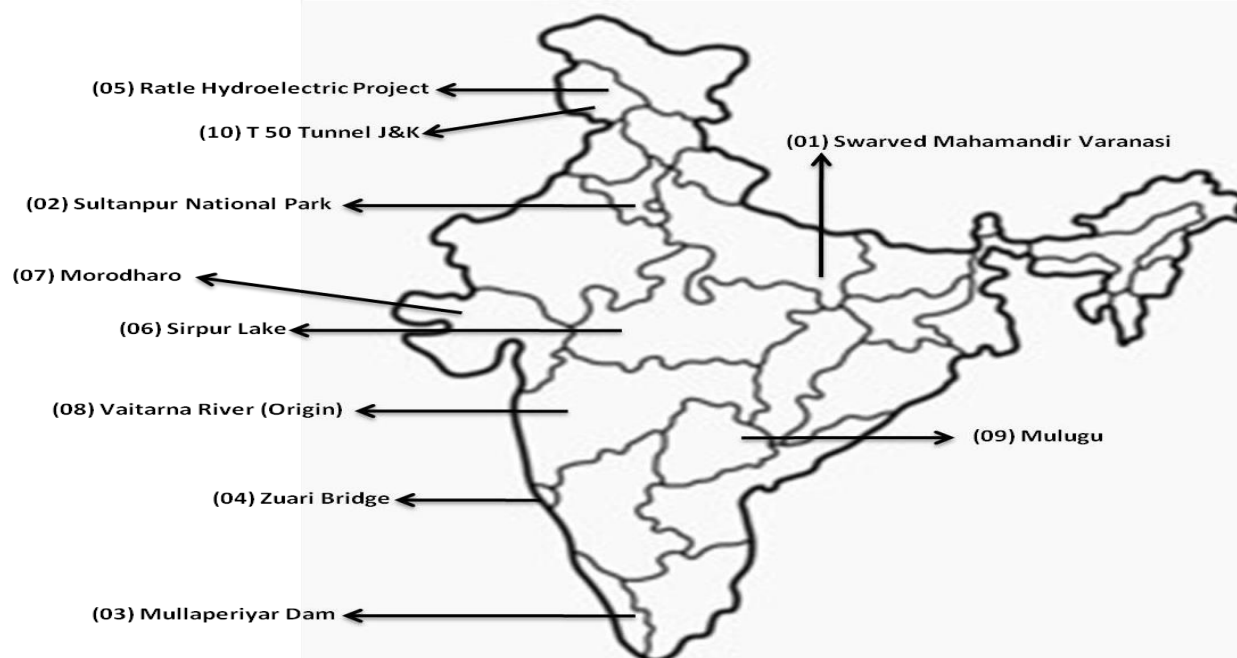
Joint military exercise - Sada Tanseeq	<ul style="list-style-type: none"> The first joint military exercise between the Indian Army and the Royal Saudi Land Force, called Sada Tanseeq, was held at Mahajan Field Firing Ranges in Rajasthan.
2024 MILAN Exercise	<ul style="list-style-type: none"> MILAN 2024, the 12th edition of the Indian Navy's largest naval exercise, was held in February 2024. The exercise took place in Visakhapatnam and included the participation of over 50 countries. Defence Minister inaugurated NISHAR, a platform created by the Indian Navy for networking and information-sharing. <ul style="list-style-type: none"> NISHAR allows ships of the friendly navies to share information through the MITRA terminal, which works on plug-and-play architecture.

Military Exercises in News

Exercise Name	Participating Forces/Nations	Type	Frequency
SADA TANSEEQ	India, Saudi Arabia	Military	
MILAN 2024	Various navies from countries & India	Naval	
Exercise 'DOSTI-16'	India, the Maldives, and Sri Lanka	Coast Guard	Two Years
Exercise Steadfast Defender 24	NATO member countries	Military	

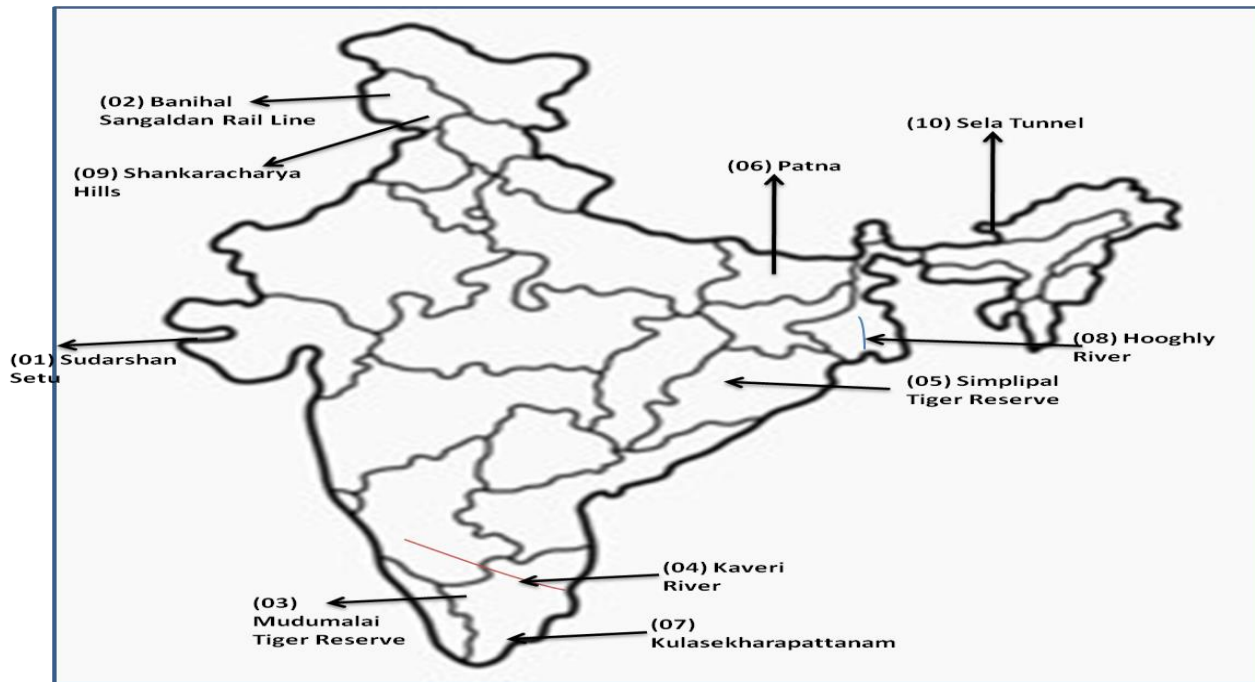
MAPS: PLACES IN NEWS

NATIONAL PLACES IN NEWS



1	Swarved Mahamandir Varanasi	It is the world's largest meditation centre, where 20,000 people can sit together and meditate. Prime Minister recently inaugurated the world's largest meditation centre, Swarved Mahamandir, in Varanasi.
2	Sultanpur National Park	According to forest department officials the Sultanpur National Park in Farrukhnagar, Gurugram has reported a decrease of 20-30 per cent in the number of migratory birds this season. It comprises mainly of wetlands. It was notified as a Ramsar site, a wetland of international importance, in 2021.
3	Mullaperiyar Dam	It is a masonry gravity dam situated on the Periyar River in Thekkady, Idukki district, in Kerala. It is located, on the Cardamom Hills of the Western Ghats. The dam is built at the confluence of the Mullayar and Periyar rivers.
4	Zuari Bridge, Goa	It is located on the Zuari river at Cortalim village on Margao-Panaji National Highway. It is a 13.20-kilometer eight-lane bridge across Zuari river. It is India's second longest cable-stayed bridge.
5	Ratle Hydroelectric project	Chenab River has been diverted to expedite construction of a dam for the Ratle Hydro Electric Project in J&K. The project is a Run of River Scheme on the Chenab River, located in the Kishtwar district, in the Indian UT of Jammu and Kashmir.
6	Sirpur lake	The Government organised a national event at Sirpur Lake, Indore to celebrate World Wetlands Day (WWD). The day commemorates the signing of the Ramsar Convention on Wetlands of International Importance in 1971 and India has been a party to the Convention since 1982.
7	Morodharo	The site, named Morodharo, yielded a large quantity of Harappan pottery similar to that found in Dholavira. The settlement, dating back 4,500 years, shows architectural similarities to Dholavira and depended on the sea, suggesting that the desert was once navigable water.
8	Vaitarna River	It is a west flowing river situated between Mumbai and the Tapi River. Originates in the Trimbakeshwar Hills of Nasik district, Maharashtra. It receives most rainfall from the South West monsoon.

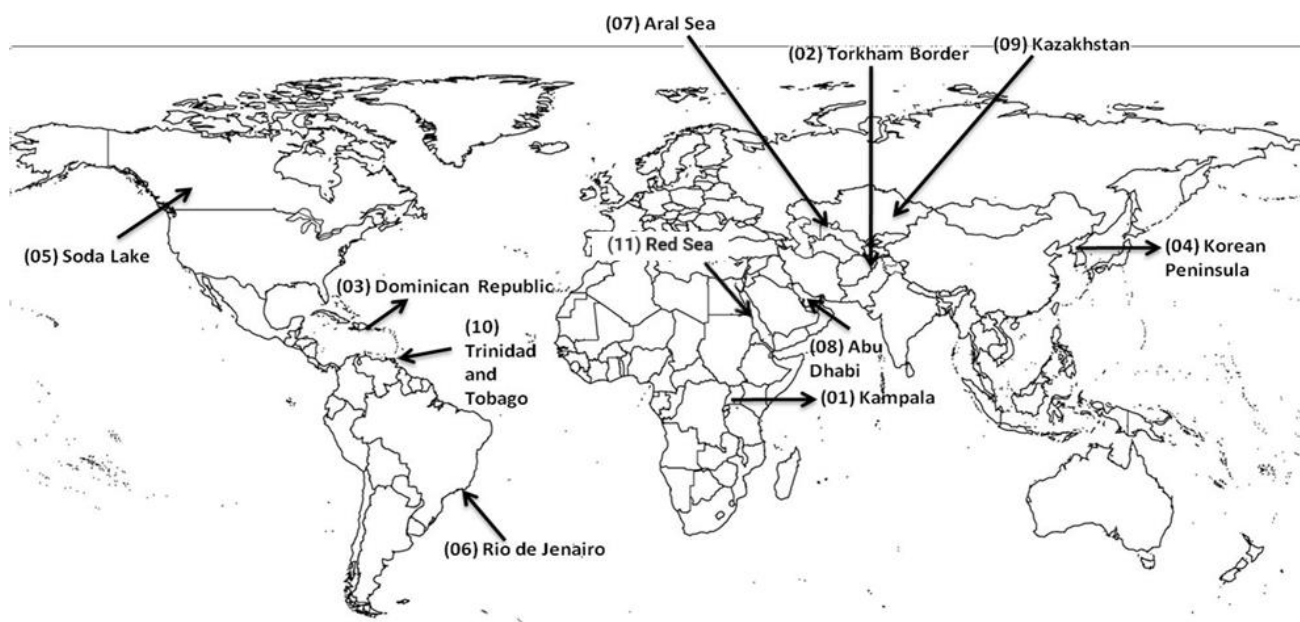
9	Mulugu	Recently Sammakka-Saralamma Jatara was held in Mulugu district of the state. It is one of the largest tribal festivals in the world celebrated in the Indian State of Telangana. It is also known as Medaram Jatara that is held every two years.
10	T 50 Tunnel J&K	India's longest rail tunnel T-50, part of the Udhampur-Srinagar-Baramulla Rail Link (USBRL), was inaugurated in Jammu and Kashmir. The tunnel, named T-50, spans 12.77 km and is considered one of the most challenging aspects of the project.



1.	Sudarshan Setu	The Prime Minister inaugurated the Sudarshan Setu, a cable-stayed bridge connecting Okha mainland and Beyt Dwarka island in Gujarat . The bridge, spanning 2.32 km, is India's longest cable-stayed bridge. Featuring a unique design with verses from the Shrimad Bhagavad Gita and images of Lord Krishna, the Sudarshan Setu also incorporates solar panels generating one megawatt of electricity. The bridge aims to enhance transportation and reduce travel time for devotees visiting Dwarka and Beyt-Dwarka, replacing the reliance on boat transport.
2.	Banihal-Sangaldan railway line	The PM inaugurated the Banihal-Sangaldan railway line in Jammu and Kashmir, aiming to connect Baramulla in North Kashmir to Udhampur in Jammu. The railway section includes tunnels, bridges, and escape tunnels for passenger safety. The new train route significantly reduces travel time between Srinagar and Jammu and facilitates the transportation of goods, benefiting the people of Kashmir economically.
3.	Mudumalai Tiger Reserve	The first-ever herpetofaunal survey in Mudumalai Tiger Reserve recorded 82 species of reptiles and amphibians. It covered Theppakadu, Kargudi, and Nilakottai forest ranges. Mudumalai Tiger Reserve is located in the Nilgiris District of Tamil Nadu state at the tri-junction of three states, viz, Karnataka, Kerala and Tamil Nadu. It is a part of the Nilgiri Biosphere Reserve (1 st Biosphere Reserve in India). The Reserve has tall grasses, commonly referred to as 'Elephant Grass'
4.	Kaveri River	Acute scarcity of water has been reported in various parts of Karnataka as rivers carry less water. The Kaveri River (Cauvery) is designated as the 'Dakshin Bharat ki Ganga' or 'the Ganga of the South'. The Cauvery River rises

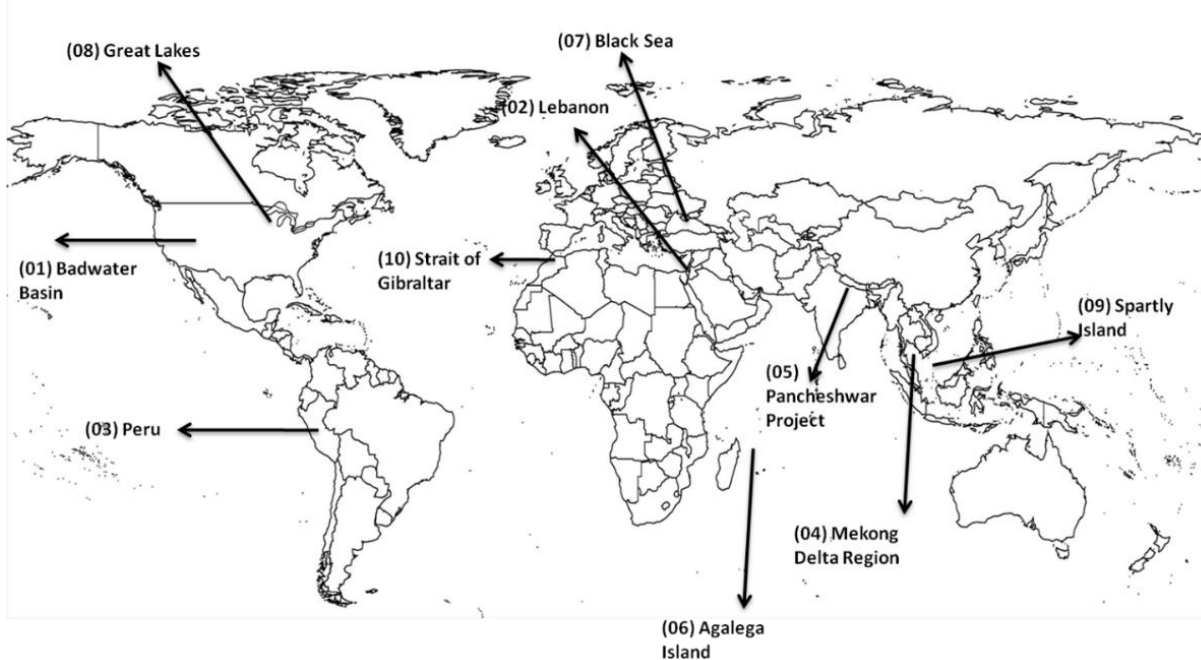
		at Talakaveri on the Brahmagiri range near Cherangala village, Kodagu (Coorg), Karnataka. <u>The Tungabhadra River</u> is a river in India that starts and flows through the state of Karnataka during most of its course, Andhra Pradesh and ultimately joining the Krishna River near Murvakonda in Andhra Pradesh.
5.	Simplipal Tiger Reserve	The Odisha government has sought the National Tiger Conservation Authority's (NTCA) nod to introduce some female tigers to the Similipal Tiger Reserve. Similipal Tiger Reserve is a national park and tiger reserve located in the Mayurbhanj district of Odisha, India. It is part of the Mayurbhanj Elephant Reserve. The reserve derives its name from the abundance of red silk cotton trees, known as ' <i>Simul</i> ' in the local language.
6.	Patna	India's first centre for research on conserving the endangered Gangetic River dolphin was inaugurated in Patna, Bihar. Bihar is home to around half of the estimated 3,000 Gangetic dolphins in India.
7.	Kulasekharapattanam	Recently, PM laid the foundation stone for India's second spaceport at Kulasekharapattanam, Tamil Nadu. The new spaceport is dedicated to Small Satellite Launch Vehicles (SSLVs) developed by the private sector. Operational in about two years, it will exclusively serve private sector launches.
8.	Hooghly river	PM Modi inaugurates India's first underwater Metro in Kolkata . The Howrah Maidan-Esplanade section underwater Metro line has the first transportation tunnel under a river in India. It passes under the Hooghly River. The Hooghly River is a distributary of the Ganges River in West Bengal, India. It starts at Nurpur in the Murshidabad district, where it branches off from the Ganges.
9.	Shankaracharya Hills	Prime Minister of India recently paid obeisance to Shankaracharya Hill during his visit to Jammu and Kashmir. The ancient Shankaracharya Temple, constructed with grey stones, stands on Shankaracharya Hill, on the Zabarwan Range in Srinagar, Jammu and Kashmir. Initially known as Takht-i-Sulaiman, which means Throne of Solomon, it was later renamed after a saint who preached enlightenment here in AD 750.
10.	Sela tunnel	PM Modi inaugurated the strategically-important Sela tunnel in Arunachal Pradesh. The Sela Tunnel, situated at an elevation of 13,000 feet, will be the world's longest bi-lane tunnel at an elevation. The tunnel has been made on the road connecting Assam's Tezpur to Arunachal Pradesh's Tawang.

INTERNATIONAL PLACES IN NEWS



1	Kampala	The 19th Non-Aligned Movement (NAM) Summit was held in Uganda's capital, Kampala. Kampala is reported to be among the fastest-growing cities in Africa, with an annual population growth rate of 4.03 percent. Kampala is a hilly place with its valleys filled with sluggish rivers/ swamps.
2	Torkham Border	Trade between Pakistan and Afghanistan resumed recently after the two sides reopened a key northwestern border crossing Torkham border, shut for more than 10 days. Torkham border crossing is an important economic and strategic lifeline for both Pakistan and Afghanistan.
3	Dominican Republic	Union Cabinet of Indian government has approved the signing of a protocol for the establishment of a Joint Economic and Trade Committee (JETCO). It is a Caribbean nation that shares the island of Hispaniola with Haiti to the west. Its terrain comprises of rainforest, savannah and highlands, including Pico Duarte, the Caribbean's tallest mountain. Its capital city is Santo Domingo.
4	Korean Peninsula	The ongoing tensions in the Korean peninsula have raised concerns about the deterioration of the international security environment. The Korean peninsula was divided into two by the end of World War II, after imperial Japan who occupied the territory was defeated.
5	Soda Lake	Scientists have discovered a shallow "soda lake" in western Canada. It is a lake with a pH value usually between 9 and 11. A soda lake or alkaline lake is a lake on the strongly alkaline side of neutrality, typically with a pH value between 9 and 12. High carbonate concentration, especially sodium carbonate, is responsible for the alkalinity of the water.
6	Rio de Janeiro	Recently dengue health emergency declared in Rio de Janeiro. It is one of the most visited cities in the Southern Hemisphere and is known for its natural settings, carnival, samba, bossa nova, and balneario beaches such as Barra da Tijuca, Copacabana, Ipanema, and Leblon.

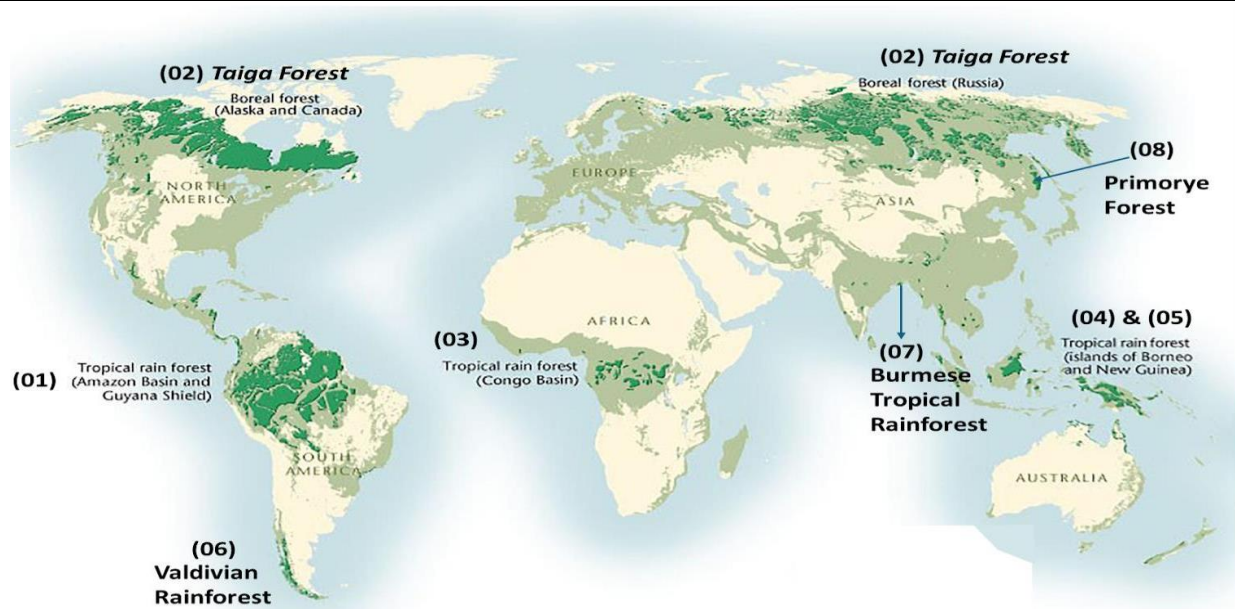
7	Aral Sea	Climate change exacerbates the ongoing decline of the Aral Sea, now reduced to less than a quarter of its former size. The Aral Sea drainage basin encompasses Uzbekistan and parts of Afghanistan, Iran, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan.
8	Abu Dhabi	Prime Minister inaugurated Abu Dhabi's first Hindu stone temple. The UAE has three other Hindu temples that are located in Dubai.
9	Kazakhstan	One of the worst methane leaks ever recorded took place last year at a remote well in Kazakhstan. Kazakhstan is a large landlocked country in Central Asia and Eastern Europe. It shares borders with Russia, China, Kyrgyzstan, Uzbekistan, and Turkmenistan, with access to the Caspian Sea. Astana is the capital, while Almaty serves as the largest city and main cultural centre
10	Trinidad and Tobago	Recently oil spills have impacted the island nation. It is an island country of the southeastern West Indies. It consists of two main islands—Trinidad and Tobago— and several smaller islands. Trinidad is the larger and more populous of the main islands; Tobago is much smaller, comprising about 6% of the total area and 4% of the population.
11	Red Sea	The EU has initiated a naval mission, named ' Aspides ' (Greek for shield), aimed at safeguarding cargo ships in the Red Sea amidst ongoing attacks by Houthi rebels . Operating out of Larissa, Greece , the mission, based solely at sea, seeks to protect maritime traffic and trade.



1	Badwater Basin	NASA images show Bad water Basin in Death Valley . It is North America's lowest point. It features a spring-fed pool of "bad water," surrounded by salt flats, making the water undrinkable.
2	Lebanon	The Israeli military struck targets of the militant Hezbollah group "deep inside Lebanon". It is bordered by Syria to the north and east, by Israel to the south, and by the Mediterranean Sea to the west. Lebanon's capital and largest city is Beirut.
3	Peru	Peru Declared Health Emergency Amidst Dengue Surge. The capital Lima is located on the western side of South America. Peru shares its borders with five countries: Ecuador and Colombia to the north, Brazil to the east, Bolivia to the southeast, and Chile to the south. Its western border lies along the Pacific Ocean.

4	Mekong Delta Region	Southern Vietnam, including its “rice bowl” Mekong Delta region, suffered an unusually long heatwave. The Mekong Delta is one of the largest and most fertile deltas. It is also considered among the world’s five most vulnerable deltas.
5	Pancheshwar project	PMP is a bi-national hydropower project to be developed in River bordering Nepal and India. Development of PMP, is a mutual interest project between two countries, and is covered under integrated Mahakali Treaty signed between Nepal and India in 1996
6	Agalega Island	Prime Minister Narendra Modi and Prime Minister Pravind Jugnauth of Mauritius jointly inaugurated an airstrip and a jetty that India has built on Agaléga. Mauritius, is an island country in the Indian Ocean, off the south-eastern coast of East Africa, east of Madagascar.
7	Black Sea	Ukraine claimed that its forces destroyed a Russian military patrol ship in the Black Sea. The Black Sea is a marginal Mediterranean Sea lying between Europe and Asia. It is bounded by Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine.
8	Great lakes	These have experienced historic lows in ice cover recently. The Great Lakes are a series of large interconnected freshwater lakes located in the east-central interior of North America. These magnificent lakes connect to the Atlantic Ocean via the Saint Lawrence River. The five Great Lakes are: Lake Superior, Lake Michigan, Lake Huron, Lake Erie, Lake Ontario
9	Spratly Islands	Tensions are rising in the South China Sea after Chinese vessels attempted to block a Philippine mission to resupply their troops on the contested reef. The Spratly Islands are a disputed archipelago in the South China Sea. Composed of islands, islets, cays and more than 100 reefs, the archipelago lies off the coasts of the Philippines, Malaysia and southern Vietnam.
10	Strait of Gibraltar	It is the only natural link between the Atlantic Ocean and the Mediterranean Sea and is one of the busiest waterways in the world. It serves as a strategic maritime route between Europe and Africa.

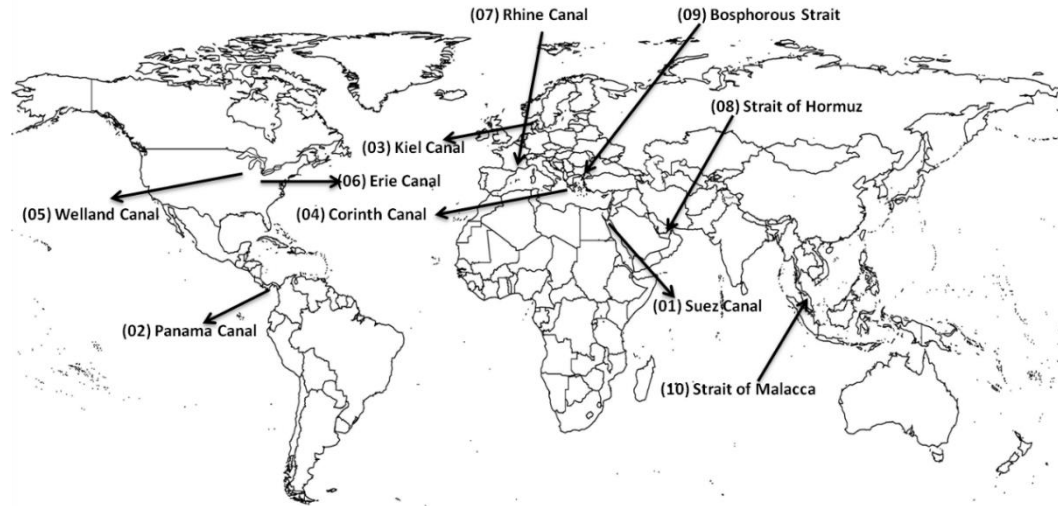
MAJOR FORESTS IN THE WORLD



1	Amazon Forest	It not only has the largest area, but is also home to one in ten species existing on earth. It is the most diverse forest and has the widest range of plants and animals in the world. In total, an estimated 290 trillion trees grow in the Amazon. Animals such as jaguars, spider monkeys, toucans, sloths and thousands of other species are among its inhabitants.
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2	Taiga Forest	The taiga is known for the enormous variety of fir trees, but due to its geographical location, the biodiversity here is not broad. In winter, temperatures can easily drop to - 40°C or lower. But even in this actually hostile area, diverse animal species such as bears, wolves, foxes and beavers live. The taiga absorbs more CO ₂ from the atmosphere than the tropical and temperate forests combined.
3	Tropical rainforest in Congo	Although it is currently one of the forests least affected by deforestation, there is a great danger of clearing due to its richness in resources. It is the second largest rainforest in the world. In contrast to the Valdivian rainforest, a variety of rather large animals live here, including the gorillas, hippopotamus and the African elephant, which, by the way, is the largest animal living on the land. As in the rainforest of New Guinea, primitive peoples still live in harmony with nature.
4	New Guinea Tropical Rainforest	One of the most extraordinary rainforests in the world is located in New Guinea. In addition to the diverse plants and animals, more than 1,000 indigenous tribes live in this forest. Moreover, a large part of the forest has still not been explored, making it a hotspot for researchers from all over the world.
5	Tropical rainforest in Borneo	The oldest tropical rainforest in the world is located on Borneo and has existed for around 140 million years. In addition to more than 10,000 different plant species, it is also home to rare animal species such as the Sumatran rhinoceros, whose population is estimated at just 250 animals worldwide. Borneo's best-known animal, the Bornean orangutan, is also on the list of endangered animals, in the critically endangered column.
6	Valdivian Rainforest	One of the youngest and largest forests in the world stretches across the two countries of Chile and Argentina. The animals living here are comparatively very small. For example, the smallest deer species, pudu, and the smallest wild cat, kodkod, live in this region. But even this forest is unfortunately only protected to a small extent and thus endangered from progressive deforestation.
7	Burmese Tropical Rainforest	Myanmar in Asia is home to one of the oldest rainforests in the world. It is located between the Pacific and Indian Oceans, near the equator, and is rich in biodiversity due to the diverse environmental conditions it has experienced to date. It provides habitat for a large number of exotic animal species, such as the Asian elephant, gibbons and Bengal tigers. Originally, this forest was part of a much larger environmental system, but due to increased deforestation by humans and their industrial use of wood, its size is shrinking the longer it lasts.
8	Primorye Forest	The smallest of the ten giants is located in south-eastern Russia. It is home to many endangered species such as the Siberian tiger. It is also the only forest in the world where tigers, bears and leopards coexist.

MAJOR CANALS OF WORLD



1.	Suez Canal	Indian trade worth \$200 billion to/from North America, South America and Europe is carried out using this route. For India, it is a major route for import and export of ethane with the US, and the imports of crude from Latin America. Hence, it is important for India's energy security. Connects the Mediterranean Sea to the Red Sea, facilitating maritime trade between Europe and Asia. Suez-Mediterranean Pipeline Carries crude oil from the Red Sea to the Mediterranean Sea, bypassing the Suez Canal for oil transportation.
2.	Panama Canal	It is a constructed waterway that connects the Atlantic and Pacific oceans across the Isthmus of Panama. It is one of the two most strategic artificial waterways in the world, the other being the Suez Canal. It is approximately 80 kilometres long, connects the Atlantic Ocean to the Pacific Ocean, providing a shortcut for ships travelling between the two oceans.
3.	Kiel Canal	It connects Scandinavia and the Baltic States to international Maritime traffic via a short link and provides an attractive connection between the North Sea ports on the English Channel and the Baltic Sea ports in Germany. Links the North Sea with the Baltic Sea, providing a shortcut for ships travelling between the two seas.
4.	Corinth Canal	The Corinth Canal is an artificial canal in Greece that connects the Gulf of Corinth in the Ionian Sea with the Saronic Gulf in the Aegean Sea. It cuts through the narrow Isthmus of Corinth and separates the Peloponnese from the Greek mainland, making the peninsula an island Cuts through the Isthmus of Corinth in Greece.
5.	Welland Canal	It connects two of the Great Lakes (Ontario and Erie) and forms an integral part of the deep waterway that allows large Lakers and ocean vessels to navigate to and from the heart of North America.
6.	Erie Canal	The Erie Canal is the longest artificial waterway in North America. It Links the Great Lakes with the Hudson River, providing a navigable water route from the Atlantic Ocean to the Great Lakes.
7.	Rhine Canal	The Amsterdam-Rhine canal is one of the most important transport links in the Netherlands connecting the port of Amsterdam with the industrialized Ruhr district in Germany. Connects Amsterdam to the Rhine River, serving as an important waterway for transportation and trade in the Netherlands.
8.	Strait of Hormuz	The Strait of Hormuz is one of the world's most important straits due to its being the quickest route for oil to be transported to other countries from the Middle East. It is located in the Middle East, bordering Iran, the United Arab Emirates, and Oman. Located

		between Oman and Iran, it's a critical chokepoint for global oil transportation, connecting the Persian Gulf with the Gulf of Oman.
9.	Bosporus Strait	It is the 21st longest suspension bridge in the world. Separates European and Asian Turkey, serving as a key passage for maritime traffic between the Mediterranean and the Black Sea.
10.	Strait of Malacca	Malacca Strait is a narrow stretch of water located between the Indonesian island of Sumatra to the southwest and the Malay Peninsula to the northeast, connecting the Andaman Sea with the Singapore Strait and the South China Sea.