

FORTUNE Prelims Precise

JULY 2024



FORTUNE IAS

Toppers in Top 100



Rank 4
P K Sidharth Ramkumar
2024



Rank 6
Meera K
2021



Rank 15
Sidharth B
2017



Rank 16
Ayan Jain
2024



Rank 21
Dilip K Kainikkara
2022



Rank 28
Hamna Mariyam
2017



Rank 29
Sreelakshmi Ram
2019



Rank 31
Vishnu Sasikumar
2024



Rank 33
Anand
2016



Rank 36
Arya V M
2023



Rank 40
Archana P P
2024



Rank 45
Safna Nazarudeen
2020



Rank 49
Renjina Mary V
2019



Rank 55
Dr. Arun S Nair
2020



Rank 57
Alfred O V
2022



Rank 58
Hari Kallikkat
2018



Rank 59
Benjo P Jose
2024



Rank 62
Aparna M B
2021



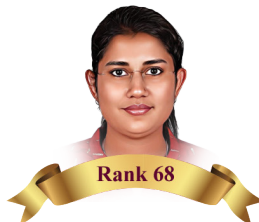
Rank 63
Dheenah Dastageer
2021



Rank 66
Akhil V Menon
2022



Rank 66
Arjun Mohan
2019



Rank 68
Kasturi Sha
2024



Rank 71
Fabi Rasheed
2024



Rank 81
Malini S
2023



Rank 92
Devi Nandana
2020



Rank 93
Annie George
2024



Rank 100
Kiran P B
2022

Preface

Fortune IAS Academy presents '**Prelims Precise**', a monthly current affairs magazine through which we make prelims current affairs revision precise and effective.

This magazine is a comprehensive resource that condenses the significant news of each month into distinct sections such as polity and governance, economic development, science & technology, among others.

Each content is organised with the why in news context followed by its explanation.

Fortune Prelims Precise is available to all Prelims cum Mains batch students (2024) as part of the course study material. **It can be purchased from Fortune IAS Academy for Rs. 50 per issue.**

Soft copies of Prelims Precise, FWD (Fortune Weekly Digest for mains) and FINDER (Fortune IAS News Daily Explainer) is available on our telegram channel for free. Please scan QR code below to join our telegram channel.



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History & Culture

46th World Heritage Committee Meeting

- The 46th session of UNESCO World Heritage Committee was held for the **first time in India**.
- The **Ministry of Culture (MoC)** and the **Archaeological Survey of India (ASI)** were the nodal agencies to host the session at Bharat Mandapam (New Delhi)
- The World Heritage Committee meets **once a year**, and consists of representatives from 21 of the States Parties to the **World Heritage Convention (1972)**
- Members of the committee are elected based on a regional distribution system by the **General Assembly of UNESCO**, which meets every two years
- Each member serves a **four-year term** and can be re-elected. **One-third (7) members retire** every two years after serving their full tenure.
- The Committee is **responsible** for implementing the World Heritage Convention, managing the World Heritage Fund, and deciding on property inscriptions on the World Heritage List.

Project PARI (Public Art of India)



- The Project PARI was initiated by the **Ministry of Culture** during the 46th World Heritage Committee Meeting in New Delhi.
- Executed by the **Lalit Kala Akademi**, the project aims to enhance Delhi's aesthetic and cultural landscape.
- Over 150 visual artists from across India contributed through traditional art forms, wall paintings, murals, sculptures, and installations.
- The art forms include -

Art Form	State
Phad, Pichhwai and Bani Thani paintings	Rajasthan
Thangka painting	Sikkim/Ladakh
Alpona art	West Bengal
Cheriyal painting	Telangana
Lanjia Saura	Odisha
Aipan	Uttarakhand
Alpana art	Tripura
Gond Art	(Madhya Pradesh)
Kalamkari	Andhra Pradesh
Warli paintings	Maharashtra

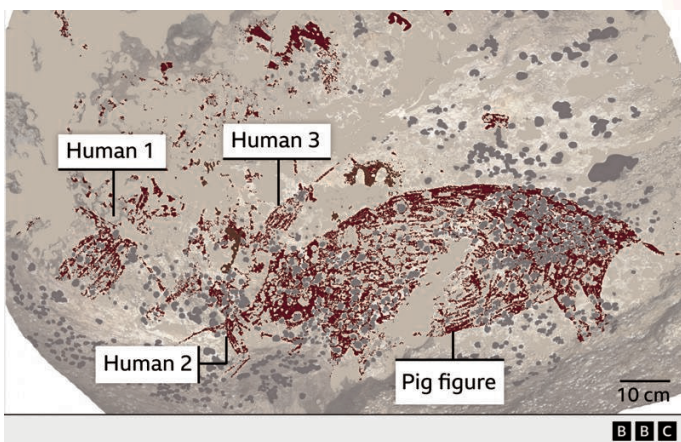
The Charaideo Maidams



- Charaideo Maidams became the **43rd property from India** inscribed on **UNESCO's World Heritage List**.
- These are 700 year old **royal burial sites of the Ahom dynasty**, which ruled over much of Assam and the North East from 1228 to 1826 AD.

- Set in the foothills of the **Patkai Ranges in eastern Assam**, it contains the remains of kings and other royals together with grave goods such as food, horses and elephants, and sometimes queens and servants.
- The Moidam is the first from the North East to be recognised as a World Heritage Site in the cultural category.
- The Ahoms adopted the **Hindu method of cremation after the 18th century** and began entombing the cremated bones and ashes in a Maidam at Charaideo.

The world's oldest cave painting



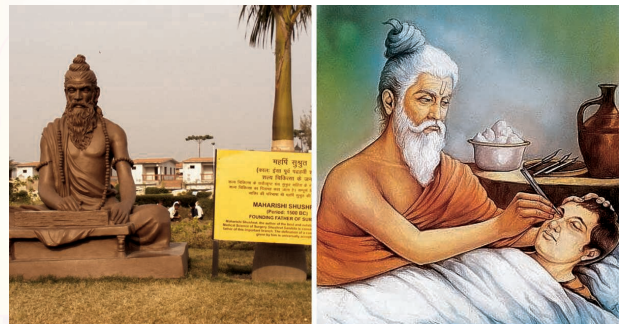
- Located in the **Leang Karampuang** cave on the **Indonesian island of Sulawesi** was created at least 51,200 years ago.
- The painting in red pigment shows a pig standing still with its mouth partly open and at least three human-like figures.
- The painting is more than **5,000 years older than the previous oldest cave art** — a painting of a wild pig, which was discovered in 2021 in Leang Tedongnge, Indonesia.
- Experts consider the **Bhimbetka paintings** in Madhya Pradesh to be the oldest cave paintings in India.

Vachana Literature

- Dr. Phakirappa Gurubasappa Halakatti**, renowned for his role in revitalising Vachana Literature, was remembered on his birth anniversary.
- Vachana Literature, meaning **“that which is spoken,”** refers to **Kannada** rhythmic compositions from the **Sharana movement**.

- These verses, typically **4–8 lines long**, are written in **simple language**, free of grammatical or literary constraints but rich in **musical** and emotional qualities.
- They draw from **everyday life** and often conclude with invocations to **Shiva**.
- Madara Chennaiah**, an 11th-century cobbler-saint, is considered the “father of Vachana poetry.”
- Guru Basavanna** led the Sharana movement, and **Dr. P.G. Halakatti**, also called **Vachana Pitamaha** (“grandfather of Vachana”) is credited with restoring Vachana literature.

Maharishi Sushruta



- The All-India Institute of Ayurveda (New Delhi) celebrated **Sushruta Jayanti (15th July)** with a live surgical demonstration.
- Sushruta, an ancient physician from **Kashi (Varanasi)**, is known as the **Father of Indian Medicine and Surgery**.
- He authored the **Sushruta Samhita** in Sanskrit, one of the Great Trilogy of Ayurvedic Medicine, alongside the **Charaka Samhita** by Maharishi Charak and **Astanga Hridaya Samhita** by Vagabhatta.
- The **Sushruta Samhita covers surgeries** like rhinoplasty and lithotomy, as well as toxicology, paediatrics, and pharmacology.
- It is considered a **compilation** of existing Ayurvedic knowledge rather than an entirely original work.

Olympic Order for Bindra

- Abhinav Bindra was awarded the Olympic Order for his **“distinguished contribution”** to the Olympic movement by the **International Olympic Committee (IOC)**.

- Bindra became the **second Indian** to receive this honour in the **gold category after Indira Gandhi in 1983**.
- He was India's **first-ever individual Olympic gold medallist** from the 2008 Beijing Games in the 10m air rifle event, receiving the Olympic Order during the IOC's 142nd Session in Paris.
- He also serves as the **vice chair of the IOC Athletes' Commission**.
- The Olympic Order, **established in 1975** in gold, silver, and bronze categories, is the IOC's highest honour.
- The IOC usually presents the award to the **chief national organisers** at the closing ceremony of each Olympic Games.



Polity & Governance

Expunction Powers in Parliament

- The recent **'selective expunction'** by **Parliament's presiding officers** has sparked tension between the Opposition and the Centre.
- **Parliament records all proceedings verbatim**, but on the **orders of the Presiding Officer**, words deemed "defamatory, indecent, unparliamentary, or undignified" are expunged, meaning removed.
- These powers are derived from **Rule 261 of the Rajya Sabha and Rules 380 and 381 of the Lok Sabha's Rules of Procedure**.
- The Lok Sabha Secretariat maintains a **list of 'unparliamentary' words**, while the Rajya Sabha's rules guide the avoidance of offensive expressions.

Speedy Trial – Constitutional Right

- The Supreme Court recently **granted bail to an undertrial prisoner** facing charges under the Unlawful Activities(Prevention) Act, **1967(UAPA)**, the anti-terror law of India.
- The SC held that **a constitutional court can grant bail despite statutory restrictions** if it finds that the **right to speedy trial** has been infringed (**irrespective of the severity of the alleged crime**).
- SC in the past had been reluctant in the past in giving bail in anti-terror laws.
- In **Hussainara Khatoun v. State of Bihar (1979)**, the SC pointed out that speedy trial is a **fundamental right** of an accused person implicit in **Article 21** of the Constitution.

National Security Council

- It has been **25 years since India** constituted the **National Security Council (NSC) in 1998** after the nuclear tests.

- **NSC** is the apex body responsible for **advising the Prime Minister** on all aspects of national security, including **defence, foreign policy, internal security, and economic security**.
- Meetings of NSC are headed by the **Prime Minister** and **National Security Advisor** acts as the Secretary
- **The National Security Council (NSC) in India operates on a three-tiered structure:**
 - **Strategic Policy Group (SPG):** This is the core decision-making body, chaired by the National Security Advisor (NSA). It includes the NITI Aayog Vice-Chairperson, Heads of Military and various secretaries.
 - **National Security Advisory Board (NSAB):** This is a larger body comprising experts and officials from various fields.
 - **National Security Council Secretariat (NSCS):** This is the administrative arm that supports the NSC

Section 125 CrPC

- The Apex Court ruled that **a divorced Muslim woman is entitled to a claim of maintenance** under Section 125 of the Code of Criminal Procedure (CrPC), 1973, against her former husband.
 - ➔ This affirms that **a parallel remedy** under a secular law **cannot be foreclosed by existing personal laws**.
- **Section 125** provides for maintenance to destitute wives, children, and parents without specifying religion.
- In contrast, **Section 3 of the Muslim Women (Protection of Rights on Divorce) Act, 1986**, limits maintenance to the iddat period only.
- This Act was introduced to counter the 1985 Shah Bano case ruling, which had allowed maintenance under Section 125. The section does **not specify anything about the woman's religion**.
- **Iddat** is a waiting period prescribed in Islamic law that a woman must observe after the dissolution of her marriage, either through divorce or the death of her husband. It is usually 3 months.

Article 341

- The Supreme Court has held that States cannot tinker with the **Scheduled Castes List notified under Article 341** of the Constitution.
 - ◆ The judgement came due to a notification issued by the Bihar government in 2015 to merge the Extremely Backward Class of Tanti-Tantwa with the Scheduled Caste of Pan/Sawasi in the Scheduled Castes List.
 - ◆ The merger would enable the **Tanti-Tantwa to claim the benefits of Scheduled Castes**.
 - ◆ SC said that any inclusion or exclusion of any caste, race or tribe or part of or group within the castes, races or tribes has to be, by **law made by the Parliament**
- **Article 341 (1) - The President** can designate certain groups as **Scheduled Castes in any State or Union territory** in consultation with the Governor.
- **Article 341 (2) - Any amendment** to the President's List has to be made **by a parliamentary law alone**, and not by any notification.

Narco coordination centre (NCORD)

- The 7th apex level meeting of NCORD was held and the **National Narcotics Helpline 'MANAS'** (Madak Padarth Nisedh Asuchna Kendra) with the number **1933** was launched.
- The NCORD mechanism was formed in 2016 **for better coordination between states and the Ministry of Home Affairs in combating drug trafficking and abuse**.
- It is designed to **facilitate better communication, cooperation, and intelligence sharing** among law enforcement and drug control agencies.
- It has an **Apex Level NCORD Committee**, which is headed by Union Home Secretary, **State Level** headed by Chief Secretaries and **District Level** Committees headed by District Magistrates.

External Cooperation Official

- A disagreement arose between the Union and the state of Kerala over the appointment of a **secretary in charge of 'External Cooperation,'** sparking a debate about the role of Indian states in foreign policy.
- **Foreign affairs** is included in the **Union List of the Indian Constitution** (7th schedule entry 10).
- The Union government usually appoints **Foreign service officers** and are encouraged to **adopt particular States and maintain continuous contacts** with the States concerned throughout their career.
- The Kerala Government explained that they chose the word '**External Cooperation**' deliberately and 'External Relations' and 'Foreign Affairs' were consciously avoided to eliminate any misunderstanding.
- An External Cooperation Official can foster cooperative relations in commercial, industrial, and cultural fields.

MyGov

- 'MyGov' platform, a vibrant forum for **participative and good governance**, celebrated its 10th anniversary.
- MyGov is part of Digital India Corporation, a **Section 8 company under the Ministry of Electronics and IT.**
- It is **Government's Citizen Engagement Platform** which collaborates with multiple Government bodies/ Ministries to engage with citizens.
- Citizens can **register on the MyGov platform** and participate in various activities such as discussions, polls, surveys, and contests.



Economy

National Indicator Framework Progress Report, 2024

- The framework released by the **Ministry of Statistics and Programme Implementation (MoSPI)** shows **Sustainable Development Goals (SDGs)** Progress at National Level.
- This **annual report** serves as a valuable tool for policymakers, planners, and other stakeholders.

Key Highlights:

- 🏠 The Number of **Self-Help Groups (SHGs)** provided **bank credit linkage** has increased from 18.32 lakh in 2015-16 to 44.15 lakh in 2023-24.
- 🎓 **Gross Enrolment Ratio in higher secondary education** has increased from 48.32 in 2015-16 to 57.60 in 2021-22.
- 🔌 The installed **renewable energy generating capacity** has **steadily increased** in value from 63.25 watts per capita in 2014-15 to 136.56 watts per capita in 2023-24.
- 💰 Percentage of **budget allocated for welfare of SCs and STs** has increased from 2.86% in 2015-16 to 6.19% in 2023-24.
- 👶 The Maternal Mortality Ratio and the Under-five mortality rate has declined.
- 🗑️ Wards with 100% **door to door waste collection** have increased from 43% in 2016 to 97% in 2024.

Project Nexus

- The **Reserve Bank of India (RBI)** joined Project Nexus, conceptualised by the Innovation Hub of the **Bank for International Settlements (BIS), Basel, Switzerland.**
- It is a **multilateral international initiative** that aims to enable instant cross-border retail payments by interlinking **domestic instant payments systems (IPSS)** into a single Nexus network.

- **India's Unified Payments Interface (UPI) and Fast Payment Systems (FPS)** of Malaysia, the Philippines, Singapore and Thailand will be interlinked through Nexus - **All 5 being the Founding members. Indonesia is an observer.**
- Connecting these IPS to each other can enable cross-border payments **within 60 seconds in most cases.**

Securities Appellate Tribunal (SAT)

- The Chief Justice of India has **advocated for more SAT benches** in view of rapid growth in the market and increased volume of financial transactions.
- SAT is a **statutory body** under **Securities and Exchange Board of India (SEBI) Act, 1992** with currently **only one bench in Mumbai** working under the **Ministry of Finance**
- It is composed of Presiding Officer, Judicial Member and Technical Member all appointed by the Central government.
- They serve a term of **5 years and are eligible for reappointment** for maximum five years (up to age of 70 years).
- SAT hears and disposes of **appeals against the orders of SEBI**, the Insurance Regulatory Development Authority of India (IRDAI), and the Pension Fund Regulatory and Development Authority (PFRDA) along with appeals against the stock exchanges and depositories.

Stablecoin

THE 4 MAJOR TYPES OF STABLECOINS



Fiat-backed



Commodity-backed



Crypto-backed



Algorithmic

- The recent volatility in the stablecoin market, from the **collapse of TerraUSD** to the depegging of **TrueUSD**, has heightened concerns about the stability and reliability of these digital assets.
- A stablecoin is a kind of **cryptocurrency with a value that is "pegged"** to another asset—often a traditional **currency like the US dollar.**

- Cryptocurrencies are considered volatile and can experience dramatic price fluctuations in a short period of time.

- Stablecoins aim to solve this uncertainty, attempting **to combine the stability of cash (by maintaining a reserve or collateral of a particular currency in cash) with the benefits of crypto technology.**

Integrated tribal development programme (ITDP) by NABARD

- National Bank for Agriculture and Rural Development (NABARD) launched **a 5 year ITDP** in the Kulathupuzha grama panchayat, **its first initiative, in Kollam, Kerala.**
- ITDP is a flagship programme based on the **'wadi' model** of tribal development.
- Projects under this programme are funded through **Tribal Development Fund**, a dedicated fund of NABARD..
- ITDP encompasses various **components** including water resource development, leadership training, sanitation and hygiene initiatives, marketing and branding training, and skill development workshops.

Wadi Model - The word "Wadi" means "small orchard" and refers to plots of one to two acres that are used for family-centric agriculture. The model is **based on the tribals' connection to trees and forests**, and addresses production, processing, and marketing of wadi produce, as well as other livelihood needs.

PLI Scheme for White Goods (PLIWG)

- Government **reopens application window** for Production Linked Incentive (PLI) Scheme for **White Goods (ACs and LED Lights)** for 90 days.
- The Scheme falls under the **Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.**
- The Scheme is to be implemented over **a seven-year period**, from FY 2021-22 to FY 2028-29.
- The Scheme shall extend incentives ranging from 4% to 6% on net incremental sales of ACs and LED lights over the sale during the base year, viz 2019-20.

- The **scheme incentivizes manufacturing of components or sub-assemblies** which are not manufactured in India presently with sufficient capacity.
- Mere re-assembly or reselling shall not be incentivised under the scheme

White Goods:

- ◆ White goods are **large household appliances** typically used for cleaning or food preservation such as dishwashers, clothes dryers, refrigerators, microwaves etc. They were originally named “white goods” because they were often finished in white enamel.

Zombie Startups

- Shutting down of **Koo**, an Indian social media company that sought to target rival X (formerly Twitter) has brought focus on Zombie startups.
- **Zombie startups** are companies without any kind of growth or evolution that simply continue to exist.
- It may have enough funds to operate but is **not generating significant revenue**.
- Lack of market-suitable products, high cost of acquiring customers, inability to transform, inefficient use of funds etc. can make a startup Zombie.

The Financial Inclusion Index (FI-Index)

- The **Reserve Bank of India's FI-Index**, capturing the extent of financial inclusion across the country, rose to 64.2 in March 2024 from 60.1 in March 2023.
- This **annual index** captures information on various aspects of financial inclusion in **a single value ranging between 0 and 100**.
- Number **0** represents **complete financial exclusion** and 100 indicates full financial inclusion.
- It has three broad parameters in calculating inclusion— **access (35%), usage (45%), and quality (20%)**.
- It is a comprehensive index incorporating details of **banking, investments, insurance, postal as well as the pension sector** in consultation with government and respective sectoral regulators.
- The FI-Index has been constructed **without any 'base year'**.

The Digital Economy Report 2024

- The Digital Economy Report was released by the **UN Trade and Development (UNCTAD)**.
- It underscores the urgent need for environmentally sustainable and inclusive digitalization strategies.

Findings:

- ★ The production and use of digital devices, data centres and information and communications technology (ICT) networks **account for an estimated 6% to 12% of global electricity use**.
- ★ A two-kilogram computer requires 800 kilograms of raw materials.
- ★ **Annual smartphone shipments have more than doubled** since 2010.
- ★ Digitalization's water consumption is growing.
 - 📄 In 2022, Google's data centres consumed more than **21 million cubic metres of water for cooling servers**.
- ★ A significant portion of digital waste created in **developed countries is sent to developing nations**.
- ★ It urges **a global shift towards a circular digital economy**, focusing on circularity by design through durable products, responsible consumption, reuse and recycling, and sustainable business models.

Margin Trading Facility (MTF)

- The National Stock Exchange (NSE) has significantly **narrowed the list of stocks eligible for collateral in margin funding**.
- SEBI introduced the **Margin Trading Facility (MTF) in 2004**.
- **MTF** is a service offered by stockbrokers that allows investors to purchase shares by paying only a portion of the total value upfront.
- **The broker covers the rest of the investment**, charging interest on the borrowed amount.
- Usually, **investors have to provide collateral** for margin trading. This collateral can be cash or securities they own.

- For instance, to buy 1,000 shares at Rs 100 each, an investor would need Rs 1 lakh.
- With MTF, investors only need to pay 30%, while the broker provides the remaining 70% at an interest rate.

Greenium

- The Economic Survey 2023-24 stated that despite securing a good rating on its green bond framework, Indian sovereign green bonds have **hardly received any 'greenium' from private investors.**
- Sovereign Green Bond** is issued by the government to raise funds for environmentally friendly projects.
- investors are often willing to accept a lower return (lower yield) on a green bond because they believe in the environmental impact of the project it funds.
- This **lower yield is beneficial for the issuer and is known as the greenium.**

Prime Minister's Package – Employment Linked Incentives

- Five key schemes and initiatives** have been announced in the Budget with an outlay of Rs. 2 lakh crore.
- Three of these (Scheme A, B and C) will be implemented through the **Employee Provident Fund Organisation (EPFO), encouraging workforce formalisation** by incentivizing both employers and employees.
- Scheme A:** Targets first-time employees in the formal sector registered with EPFO.
 - ▶ This scheme offers a **one-month wage** (up to Rs. 15,000) in three instalments.
- Scheme B:** Focuses on the **manufacturing sector** and offers benefits with respect to EPFO contributions during the **first four years of employment** of first-time employees.
 - ▶ Employees with salaries **up to Rs. 1 lakh will be eligible.**
- Scheme C:** Provides support to **employers by reimbursing Rs. 3,000 per month for two years** towards their EPFO contribution for each additional employee with a salary of up to Rs. 1 lakh per month.

- Scheme D:** A **centrally sponsored scheme** for skilling **20 lakh youth over five years**, along with upgrading **1,000 Industrial Training Institutes** to align with industry skill needs.
- Scheme E:** Offers **internship opportunities to one crore youth in 500 top companies** over the next five years, with an **internship allowance** of Rs. 5,000 per month.

Angel Tax

- The Ministry of Finance **abolished angel tax** on startup funding.
- Angel tax was introduced in 2012 **to curb possible money laundering by foreign participants**, by investing in overvalued unlisted firms in India.
- Angel tax, officially **Section 56(2) of the Income Tax Act**, **applies to unlisted companies** when they raise capital by issuing shares to investors at a price exceeding its fair market value.
- The excess amount was treated as income and taxed at **30.9%.**
- The abolition assumes significance as startups funding **dropped 60% in 2023 to \$10 Billion.**



SOCIOLOGY OPTIONAL CLASS

Our Toppers



Kasturi Sha
AIR 68, UPSC CSE 2023
Topper in First Attempt



Fabi Rasheed
AIR 71, UPSC CSE 2023
Topper in First Attempt



Oormila J S
AIR 561, UPSC CSE 2023
Topper in First Attempt



Lakshmi Menon V
AIR 477, UPSC CSE 2023



Akashy Dileep
AIR 439, UPSC CSE 2023



Thaslim
AIR 745, UPSC CSE 2023



Classes Starting on:
SEP 04TH, 2024

ADMISSIONS OPEN

+91 9495 015 888

International Relations

Colombo Process

- India chaired its **first meeting as Chair of the Colombo Process**.
- India assumed the **Chairmanship** in 2024 for a period of two years.
- Established in 2003, Colombo Process is also known as the **Regional Consultative Process on the Management of Overseas Employment and Contractual Labour for Countries of Origin in Asia**.
- It is a **non-binding regional consultative process on migration**, which facilitates **dialogue and cooperation** on labour migration governance and mobility.
- It comprises **12 South and Southeast Asian** labour-origin countries - Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam
- The Secretariat is hosted by the **International Organisation for Migration(IOM), Geneva**.

The Global Partnership on Artificial Intelligence (GPAI)

- India chaired the 6th meeting** of the GPAI Ministerial Council held at Bharat Mandapam, New Delhi.
- GPAI is an integrated partnership to advance an ambitious agenda **for implementing human-centric, safe, secure and trustworthy artificial intelligence (AI)**.
- GPAI has a Council and a Steering Committee, **supported by a Secretariat hosted by the OECD**.
- Its working groups will initially focus on four themes:
 - ▶ Responsible AI
 - ▶ Data Governance
 - ▶ the Future of Work
 - ▶ Innovation and Commercialization

- 29 member nations** of GPAI had unanimously adopted the **New Delhi Resolution** in 2023, which promised **“to position GPAI at the front and centre of shaping the future of AI”**.

On the Table

India is the current chair of Global Partnership on Artificial Intelligence (GPAI)

Countries including the **US, France, Canada, the UK, Japan, Korea, Brazil and Argentina** have come to an agreement making GPAI the apex body with a ministerial sign-off and the final negotiation set to take place on July 3

Govt of India is keen to turn GPAI into a much larger body with participation of close to 44 countries

The body is currently dominated by nations from the European Union

SIDDHARTH

Global IndiaAI Summit (2024)

- India hosted the **‘Global IndiaAI Summit’ in Bharat Mandapam, New Delhi**.
- The summit focused on advancing AI development in areas like Compute Capacity, Foundational Models, Datasets, Application Development, Future Skills, Startup Financing, and Safe AI, which are the **seven key pillars of IndiaAi Mission**.
- IndiaAi Mission has been approved by the Union Cabinet in March 2024 with the outlay of **USD 1.25 Billion**.
- A session named **Collaborative AI on Global Partnership (CAIGP)** was held: It brought together **GPAI members, AI experts, and industry representatives to identify mechanisms for overcoming the global AI divide**.
- The discussion covered India’s AgriStack:** It is an open-source **digital public infrastructure (DPI)** announced in this year’s Union Budget.
 - ✍ It will bring over six crore farmers under the **formal land registry system**.
 - ✍ Under the system, farmers’ registry is assigned a **unique digital ID**, which is **linked to their land records and Aadhaar**.
 - ✍ It will be a **repository of all farmer information**, including their identity, land records, coverage, income, insurance, loans, crop details and **revenue history**.

- ☞ It will be implemented by the **Union Ministry of Agriculture and Farmer Welfare** in collaboration with the revenue and agriculture departments of state governments.
- ☞ **Uttar Pradesh and Maharashtra** are already piloting these IDs.

Codex Alimentarius Commission(CAC)

- The **Food Safety and Standards Authority of India (FSSAI)** represented India in the 86th session of the Executive Committee of CAC (CCEXEC86).
- It was held at the **Food and Agriculture Organization (FAO) Headquarters in Rome**.
- CAC is an international body **established in 1963 by FAO and the World Health Organization (WHO)**.
- It aims to protect **consumer health** and promote fair practices in the food trade.
- The **Codex Alimentarius(CA)** is international food standards, guidelines and codes of practice that contribute to the safety, quality and fairness of this international food trade.

Forum of India-Pacific Islands Cooperation (FIPIC)

- The External Affairs Minister signed a Memorandum of Understanding (MoU) to fund four community development **projects in the Republic of Marshall Islands**.
- It was launched during PM Modi's visit to Fiji in November 2014.
- It was **established as a platform for dialogue and cooperation between India & 14 Pacific Island countries**.
- **FIPIC includes 14 of the island countries** – Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

UNGA resolution on Nuclear facilities in Ukraine

- General Assembly adopts Resolution demanding Russian Federation immediately **return full control of Zaporizhzhia Nuclear Power Plant** to Ukrainian authorities.
- It also called for **immediate cessation of the attacks** against critical energy infrastructure of Ukraine.
- The resolution was adopted by a recorded vote of 99 in favour to **9 against (Belarus, Burundi, Cuba, Democratic People's Republic of Korea, Eritrea, Mali, Nicaragua, Russian Federation, Syria)** with 60 abstentions.
- While they carry significant political weight **member states are not obligated to comply with UNGA resolutions**, as opposed to the legally binding UNSC resolutions

2nd BIMSTEC Foreign Ministers Retreat

- The **2nd Retreat of the Foreign Ministers** was held in **New Delhi**.
- Retreat refers to an informal and less structured meeting setting.
- BIMSTEC is a regional organisation founded in 1997 with the signing of the **Bangkok Declaration**.
- Originally named BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation), it was renamed BIMSTEC after Myanmar joined in 1997, and again with the inclusion of Bhutan and Nepal in February 2004.
- Its **Secretariat was established in Dhaka (2014)** following the **Third BIMSTEC Summit**.
- Initially focusing on **six sectors**—trade, technology, energy, transport, tourism, and fisheries.
- BIMSTEC **expanded its focus in 2008** to include agriculture, public health, poverty alleviation, counter-terrorism, environment, culture, people-to-people contact, and climate change.
- The first edition of the Foreign Ministers' Retreat was held in 2023 at **Bangkok, Thailand**.

UN led conference on Afghanistan

- India joined 25 countries for the third conference on Afghanistan held in Doha, Qatar.
- The conference aims to find ways to improve the lives of Afghan people under Taliban rule.
- It is the first time the Taliban are attending & Other participants include the European Union, the Organization of Islamic Cooperation (OIC), and the Shanghai Cooperation Organization (SCO).
- The UN informed that recognition is impossible as long as restrictions on women's education and employment remain in place.

India's Interests:

- ➔ Ensuring that Afghan territory is not used for sheltering terrorists or financing terrorist acts.
- ➔ Securing its investments in Afghanistan as it is working on close to 500 projects in the country spread across all 34 provinces.

The India-Mauritius Health Partnership project

- EAM Jaishankar inaugurates India's first overseas Jan Aushadhi Kendra in Mauritius.
- It aims to supply cost-effective, Made-in-India medicines to enhance public healthcare and well-being in Mauritius.
- The Mediclinic project was inaugurated at Grand Bois village in Mauritius.
 - 👉 The project will provide secondary healthcare for approximately 16,000 people living in the area.

Quadrilateral Security Dialogue(QSD)

- The Quad Foreign Ministers' meeting in Tokyo was convened with the aim of fostering a strong and prosperous Indo-Pacific.
- The Quad concept was first proposed in 2007 by Japanese Prime Minister Shinzo Abe after the 2004 Indian Ocean tsunami, with humanitarianism as its foundation.

- After being dormant for ten years due to issues from Australia about China, it was reestablished in 2017 and held its first-ever summit last year.
- It has also held "Quad-plus" gatherings with South Korea, New Zealand, and Vietnam that may indicate future regional expansion.
- Quad operates without an office or any standing decision-making body.



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Environment & Ecology

Peoples Biodiversity Register (PBR)

- The Thazhakara panchayat in Kerala recently updated its People's Biodiversity Register (PBR) as **mandated by the Biological Diversity Act (2002)**.
- PBRs **document local biodiversity**, including habitats, land races, folk varieties, domesticated animals, and micro-organisms, preserving associated knowledge.
- The Biological Diversity Rules (2004) require **Biodiversity Management Committees (BMCs)** at the local level to prepare these registers in consultation with the community.
- BMCs consist of a **Chairperson and up to six members**, with at least one-third women and 18% from SC/ST communities.

Chromium contamination

- The Kolkata bench of the National Green Tribunal has ordered the **Central Ground Water Board** to investigate **chromium contamination in Sukinda Valley, Odisha**.
- This area, **home to 97% of India's chromite deposits**, is heavily polluted, earning it the title "**Valley of Despair**."
- The **Brahmani River**, which flows through the valley, is Odisha's most polluted due to chromium exposure.

Chromium exists in **two forms**:

- ✓ **Trivalent Chromium [Cr(III)]**: Essential for glucose and lipid metabolism.
- ✓ **Hexavalent Chromium [Cr(VI)]**: Highly toxic and carcinogenic.

Navigating New Horizons Report 2024

- The **United Nations Environmental Programme (UNEP)** and the International Science Council (ISC) released "Navigating New Horizons – A Global Foresight Report on Planetary Health and Human Wellbeing."

- The report highlights **accelerating global crises**—climate change, biodiversity loss, and pollution—and warns of a looming 'polycrisis,' where these issues amplify and synchronise.

Key findings include:

- ★ **Displacement**: 1.5% of the global population, or 1 in 69 people, is forcibly displaced.
- ★ **Critical Minerals**: Demand for clean energy technologies could significantly impact biodiversity.
- ★ **AI Risks**: AI may recommend pro-escalation tactics in conflicts, and AI-driven autonomous weapons could disrupt the global environment in the next 4-6 years.
- ★ **Synthetic Biology**: AI and synthetic biology could lead to new biological weapons.
- ★ **Extreme Weather**: Events like wildfires, heatwaves, and floods cause displacement, food shortages, and eco-anxiety.

Uranium Contamination in water

- The Bhabha Atomic Research Centre (BARC) argues that **uranium concentrations up to 60 µg/l in drinking water are safe**.
- This is despite the Bureau of Indian Standards (BIS) **setting a limit of 30 µg/l in 2021**, aligning with WHO guidelines.
- BARC contends that the WHO's 30 µg/l standard is a guideline, **not a safety limit**, and criticises BIS for not conducting health impact studies before adopting it.
- BARC also notes that adhering to the BIS standard would **increase purification costs without providing additional health benefits**.

State of World's Forests Report 2024

- The report released by the **Food and Agriculture Organization (FAO)** of the United Nations has **brought both relief and concern** regarding the state of the world's forests.

Findings:

- The global forest covered about 4.1 billion hectares, which is **31% of land area**.

- The Russian Federation, Brazil, Canada, the United States of America, and China **account for 54% of the global forest area, in decreasing order.**
- 10 countries, including Australia, the Democratic Republic of Congo, Indonesia and **India**, contribute about **two-thirds of the global forest area.**
- **Brazil registered a 50% decrease** in deforestation in 2023 compared to 2022.
- **South and Southeast Asia** contributed almost **44% of the total global mangrove area.**
- Despite positive signs, it estimated about 340-370 million ha of the **earth's land area is impacted by annual fire.**
- The report also found that **forests experience threats from pests.**
- Citing the example of **pine wood nematode (a microscopic, worm-like creature)**, it said that **forests in China, Japan and the Republic of Korea** saw significant damage to native pine forests.

State of World's Mangrove 2024 Report

- The report was released by the **Global Mangrove Alliance (GMA)** on **World Mangrove Day (26 July).**
- The report assessed the **world's natural mangrove forests** spread over 1.47 lakh sq km by using **satellite data** to plot a global map of mangroves with **2020 as the baseline.**

Highlights of the report:

- 📖 The report highlights how **land-based conversion activities** are also having an impact on mangrove ecosystems.
- 📖 The Food and Agriculture Organisation found that **conversion to aquaculture, oil palm plantations, and rice cultivation** account for **up to 43% of mangrove losses** between 2000 and 2020.
- 📖 **Southeast Asia** has about **one-third of all mangroves** across the world. (Indonesia alone has **21%** of the world's mangroves.)
- 📖 This region is followed by West and Central Africa and then the Americas.
- 📖 The **Global Red List of Mangrove Ecosystems (IUCN)** shows that 18 mangrove provinces are threatened, **representing 50%** of the world's mangrove area.

📖 The report highlighted **shrimp aquaculture especially in Andhra Pradesh, West Bengal and Gujarat** as a major driver behind the loss in India.

The Global Mangrove Alliance (GMA), launched at the 2018 World Ocean Summit in Mexico, aims to unite diverse stakeholders to conserve and restore mangrove ecosystems. In 2022, the GMA revised its goals for 2030:

1. **Halt Loss:** Reduce net mangrove losses from human activities to zero.
2. **Restore Half:** Restore at least 50% of recently lost mangroves.
3. **Double Protection:** Increase secure protection of remaining mangroves from 40% to 80%.

World Soil Health Index

- **UNESCO introduced** the 'world soil health index' at the **International conference on Soils** held at Agadir, **Morocco.**
- The index will help to **standardise measures for analysing and comparing soil quality** in different regions and ecosystems.
- UNESCO states that a staggering **90% of the planet's land surface** could be degraded by 2050.
- It quoted the **World Atlas of Desertification** (released by the European Commission and UN Environment Programme), which said that **75% of soils are already degraded**, directly affecting 3.2 billion people.

Fauna of India Checklist

- **India became the first country** to prepare a **checklist of its entire fauna**, covering 1,04,561 species.
- The 'Fauna of India Checklist Portal' was also launched on the occasion of the **109th Foundation Day of the Zoological Survey of India (ZSI)** in Kolkata on the sidelines of the second **Animal Taxonomy Summit-2024.**
- It is a compilation of all animal species recorded in India since the 1750s.

- The **checklist includes** the habitat, endemism, significance, listing in IUCN red list, CITES list, Wildlife protection Act data among others.
- The **ZSI** was set up by British zoologist Thomas Nelson Annandale, in 1916, as the premier taxonomic research organisation in India based in Kolkata.

Rosewood Global Picture Report

- The **Convention on International Trade in Endangered Species (CITES)** launched the report at the **27th meeting of the CITES Plants Committee, Geneva**.
- The report outlines the Rosewood **species' characteristics**, their ecological roles, regeneration rates, and **global trade levels, both legal and illegal**.
- CITES oversees the international trade of various rosewood species, **including those in the genera Dalbergia, Afzelia, Khaya and Pterocarpus**.
 - Currently, these species are listed in **Appendix II**, indicating they are **not immediately threatened** with extinction **but could be at risk if their trade is not regulated**.
- The meeting highlighted **Pterocarpus erinaceus (African rosewood)**, **native to West Africa**, as **among the most threatened rosewood**.

CITES Appendices

Appendix I: Species are **threatened with extinction**. International commercial trade is **prohibited**

Appendix II: Species are **not currently threatened** but may become so without controlled trade. Trade requires **an export permit or re-export certificate**; no import permit is generally needed

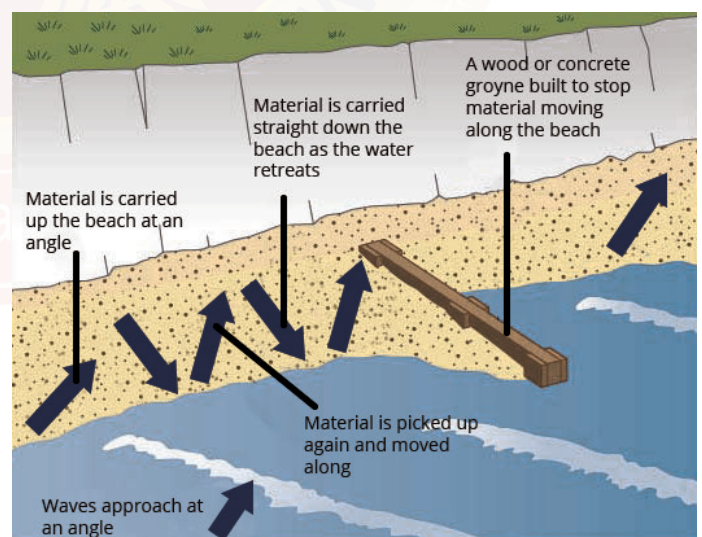
Appendix III: Species are **listed at a Party's request** to prevent unsustainable or illegal exploitation. Trade requires **appropriate permits or certificates**.

Geography

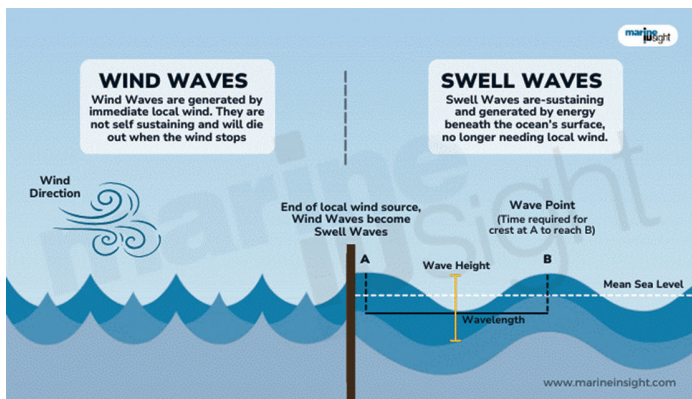
Groynes



- To address coastal erosion in **Poonthura, Trivandrum**, the Kerala irrigation department plans to construct 8 groynes at a cost of ₹17.5 crores.
- Groynes are **human-made coastal defence structures** that help limit longshore drift, reduce erosion and encourage sediment deposition.
- They are typically **narrow, straight, and perpendicular to the shoreline** and usually made of concrete, wood or stone.
- As waves hit the side of the groyne facing the longshore drift, **wave energy is reduced**, causing erosion on that side.
- The opposite, **sheltered side experiences sediment deposition**, helping to nourish the beach and trap sediment transported by longshore drift.

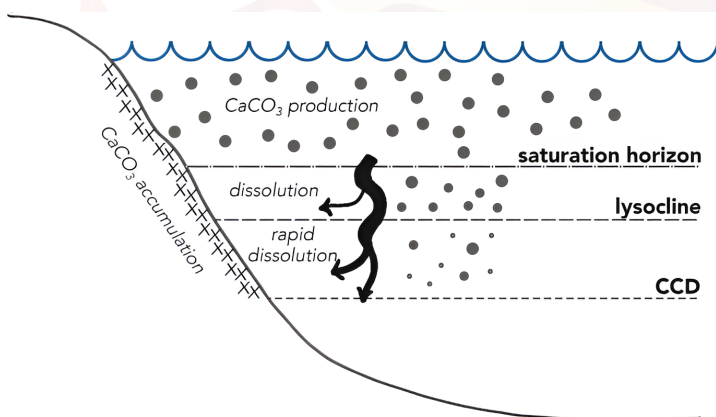


Kallakkadal/Swell Surge



- An alert was sounded in the coastal areas of Kerala and Tamil Nadu about the **possibility of 'Kallakkadal'**.
- Kallakkadal or Swell Surge is a **sudden rise in sea level along the coast**, caused by long-distance storms or atmospheric disturbances.
- These surges **originate far away from the affected area** and can lead to unexpected coastal flooding and erosion, particularly in low-lying regions.
- The phenomenon is **challenging to predict** as it's not directly linked to local weather conditions
- In 2012, the term was formally approved by the **United Nations Educational, Scientific and Cultural Organization (UNESCO)**.
- The Indian National Centre for Ocean Information Services (INCOIS) in 2020 launched an early warning system called **the Swell Surge Forecast System**.
- The new system can give a **7-day advance warning**.

Carbonate Compensation Depth (CCD)



Role of Climate Change on Length of Earth Day

- Research reveals that the **melting of the polar ice caps is causing the Earth to spin more slowly, extending the length of days** at an 'unprecedented' rate.
- As melting ice accelerates due to rising temperatures, **sea levels rise and large masses move from the polar to the equatorial regions**.
- This **redistribution affects** the Earth's rotation and results in longer days.
- This variation in the length of the day has critical repercussions not only on how we measure time, but also on GPS and other technologies that govern our modern lives.

White Paper on Glacial Geo Engineering

- Scientists at the University of Chicago and Stanford University call for **glacial geoengineering to slow sea-level rise**.

Potential interventions -

- Fibre curtains:** to prevent the collapse of **Antarctica's Thwaites and Pine Island glaciers (Antarctic)** are proposed.
 - This will reduce exposure of ice shelves to warm ocean water circulating under them.
 - These curtains could slow sea level rise from the melting of these glaciers by a factor of 10, **as they would delay the collapse of ice shelves**.
- Drilling holes through the glacier bed:** These holes could drain water from below the ice before it affects the glacier.
- Artificial freezing** of the glacier bed, **windbreaks to interrupt blowing snow** and increasing mass deposition, **cables and anchors** to delay the breakup of floating ice shelves are the other suggestions.

National Landslide Forecasting Centre(NLFC)

- NLFC was launched at **the Geological Survey of India (GSI)** campus, Salt Lake City, Kolkata along with the **Bhusanket Web Portal and Bhooskhalan Mobile App**.
- GSI is an attached office to **the Ministry of Mines**.
- The NLFC in due course will issue **early warning bulletins** for all landslide-prone states, operationalizing **the regional Landslide Early Warning System (LEWS)** nationwide by 2030.
- The web-portal and the App will enable **quick dissemination of daily landslide forecasts** and allow stakeholders to share and update spatial and temporal information on landslide occurrences.

Artificial Reefs



- Around 300 artificial reef modules were deployed off the coast of Rameshwaram.
- It aims to **enhance the marine fisheries resources** and enrich the coastal biodiversity for the **sustainable livelihood of traditional fishermen**.
- The project is supported by the **MoEFCC, Global Environment Facility**, Small Grants Programme, **UNDP** and The Energy and Resources Institute.
- Artificial reefs are human made structures which **are “aquatically recycled”** to provide habitat for fish and other aquatic organisms.
 - Made with a variety of hard, durable materials including rock, concrete, and steel.
 - **Submerged shipwrecks**, Oil and gas platforms, bridges and other offshore structures often function as artificial reefs.

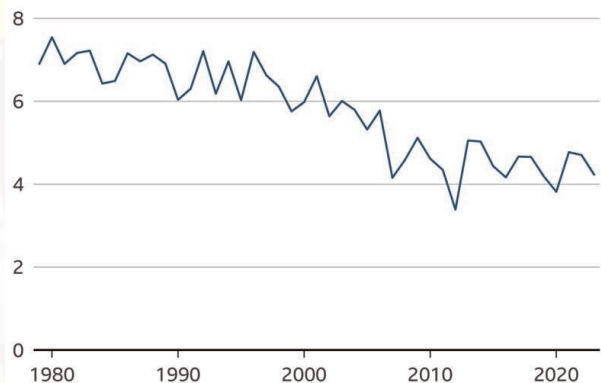
Asian Disaster Preparedness Centre (ADPC)

- India assumes the Chair of Asian Disaster Preparedness Centre (ADPC).
- It is an autonomous international organisation **for cooperation in and implementation of disaster risk reduction and building climate resilience in Asia and the Pacific**.
- It was established in **1986** as a regional disaster preparedness centre (DMC) in **Asian Institute of Technology (AIT) in Bangkok, Thailand**.
- 9 founding members: Bangladesh, Cambodia, China, **India**, Nepal, **Pakistan**, Philippines, Sri Lanka and Thailand.
- ADPC **operates as a non-profit, autonomous** and non-political in management, staffing and operations.

High intensity Wildfire in Arctic

Arctic sea-ice has been declining

Minimum sea-ice extent per year, in million sq km, 1979-2023



Five-day rolling average of sea-ice extent

Source: National Snow and Ice Data Center (NSIDC)

B B C

- Wildfires in the **Arctic's boreal forests and tundra are increasing** in frequency and intensity.
- This June saw the **third-highest carbon emissions** from these fires in two decades, at 6.8 megatonnes.
- These fires **accelerate permafrost thawing** and release ancient carbon into the atmosphere.
- With the Arctic permafrost holding about **1,700 billion metric tons of carbon**, changes in the Arctic have global repercussions.

Science & Technology

Snowblind Malware

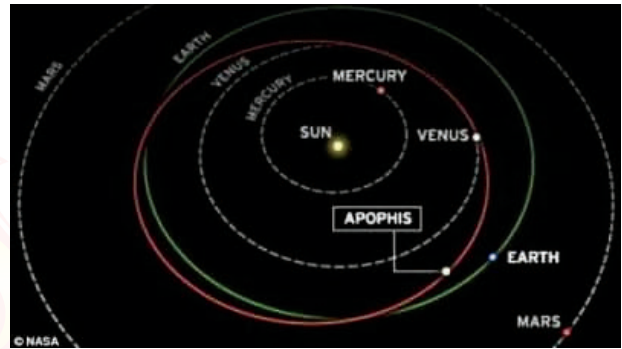
- Snowblind is a new **android banking malware** that is mostly active in **Southeast Asia**.
- Snowblind exploits a feature called '**seccomp**', which stands for '**secure computing**'.
 - It is used to check applications for signs of tampering.
 - It **injects a piece of code that loads before seccomp initialises** the anti-tampering measures.
- It can also disable **biometric and two-factor authentication**, two security features commonly used by banking apps to thwart unauthorised access.

HH70 – Superconducting Tokamak



- China's **Honghuang 70 (HH70)**, the world's first fully high-temperature superconducting tokamak, recently achieved its first plasma, successfully generating a plasma inside its core.
- Designed by **Energy Singularity**, this milestone lays the groundwork for commercial fusion energy.
- A **tokamak is a device** used to create and sustain plasma for nuclear fusion research
- A **superconducting tokamak** uses superconducting magnets (zero electrical resistance when cooled to very low temperatures) to confine plasma for nuclear fusion.

Rapid Apophis Mission for Space Safety (Ramses)



- Ramses is a **European Space Agency (ESA) mission** to study the asteroid 99942 Apophis during its close flyby of Earth using a spacecraft.
- The primary goal of the mission is to observe how the asteroid's trajectory and physical properties are affected by **Earth's gravity**.
- **Apophis** is a 370 diameter long near-Earth asteroid discovered in 2004.
- Apophis will pass **within 32,000 km of Earth** in 2029, visible to the naked eye in many regions.
- Astronomers have **confirmed no collision risk** for the next 100 years.
- **There are 3 classes of asteroids** - First is found in the asteroid belt between Mars and Jupiter. Second is the Trojan asteroid, which shares the same orbit of larger planets. Third are Near-Earth Asteroids (NEA) that pass close to earth.
- ISRO is also in **talks with ESA** and has its own **IS40M** (ISRO System for Safe and Sustainable Space Operations Management) system for protecting its space assets as well as capacity building in the area of asteroid observation and planetary defence.

Ortho-Chloro Benzylidene Malononitrile

- Security agencies seized a Karachi-bound consignment of **Ortho-Chloro Benzylidene Malononitrile (CS)**, a banned chemical, at Tamil Nadu's Kattupalli Port.
- CS, known as **tear gas**, is a riot control agent listed under the **Wassenaar Arrangement (WA)**, a 42-member export control regime established in 1996.
- India, a member since 2017, controls CS under its **SCOMET** (Special Chemicals, Organisms, Materials, Equipment and Technologie) list, requiring export authorization.

- The seizure was made under the **Customs Act, 1962** and the **Weapons of Mass Destruction Act, 2005**.
- Notably, China and Pakistan are not signatories to the WA.

Bharat Small Reactors (BSR)

- In the 2024-25 budget, the Union government announced a **partnership with the private sector to establish Bharat Small Reactors (BSRs)**.
- These **Small Modular Reactors (SMRs)**, with outputs under **300 MW** (according to the International Atomic Energy Agency), are designed for enhanced safety by virtue of having fewer operating parts.
- Research is ongoing at **Bhabha Atomic Research Centre (BARC), Mumbai**.
- A reactor at the **Madras Atomic Power Station in Kalpakkam** will be re-engineered as the first BSR, with plans to set up BSRs close to consumption sites.

Dark Oxygen

- Scientists have discovered “dark oxygen” being produced in the deep ocean, in the **Clarion-Clipperton Zone**.
- At depths of 5km, where **no sunlight can penetrate**, the oxygen appears to be produced by **naturally occurring “metallic nodules”**, which typically contain manganese and iron.
- These **nodules split seawater** - H₂O - into hydrogen and oxygen.
- The discovery of **another source of oxygen on the planet** other than photosynthesis can open the doors to revisiting how life began on Earth.
- **Mining companies have plans to collect these nodules**, which marine scientists fear could disrupt the newly discovered process.
- Mining can also damage any **marine life that depends on the oxygen** these nodules make.

The Clarion-Clipperton Zone (CCZ):

- It is an environmental management area of the Pacific Ocean, administered by the **International Seabed Authority (ISA)**.
- It spans 4.5 million square kilometres between Hawaii and Mexico.
- It is an **abyssal plain** as wide as the continental United States, embedded just beneath it are trillions of **potato-size polymetallic nodules**.

Super-Earth

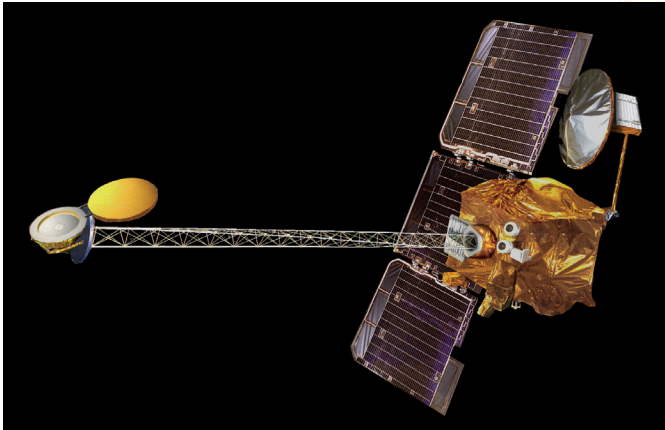
- The **James Webb Space Telescope (JWST)** indicates that the **Super-Earth exoplanet LHS 1140b** has a temperature of 68°F, potentially allowing surface liquid water.
- **LHS 1140b** is located in the **constellation Cetus**, within the Milky Way Galaxy, approximately **48 light-years away from Earth** orbiting a red dwarf star.
- A **super-Earth is a type of exoplanet** (a planet that orbits a star other than our Sun) that is about 2 to 10 times the mass of Earth.
- They are more **massive than Earth** but **lighter than ice giants** like Neptune.
- They can consist of **gas, rock, or both**.
- Larger super-Earths are also called **sub-Neptunes or mini-Neptunes**.
- There are **no Super-Earths in our Solar system**

Chandipura Virus

- A suspected outbreak of Chandipura virus has recently **claimed 15 children in Gujarat**.
- Discovered in **1965 in Chandipura village, Maharashtra**, the virus belongs to the Rhabdoviridae family, which includes the rabies-causing lyssavirus.
- **Vectors include Phlebotomine and Sargentomyia sandflies** as well as **Aedes Aegypti**, a dengue vector.
- The virus causes **encephalitis**, leading to brain inflammation, **primarily affecting children under 15**.

- There is **currently no treatment or vaccine**.
- The World Health Organization (WHO) recognized Chandipura as a potential priority disease in 2017.
- Past outbreaks in 2003-04 in central India resulted in over 300 child deaths.

Mars Odyssey Orbiter



- NASA has recently captured an epic view of the **largest volcano in our solar system named Olympus Mons** in Mars using the Mars Odyssey orbiter.
- NASA's 2001 Mars Odyssey mission created the **first global map of chemical elements and minerals that make up the Martian surface**.
- The spacecraft also holds the record for the **longest continually active mission in orbit** around a planet other than Earth.
- Mars Odyssey has been making discoveries such as **finding extensive water ice** under the surface of Mars.

Olympus Mons:

- Mons is a shield volcano and the **tallest volcano in the solar system**.
- It towers 25 kilometres above the surrounding plains and stretches across 601 km.
- It may still be an **active volcano** with the potential to erupt.
- A **shield volcano** is a type of volcano characterised by its broad, gently sloping sides and low profile since they are formed by low-viscosity lava flows.
- Olympus Mons is a very flat mountain which slopes by only 2 to 5 degrees.

Radical CAR-T Therapy

- Scientists have harnessed the immune system to **treat cancer with Car-T therapy** (chimeric antigen receptor T-cell therapy).
- This cutting-edge **treatment reprograms a patient's T-cells**—a type of white blood cell—by modifying them in a lab to better **recognize and attack cancer cells**.
- These enhanced T-cells are **then multiplied and infused back into the patient** to target and destroy cancer cells.
- The process uses **engineered retroviruses to insert a gene** for the chimeric antigen receptor into the T-cells.
- The FDA is **investigating the risk of secondary cancers**, like lymphomas or leukemias, developing after the therapy

Retrovirus

- It is a virus with Ribonucleic Acid (RNA) **as its genetic material**.
- It uses the enzyme reverse transcriptase to convert its RNA into DNA after infecting a host cell.
- Retroviruses are involved in diseases like HIV and are used in gene therapies like Car-T therapy.

Primary amoebic meningoencephalitis (PAM)

- Kerala reported three deaths due to **primary amoebic meningoencephalitis (PAM)**, caused by the “brain-eating” amoeba **Naegleria fowleri**.
- This amoeba **thrives in warm freshwater** and can, in rare cases, survive in poorly maintained pools.
- Though infections are rare, they are **nearly always fatal, with a 97% mortality rate**.
- The amoeba enters through the **nose, reaches the brain, and causes tissue destruction** and swelling.
- The infection **doesn't spread person-to-person** or by swallowing contaminated water.

- Early symptoms include **headache, fever, and nausea**, while later symptoms involve confusion, loss of balance, and hallucinations.
- **Properly chlorinated pools and using a nose clip** while swimming can prevent the disease.
- Kerala's Health Department has procured the antimicrobial drug **miltefosine** from Germany for treatment.

GOLD Satellite

- The GOLD mission found **unexpected X- and C-shaped structures** in the Earth's ionosphere.
- **NASA's Global-scale Observations of the Limb and Disk (GOLD)** mission is a geostationary satellite.
- The Satellite has been **measuring densities and temperatures** in Earth's ionosphere since its **launch in 2018**.
- GOLD's mission is to **image the boundary between Earth and space** in order to answer questions about the effects of solar and atmospheric variability of Earth's space weather.
- These unexpected structures are caused by **disturbances from space and terrestrial weather**, such as solar storms, volcanic eruptions, and extreme weather.

🚀 During these **disturbances, the crests of the ionosphere merge to form the shapes.**

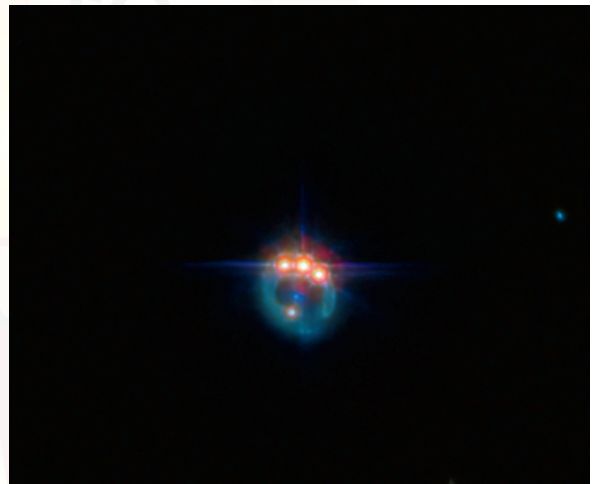
The GROWTH-India telescope



- GROWTH-India telescope captured the image of the **Near Earth Asteroid, 2011 MW1**.

- The telescope is located at **the Indian Astronomical Observatory** in Hanle, Ladakh.
- It is the country's **first fully robotic optical research telescope**.
- Its primary task is **to observe various explosive transients**, such as Near Earth Asteroids.
- It was constructed as a **joint partnership between the Indian Institute of Astrophysics and the Indian Institute of Technology Bombay**.
- The GROWTH-India telescope joins **The Himalayan Chandra Telescope (HCT)**, the gamma-ray array telescope (HAGAR), and the imaging Cherenkov telescope (MACE) at this site.

Einstein ring



- Nasa's James Webb Space Telescope (JWST) has captured a remarkable image of a "bejewelled" halo of light, known as an Einstein ring, generated by a quasar.
- It was first predicted by **Albert Einstein's theory of relativity**.
- The ring is formed due to a phenomenon called **Gravitational lensing**.
 - 🔍 Gravitational lensing is when light from a faraway celestial object, like a galaxy or quasar, passes close to a massive object, the space-time around the massive object curves, which bends the direction of the light.
 - 🔍 It **looks like the light is wrapping around the huge item** because of this curve.
- In this case of Einstein Ring, a galaxy bends the light emanating from a galaxy that is directly behind it, focusing the otherwise divergent light into a visible ring.

Miscellaneous

SEBEX 2

- India has introduced SEBEX 2, a **high-performance explosive**, developed by **Economic Explosives Limited (EEL)** under the Make in India initiative.
- It is **2.01 times more deadly** than standard TNT (Trinitrotoluene).
- SEBEX 2 utilises a **high-melting explosive (HMX)** composition.
 - ◆ This formulation significantly enhances the **lethality of warheads**, aerial bombs, artillery shells, and other munitions.
- The explosive has undergone rigorous testing and certification under the Indian Navy's **Defence Export Promotion Scheme**.

Exercise Nomadic Elephant

- The 16th edition of India-Mongolia Joint Military Exercise was held at **Foreign Training Node, Umroi (Meghalaya)**.
- It is an **annual training event** conducted alternatively in India and Mongolia.
- Last edition was conducted in Ulaanbaatar, **Mongolia in July 2023**.
- The exercise focuses on operations in the **semi-urban and mountainous terrain**.
- The Foreign Training Node in Meghalaya is a **state-of-the-art military training facility** established by the Indian Army.

Exercise MAITREE

- The 13th Joint military exercise MAITREE 2024 between Indian Army & Royal Thailand Army was held recently in Tak Province, Thailand.
- It focused on **counter-insurgency and counter-terrorism** operations in jungle and urban environments.

- The Indian Army contingent conducted **Yoga sessions**, highlighting **cultural exchange alongside military cooperation**.
- The exercise takes place **annually**.

RIMPAC 2024

- The Indian Navy's **INS Shivalik** and **P-8I aircraft** participated in **Rim of the Pacific Exercise (RIMPAC) 2024**.
- RIMPAC is the **world's largest international maritime exercise** hosted by the US Pacific Fleet in **Hawaii**.
- With 29 participating countries, RIMPAC enhances multilateral relations and operational readiness in the Indo-Pacific.
- Held biennially**, RIMPAC fosters global naval collaboration and was **established in 1971 by Australia, Canada, and the US**.

MeDevis

- The **World Health Organization (WHO)** has launched MeDevis.
- MeDevis (Priority Medical Devices Information System)** is an online platform that provides users with **access to information on medical devices**.
- MeDevis includes 2301 types of medical devices and helps to improve the **accessibility and quality of medical devices** worldwide.
- The platform is designed to **support effective decision-making** on the selection, procurement, and use of medical devices.

Exercise Pitch Black 2024

- An Indian Air Force (IAF) contingent landed at the **Base Darwin, Australia** for participating in Exercise Pitch Black 2024.
- It is a **biennial, multinational exercise** hosted by the **Royal Australian Air Force (RAAF)**.
- The name '**Pitch Black**' was derived from the emphasis on **night time flying over large unpopulated areas**.
- This edition is the **largest in the 43 year long history** of the Exercise, which includes participation

Coalition of Epidemic Preparedness Innovations (CEPI)

- India has inaugurated Asia's first "**Pre-clinical Network Facility**" under **CEPI** (Coalition for Epidemic Preparedness Innovations).
- Supported by the **Department of Biotechnology** and the **Ind-CEPI Mission**, this facility aims to advance vaccine development.
- CEPI, co-founded by India and Norway and conceived at the World Economic Forum in Davos, focuses on creating vaccines for emerging infectious diseases.
- It will initially target viruses like **MERS-CoV**, **Lassa**, and **Nipah**, which have epidemic potential.
- Ind-CEPI** is a collaborative initiative between India's DBT and CEPI to enhance vaccine development and boost India's ability to tackle emerging diseases.

Operation Nanhe Farishtey

- 84,119 Children were rescued by **Railway Protection Force (RPF)** under 'Operation Nanhe Farishtey' in the last seven years.
- The mission, launched in 2018 by RPF, is dedicated to rescue children in need of care and protection across various Indian Railway Zones.
- When a child is rescued by the RPF, they are handed over to the **District Child Welfare Committee** which hands over the child to parents.
- The Track Child Portal of the Indian Railways** contained comprehensive details about aggrieved children.

Microsoft outage- CrowdStrike

- A recent update from **CrowdStrike**, a security vendor known for its **Falcon** platform, led to a significant IT disruption.
- Falcon is designed to monitor and protect computers from threats like malware.
- However, a bug in a recent **CrowdStrike update** caused widespread crashes in millions of **Windows** systems.
- Microsoft** intervened by releasing a **Windows repair tool** to remove the faulty CrowdStrike driver, which was causing the system crashes.

DigiPIN- Digital Postal Index Number

- The Department of Posts** is advancing an initiative to establish a standardised, geo-coded addressing system in India.
- The Department collaborated with **IIT Hyderabad** for developing a **National Addressing Grid**, named as **Digital Postal Index Number (DIGIPIN)**.
- It is proposed to be **fully available in the public domain** and can be easily accessed by everyone.

MQ-9B

- The Defence Acquisition Council (DAC)** chaired by the **defence minister** reviewed the deal for **31 MQ-9B UAV** from **General Atomics of the US**.
- It is a high-altitude, long-endurance armed **Unmanned Aerial Vehicle (UAV)**.
- It is capable of **remotely controlled or autonomous flight** operations.
- The MQ-9B drone has **two variants: Sky Guardian and Sea Guardian**.
 - ★ The latter has been in operation by the Indian Navy since 2020.
- It is armed with **strike missiles, allowing it to engage and eliminate enemy targets** with high precision.

Digital Bharat Nidhi (DBN)

- The Department of Telecommunications (DoT)** released draft rules to operationalise the Digital Bharat Nidhi.
- DBN would replace the erstwhile **Universal Service Obligation Fund (USOF)**, which is a pool of funds generated by a **5% Universal Service Levy** charged upon all the telecom operators on their Adjusted Gross Revenue (AGR).
- As per the Telecom Act, contributions made by telecom companies towards the Digital Bharat Nidhi will **first be credited to the Consolidated Fund of India (CFI)**.

- The funds will be used to support universal service through promoting access to and delivery of telecommunication services in **underserved rural, remote and urban areas**.
- It also plans to **fund research and development** of telecommunication services.

Zorawar Tank

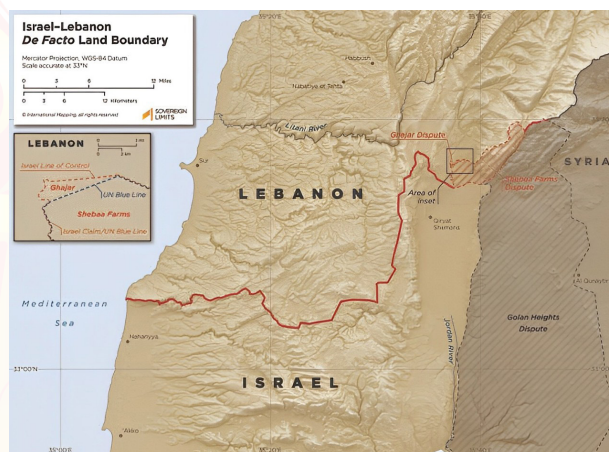
- The Defence Research & Development Organisation (DRDO), in collaboration with Larsen & Toubro (L&T) unveils **indigenous light tank Zorawar**.
- It is designed to **operate in varying terrain** and is **highly transportable** for rapid deployment to meet any operational situation.
- It is a prototype made with a **Cummins 730 hp engine from the United States**.
- The Army felt the need for a light tank to operate at 15,000 feet due to the **India-China standoff in Eastern Ladakh**, in 2020.
- Light weight, **weighing maximum 25 tonnes**, is a key requirement of the light tank which ensures it can be transported by air.

New Microcontinent

- Scientists have identified a **19–24-kilometre-thick fragment of continental crust** in the ocean off the **west coast of Greenland**.
- It has been dubbed as the **Davis Strait proto-microcontinent**.
- Researchers have found that the microcontinent formed during the **Paleogene time, 33 to 61 million years ago**.
- It exists on a **tectonic plate boundary between Canada and Greenland** which has formed **the Davis Strait**.
 - 🚢 Davis Strait connects the **Labrador Sea and Baffin Bay**.
- The tectonic evolution of Davis strait led to the formation of this unique crustal feature.
- **Proto-microcontinents** are defined as “**related regions of relatively thick continental lithosphere** separated from major continents by a zone of thinner continental lithosphere.”

Places in News

Blue line

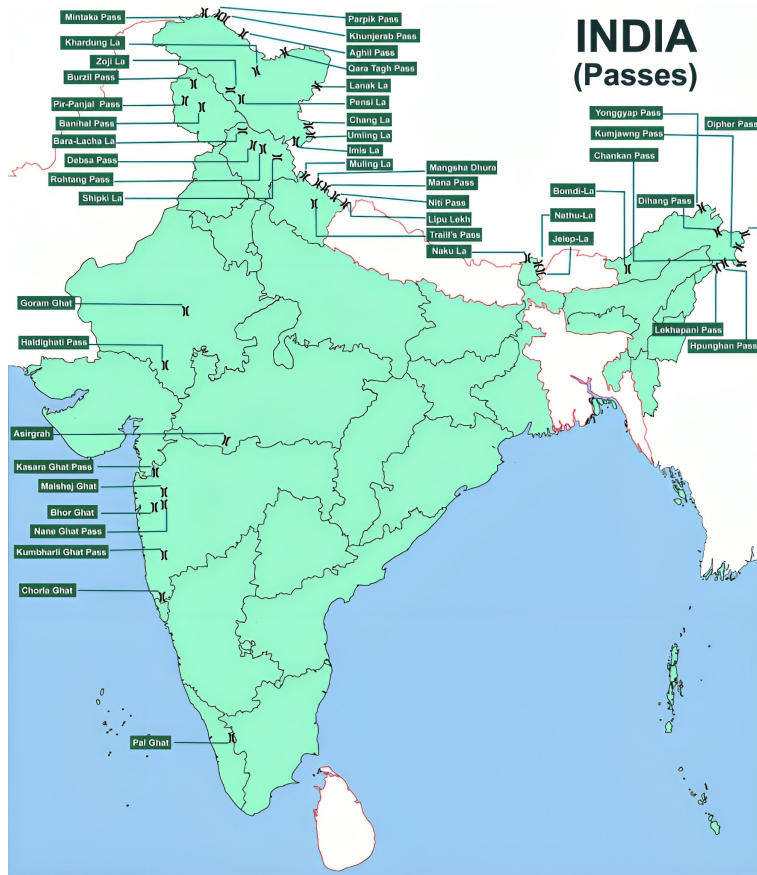


- UN warns of escalating tensions on **Lebanon-Israel 'Blue Line' frontier**.
- The line functions as a **de facto** boundary between Israel and Lebanon.
- It is not an international boundary but a **line of withdrawal**.
- It was mandated by the **United Nations in 2000** following the removal of Israeli military forces from southern Lebanon.
- It is approximately **120 kilometres (75 miles)** long and runs from the Mediterranean Sea in the west to the disputed Shebaa Farms area in the east.
- The **United Nations Interim Force in Lebanon (UNIFIL)** monitors the Blue Line to prevent hostilities between Israel and Lebanon.

Umling La

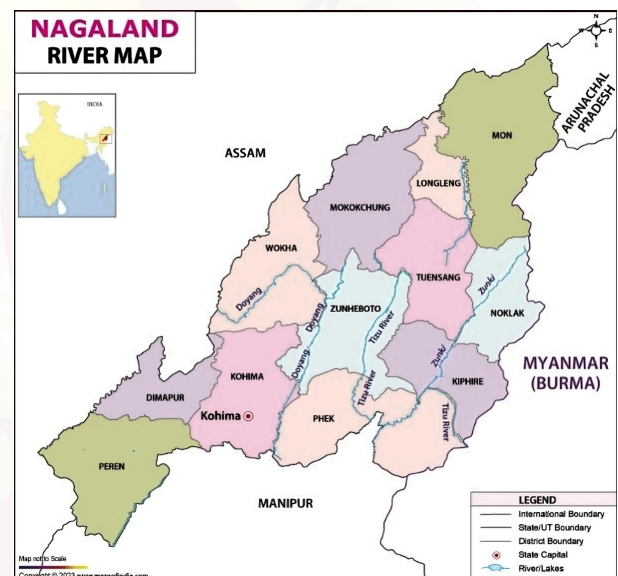
- A Bengaluru-based firm has successfully tested a UAV with 25-kg payload at the world's highest pass.
- This pass is located at an altitude of **19,300ft** in **Ladakh**.
- The road has been constructed much above the altitude of **Siachen Glacier** which is at **17,700 ft**.
- It has overtaken **Khardung La Pass (17,582 ft)** to become **the highest motorable road in the world**.

- The construction of this road has been achieved by the BRO (Border Road Organization) as part of “**Project Himank**”.

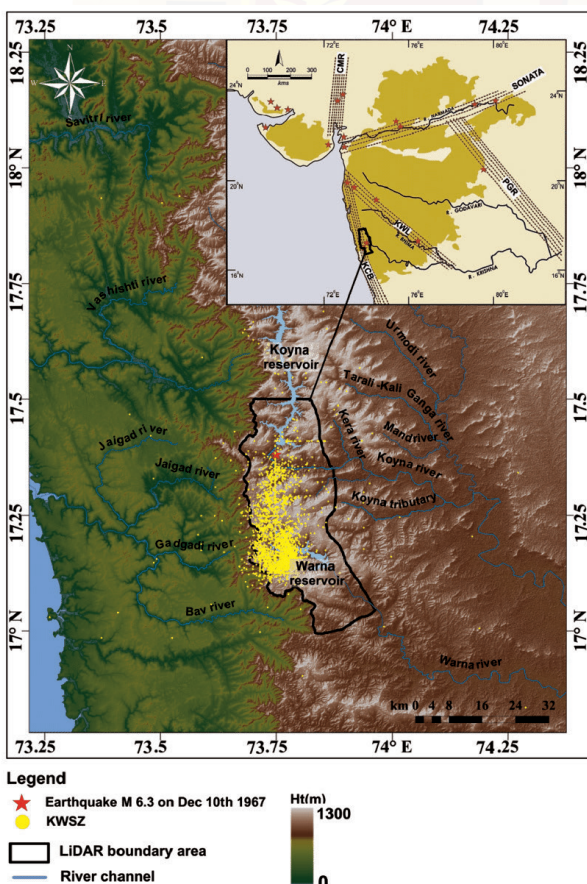


- The Borehole Geophysics Research Laboratory (BGRL) in Maharashtra, a specialised institute under the **Ministry of Earth Sciences** is mandated to execute **India's sole scientific deep-drilling programme in Koyna**.
- The region hosts the Koyna dam, a major concrete gravity dam with a height of 103 m built on the **Koyna river**.
- The reservoir of the dam forms the **Shivsagar Lake**, a huge lake of 50 km length.
- The region is one of the best worldwide examples of **reservoir-induced seismicity**.
- It has the distinction of having **generated the largest known induced earthquake (M6.3 in 1967) and persistent moderate-magnitude (>M5) events for nearly 50 years**.
- The Koyna River is a tributary of the **Krishna River** which originates in **Mahabaleshwar**.

Tizu & Zunki River



The Koyna-Warna region



- The Union Minister for Ports, Shipping, and Waterways spoke of the waterways potential of Nagaland specially the **Tizu-Zungki (National Waterways-101)**.
- Nagaland has four main rivers, namely, **Doyang, Dhansiri, Dhiku, and Tizu**.
 - The **first three** flow towards the west through the Assam plains to **join River Brahmaputra**.
- The Tizu River flows towards the east and southeast and **pours into Chindwin river (Third largest Tributary of Irrawaddy river)**.

- The **Zungki River** is the biggest tributary of **Tizu**, and starts from the north-eastern part of Changdong forest.
- The proposed **Tizu-Zungki waterway, or NW 101**, will link Nagaland with the Chindwin River, Myanmar, and beyond.

Seine river



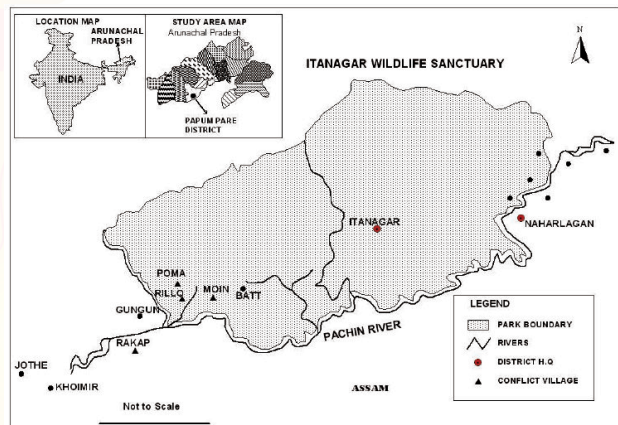
- The authorities informed that the water quality in the **Seine River** is safe enough to host some swimming events of **the Paris Olympics**.
- It is **France's second-longest river after the Loire**, covering a distance of about 775 kilometres.
- The river originates near the town of Dijon, flows through Paris, and **discharges to the English Channel**.
- The two banks of the Seine are referred to as **La Rive Gauche (the Left Bank) and La Rive Droite (the Right Bank)**.
- Both banks are listed as **UNESCO World Heritage Sites**.

Gevra and Kusmunda coal mines



- The Gevra and Kusmunda Megaprojects in **Chhattisgarh** secured **2nd and 4th Spot** in the List of **World's 10 Largest Coal Mines** released by **WorldAtlas.com**.
- They are located in the **Korba district of Chhattisgarh**.
- These two mines produce more than **100 million tons of coal annually**.
- This accounts for about **10% of India's total coal production**.

Itanagar Wildlife Sanctuary



- Researchers from the **Botanical Survey of India (BSI)** have discovered a new plant species named **Phlogacanthus sudhansusekharii** in the Itanagar Wildlife Sanctuary.
- It shares borders with the **Pam River in the east, Pachin in the south, Neorochi in the north-east and Chingke stream in the north**.
- Species like Sambar Deer (VU), Barking Deer (LC), Elephant (EN), Tiger (EN) and Leopard (VU) can be spotted in the sanctuary.
- It is also home to Great Indian Hornbill (VU), the state bird of Arunachal Pradesh as well as Kerala.

Syntrichia Caninervis



- Scientists believe the **desert moss Syntrichia caninervis** could aid future space exploration and colonisation.
- This moss, **one of the most abundant** in the world, can endure Mars-like conditions, including extreme cold, high radiation, and drought.
- It can **regenerate after being exposed to gamma rays** for up to 30 days at -196°C and survive up to five years at -80°C .
- The moss is found in dryland regions like **China's Gurbantunggut and Tengger Deserts** and the **Mojave Desert in the U.S.**

Xenophrys Apatani



Denisovan



- Researchers examined over 2,500 bones from **Baishya Karst Cave** on the Tibetan Plateau, China, revealing that Denisovans lived there 50,000 to 200,000 years ago.
- Denisovans are an extinct hominid species closely related to modern humans,
- First identified in 2010 from remains in Siberia's **Denisova Cave**, Denisovans are a recent addition to the human family tree.
- DNA evidence shows they were **related to both Neanderthals and modern humans**, with possible interbreeding among them.

Cyrtobagous Salviniae



- An exotic beetle, Cyrtobagous Salviniae, helps **completely eliminate 'Chinese Jhalar'** in 18 months **from Satpura dam in Madhya Pradesh.**
- Chinese Jhalar**, a highly detrimental aquatic fern, **had engulfed the entire Sarani reservoir** (Satpura dam) built on the **Tawa river in Madhya Pradesh.**
- Salvinia molesta, known locally as **"Chinese Jhalar"**, was first spotted in 2018 and had completely carpeted the reservoir by 2019.

Makhana



- The Bihar government has requested the Centre to declare an MSP for **makhana** (*Euryale ferox*), also known as **fox nuts** or **phool makhana**, an aquatic crop.
- This is primarily grown in Bihar's **Mithila region**, which produces 90% of India's supply.
- Makhana, part of the **Nymphaeaceae** family, is valued for its nutritional and medicinal properties.
- Declaring an MSP would support farmers and promote cultivation.
- In 2021, **Mithila Makhana** received **Geographical Indication (GI)** status, recognizing its regional importance.

Magnetotactic Bacteria (MTB)

- Researchers found **magneto fossils** in Ladakh's rock varnish layers, indicating ancient microbial activity.
- These fossils are **remnants of magnetic particles produced by magnetotactic bacteria (MTB)**, which navigate using Earth's geomagnetic field.
- MTB, **found in aquatic environments**, play key roles in the **cycling of elements** like iron, sulphur, phosphorus, carbon, and nitrogen.
- The fossils suggest the **area once had waterlogged or aquatic environments**.
- **Rock varnish** is a thin, dark coating on rocks, formed over time through microbial processes that deposit clay, iron, and manganese particles.

Senna Spectabilis



- Environmental organisations in Wayanad have urged the Forest department to maintain transparency in a project to extract Senna Spectabilis.
- **Senna Spectabilis**, introduced in Wayanad Wildlife Sanctuary between the 1970s and 1980s to promote social forestry and as **shade trees for coffee and firewood**.
- It now covers around 35% of the area, inhibiting the growth of native species.
- It is a **medium to big tree native to South and Central America**.
- It is classified as **Least Concern under the IUCN Red List**.



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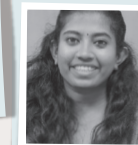
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