

Factly Weekly

Compilation

2025

**For UPSC CSE Prelims
Exam**

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Raje Raghuji Bhonsle I

News: The Maharashtra government has reclaimed the iconic sword of Maratha warrior **Raje Raghuji Bhonsle I** at an auction in London.

About Raje Raghuji Bhonsle I

- Raghuji Bhosale I (also spelt Raghoji Bhonsle) was a **Maratha ruler and military commander** born in 1695.
- He played a significant role in the **expansion of the Maratha Empire in the 18th century**, carving out the **Nagpur Kingdom** in east-central India **under Chhatrapati Shahu I**.
- He hailed from the **Hingankar Bhosale clan**, and his family had deep roots in Maratha military tradition.
- His rise started under the **mentorship of his uncle Kanhoji Bhosale**.
- Raghuji **extended his authority** over the **Berar and Gondwana regions**.
 - He led campaigns in **Bengal (1745–1755)**, and expanded Maratha rule to Odisha, Bihar, West Bengal, Uttar Pradesh, Madhya Pradesh, and Chhattisgarh.
- The Maratha warrior's strategic acumen and undeterred ambition earned him the prestigious **title of Senasahib Subha** from Chhatrapati Shahu Maharaj.

Features of his Sword



Figure 1. Source – CMO-Maharashtra

- The **basket-hilt sword** has a **European-style single-edged blade**, which is **slightly curved**, and **two fullers** — grooves or channels that run the length of the sword.
- The **spine of the sword is inlaid in gold** with an inscription in **Devanagari script**.
- The inscription reads **Shrimant Raghuji Bhosale Sena Saheb Subah Firang**, suggesting that the sword could be **ceremonial**.
- Following the **1817 Battle of Sitabuldi**, the British East India Company defeated the Nagpur Bhonsles and looted the Bhonsle treasury, including this sword.

National Security Advisory Board (NSAB)

News: Central Government has revamped the National Security Advisory Board, appointing ex-RAW chief Alok Joshi as its chairman. **National Security Advisory Board (NSAB).**



About National Security Advisory Board (NSAB)

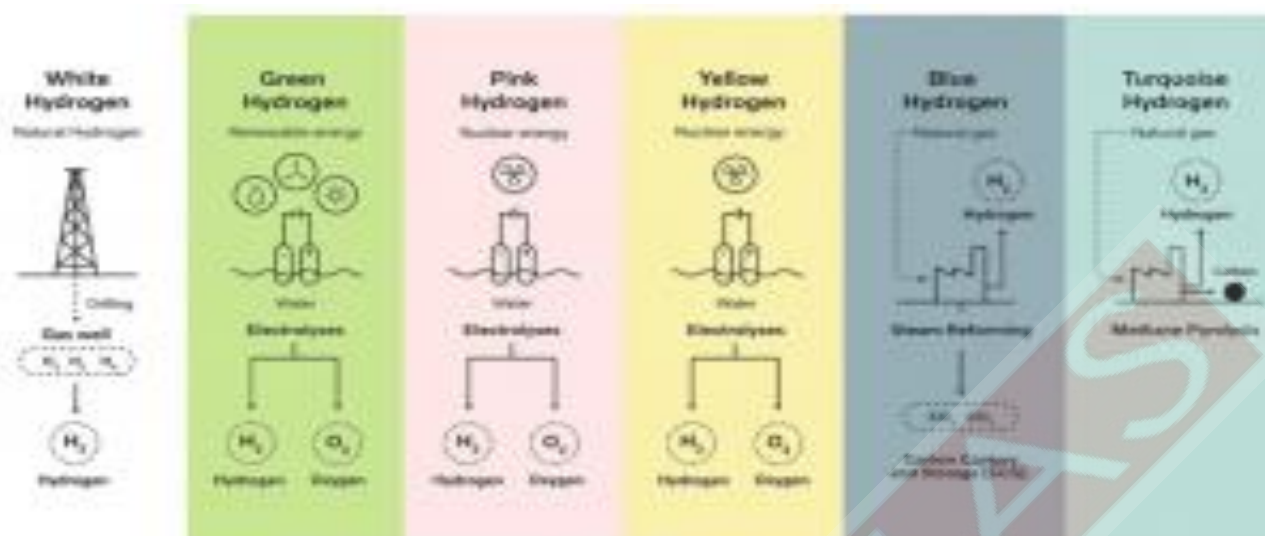
- It is an **advisory body** of eminent experts from outside the government that provides long-term strategic inputs on **national security issues**.
- It is part of the **national security management system** for India which is a **three-tier structure** consisting of a **National Security Council (NSC)**, a **Strategic Policy Group (SPG)** and a **National Security Advisory Board (NSAB)**.
- **Function:** The main function of the NSAB is to provide **long-term analysis, and policy recommendations** on national security issues to the **National Security Council**, which is **headed by the Prime Minister**.
- Its recommendations are **only advisory and non-binding**.
- **Background:** It was first established in **1998** on recommendation of a **special Task Force headed by K. C. Pant**.
 - So, it is **neither a statutory body nor a Constitutional body**.
- **Meeting:** The NSAB meets **at least once a month or more** frequently as needed.
- **Tenure:** Initially the Board was constituted for one year, but **since 2004-6**, the Board has been reconstituted **for two years**.

Natural Hydrogen

News: A growing number of sizable companies, from mining giants to energy majors, are embracing the hype for natural hydrogen.

About Natural Hydrogen

- It refers to **hydrogen gas** that is generated and **found naturally** in the earth's crust or atmosphere, rather than being produced artificially through industrial processes.
- It is also called **white/gold/geological hydrogen**, to distinguish it from **"green"** (from renewables), **"blue"** (from natural gas with carbon capture), or **"grey"** (from fossil fuels) hydrogen.



Source – Volvo Group

- **Production:** It is produced by processes such as –
 - **Serpentinisation** – It is a geological process where ultramafic rocks are altered by water and heat, transforming them into serpentinite. This process also **releases hydrogen gas**.
 - **Radiolysis of water** by radioactive rocks
 - From **organic matter at depth**.
- **Current reserves:** The total size of worldwide natural hydrogen reserves is still **poorly known** because of a **lack of concentrated exploration**. But still some of the Hydrogen reserves catalogued globally include-
 - **Australia** (Eyre Peninsula and Kangaroo Island),
 - **United States** (Kansas, Nebraska)
 - **France (Lorraine region)**
 - **Spain, Albania, Colombia, South Korea, and Canada**
 - **Mosselle region:** A massive 46-million-ton natural hydrogen reserve discovered here. It is a river valley spanning **north-eastern France, south-western Germany, and eastern Luxembourg**.
- **In India:** The natural hydrogen potential is quite **promising** because of the existence of –
 - **Favourable geological structures** like **hard rock formations** of diverse **ultramafic/mafic and basaltic** assemblages
 - **Andaman and Himalayan ophiolite** complexes
 - **Greenstone volcanic-sedimentary** sequences in cratons (Dharwar, Singhbhum)
 - **Sedimentary basis** (for example, in Vindhyan, Cuddapah, Gondwana and Chhattisgarh)
 - **Basement rocks** with fractures
 - Areas with active **hydrothermal systems** e.g. hot springs.

Green Hydrogen Certification Scheme of India

News- The Government of India has introduced the Green Hydrogen Certification Scheme of India (GHCI) under the [National Green Hydrogen Mission](#). **Green Hydrogen Certification Scheme of India.**



About Green Hydrogen Certification Scheme of India (GHCI)

- **Purpose**– It is aimed at establishing a *framework to certify green hydrogen production* and ensure *transparency, traceability, and market credibility*.
- The GHCI mandates that all green hydrogen producers—*except* those producing solely for export—must undergo a certification process to verify that their *hydrogen is produced exclusively using renewable energy sources*.
- **Ministry**: Ministry of New and Renewable Energy (MNRE)
- **Nodal agency**: Bureau of Energy Efficiency (BEE)
- The MNRE is responsible for formulating a comprehensive methodology that includes the measurement, monitoring, reporting, on-site verification, and certification of green hydrogen and its associated derivatives.
- **Scope of certification**- The certification is conducted at the project level, covering all production stages up to the compression and purification of hydrogen for transport.
 - Activities beyond the plant premises—including transportation, storage, conversion to hydrogen carriers, reconversion, and final use—are *excluded from the certification boundary*.
- **Types of Certificates**- The scheme allows for the issuance of two distinct types of certificates to green hydrogen production facilities:
 - **Concept Certificate (Voluntary)** – Issued during the design or planning stage.
 - **Facility-Level Certificate (Mandatory)** – Issued based on actual facility operations and compliance.
- **Emission Intensity Criteria** Emissions must be calculated using the official MNRE Green Hydrogen Emission Calculation Methodology.
- **Green' Certification** is conditional on meeting the average emission intensity requirements of 2 kg CO₂ eq/kg H₂ or less.

- **Certificate characteristics:**

- The green hydrogen certificate is *non-transferable and non-tradable*.
- It *cannot be used to claim any form of emission reduction credits* under carbon markets or offset mechanisms.

Special 301 Report

News- India has yet again been placed on the 'priority watch' list of the US Trade Representative (USTR) office's Special 301 Report on intellectual property rights. **Special 301 Report.**



About Special 301 Report

- **Description:** It is an *annual publication* by the *United States Trade Representative (USTR)*, mandated under the Trade Act of 1974.
- **Purpose:** The report *identifies countries* that, according to the United States, *do not provide adequate and effective protection of intellectual property rights (IPRs)* or fail to ensure fair and equitable market access for US IPR holders.
- **Categories:** Countries are classified into three categories: *Priority Foreign Country, Priority Watch List, and Watch List*.
 - Designation as a Priority Foreign Country can trigger investigations and lead to trade sanctions.
 - Countries on the Priority Watch List are considered to have serious IPR-related deficiencies that warrant heightened US scrutiny.
 - Nations with IPR concerns, but not deemed urgent, are placed on the Watch List.
- **Scope:** The report *includes both developed and developing countries*.

Key highlights from the 2025 Special 301 Report

- **Countries on Priority Watch List:** India, along with China, Indonesia, Russia, and Argentina, has been placed on the Priority Watch List in the 2025 edition of the report.
- **Primary Concerns regarding India:**
 - Ambiguity in the interpretation of the Indian Patents Act.
 - *Inadequate enforcement measures against piracy, counterfeiting, and digital content theft.*
 - *Absence of a comprehensive legal framework to safeguard trade secrets.*
 - Imposition of high customs duties on IPR-sensitive products such as Information and Communication Technology (ICT) equipment, solar energy components, and pharmaceuticals.

S8 Tension

News: New research suggests that understanding the “clumpiness” of matter, measured by Sigma-8 (S8) Tension, could unlock key insights into the universe’s structure and complexity. **S8 Tension.**



About S8 Tension

- **Sigma 8 or S8** is a **cosmological parameter** that **quantifies** the “**clumpiness**” of **matter** i.e. how much matter (including dark matter) is clustered together in the universe on a scale of about 8 mega parsecs (roughly 26 million light-years).
 - A **higher value for S8** indicates **more clustering** with a greater amount of matter clumped together, while a **lower value indicates a more uniform distribution** of matter.
- The “**S8 tension**” refers to a **persistent discrepancy** between the **values of S8** obtained from **two different types of astronomical observations**:
 - **Cosmic Microwave Background (CMB) Data:** Measurements from the early universe (like the Planck satellite) give a higher value of S8 (around 0.83).

- **Large-scale Structure and Galaxy Surveys:** Observations of the current universe, using galaxy clustering and gravitational lensing yield a lower S_8 value (around 0.76–0.78).
- These two sets of measurements do not overlap within their statistical uncertainties, meaning that **if one is correct, the other is very unlikely to be correct** by chance.
- This is similar to the well-known “Hubble tension,” but while the Hubble tension deals with the rate of cosmic expansion, the S_8 tension **concerns the distribution and clustering of matter**.
- **Importance of S_8 Tension:** If this tension cannot be explained by observational uncertainties it could mean:
 - The **Lambda Cold Dark Matter (ΛCDM) model** is **incomplete** or needs revision.
 - **Dark matter** or dark energy may **behave differently** than currently assumed.
 - **New physics** could be **involved** (e.g., interacting dark energy, modified gravity, or even time-varying fundamental constants).

Vikramaditya I of the Badami Chalukyas

News: A rare inscription dating back to the **time of Vikramaditya I of the Badami Chalukya dynasty** has been unearthed at Madapura Lake in Nyamati taluk of Davangere district. **Vikramaditya I of the Badami Chalukyas.**



About Vikramaditya I of the Badami Chalukyas

- He was the son of **Pulakeshin II**, one of the most illustrious Chalukya rulers.
- He ruled between **654 and 681 AD**.
- **Highlights of his Rule:**

- **Period of Instability:** After Pulakeshin II's death, the Chalukya Empire suffered from internal strife and external threats, particularly from the **Pallavas**, who occupied the Chalukya capital, Vatapi (Badami), for about 13 years.
- **Recapture of Vatapi:** His most significant achievement was driving the Pallavas out of Vatapi and **reclaiming the Chalukya** capital, marking a turning point in the Chalukya-Pallava rivalry.
- He consolidated the Chalukya kingdom by **plundering Kanchipuram**, the Pallava capital.
- **Titles:** He adopted grand titles such as **Maharajadhiraja** ("king of great kings"), **Satyashraya**, **Rajadhiraja**, and **Rana-rasika** ("lover of war"), reflecting his military prowess and restored sovereignty.

Vizhinjam International Seaport

News- PM Narendra Modi will formally open the Vizhinjam International Seaport in Kerala on Friday (May 2, 2025), marking a major step in putting the southern state on the global maritime map. **Vizhinjam International Seaport.**



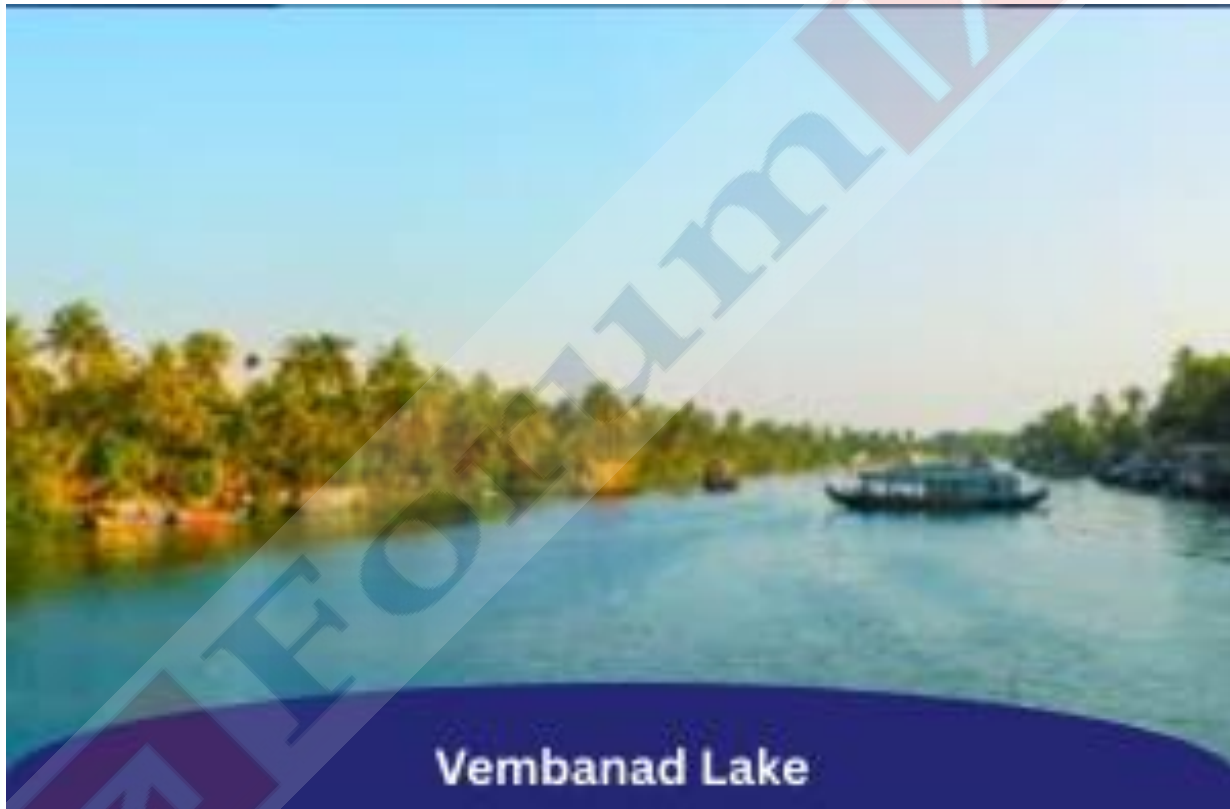
About Vizhinjam International Seaport

- It is India's first deepwater container transshipment port.
- **Location:** It is located in Vizhinjam, a coastal town in the Thiruvananthapuram District of Kerala. It is strategically positioned just 10 nautical miles from the vital east-west international shipping route connecting Europe, the Persian Gulf, and East Asia.
- **Development model:**
 - Developed under the *Landlord Model* through a *Public-Private Partnership (PPP)*.
 - Implemented on a *Design, Build, Finance, Operate, and Transfer (DBFOT)* basis.

- The project is being developed by Adani Vizhinjam Ports Private Ltd., a subsidiary of Adani Ports and SEZ Ltd. (APSEZ).
- **Key features:**
 - Primarily designed to cater to container transshipment, the port will *also handle multi-purpose and break-bulk cargo*.
 - Planned to serve as a *global bunkering hub*, supplying clean, green fuels such as hydrogen and ammonia.
 - The port will *feature approximately 30 berths*, most of which will be capable of accommodating Mother Vessels.

Vembanad Lake

News– A Rs. 188.25 crore five-year rejuvenation plan, inspired by Namami Gange, has been proposed by the Alappuzha District Administration to restore the shrinking **Vembanad lake**.



About Vembanad Lake

- **Description:**
 - It is the *longest lake in India and the largest in the state of Kerala*, stretching approximately 96.5 km in length and covering an area of around 2,033 square kilometres.
 - It spans across three districts—Alappuzha, Kottayam, and Ernakulam.
- **Local names:** The lake is known by various local names: *Vembanad Kayal*, *Vembanad Kol*, *Punnamada Lake* (in the Kuttanad region), and *Kochi Lake* (in the Kochi region).

- **Hydrological importance:** Vembanad plays a crucial role in Kerala's hydrology. It is fed by six major rivers, including the *Meenachil*, *Achankovil*, *Pamba*, and *Manimala*, and discharges into the Arabian Sea on its western side.
- **Ecological significance:**
 - It forms part of the *Vembanad-Kol Wetland*, designated a Ramsar Site in 2002 in recognition of its international ecological value.
 - The lake supports rich biodiversity and sustains the *Kumarakom Bird Sanctuary*, located along its eastern bank. This sanctuary provides a habitat for numerous resident and migratory bird species..
- **Cultural significance:** Culturally, the lake is renowned for hosting the *Nehru Trophy Snake Boat Race (Vallam Kali)*, held annually in August in the Punnamada segment.

Key Facts about Egypt

News– India and Egypt have decided to strengthen their cooperation against all forms of terrorism. The agreement was reached at the 4th Counter-Terrorism Joint Working Group meeting in Cairo.

About Egypt



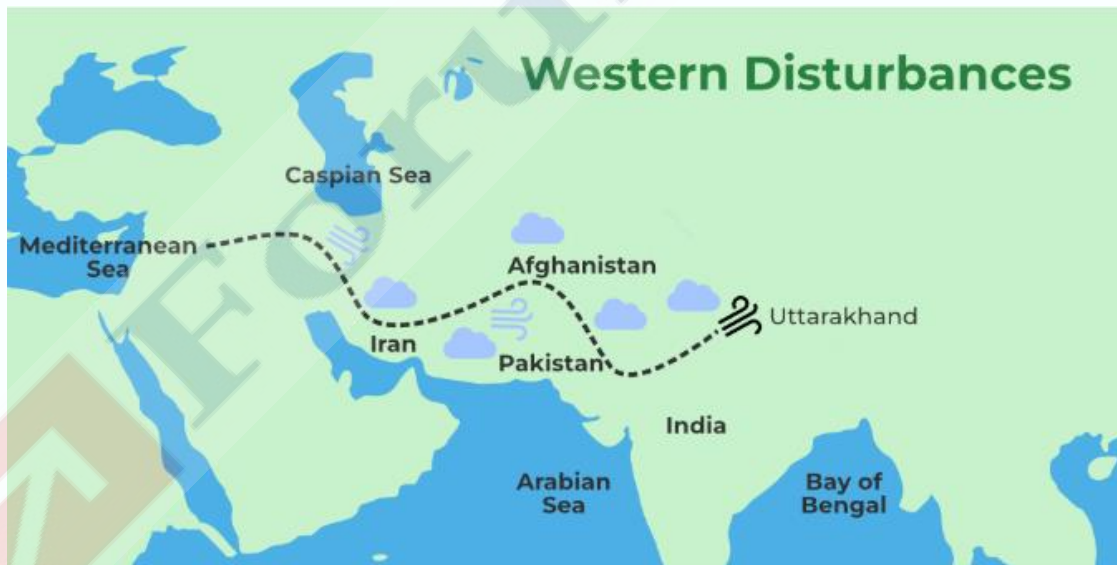
Source- WorldAtlas

- **Capital:** Cairo- The capital and largest city in Egypt.
- **Geographical location-** Egypt is located in northeastern Africa. It also extends into southwest Asia through the Sinai Peninsula, making it a transcontinental country.
- **Borders:**
 - Libya to the west
 - Sudan to the south
 - Israel and the Gaza Strip to the northeast
- **Coastlines:**
 - Mediterranean Sea to the north
 - Red Sea to the east
- **Major Mountain Ranges:** Red Sea Hills, Sinai Mountains
 - **Highest Peak:** Mount Catherine (2,642 meters)
- **Major deserts:** Western Desert (Al-'Aṣrā al-Gharbiyyah), Eastern Desert (Al-'Aṣrā al-Sharqiyyah)
- **Major river-** Nile River: The longest river in the world, flowing from south to north through Egypt.
- **Government:** Egypt is a *semi-presidential republic* with executive power shared between the President and the Prime Minister.

Western Disturbances

News- Recently, heavy rain and strong winds lashed Delhi and nearby areas, causing waterlogging and flight delays at the airport. The weather was triggered by a fresh Western Disturbance over northern India.

About Western Disturbances



Source- Copyright infringement not intended

- **Definition-** Western Disturbances are *eastward-moving, extra-tropical weather systems* that bring sudden winter rainfall to the northwestern parts of the Indian subcontinent. These disturbances originate beyond Iran and Afghanistan and travel across these countries, as well as Pakistan, before reaching India.
- **Origin and Characteristics:**

- They are *driven by low-pressure systems* that form due to the interaction of polar and tropical air masses.
- These systems *pick up moisture from the Mediterranean Sea, Black Sea, Caspian Sea, and occasionally the Arabian Sea.*
- They are embedded in the *Subtropical Westerly Jet Stream (STWJ)*, which flows from west to east at high altitudes over the Himalayas and Tibetan Plateau.
- **Seasonal occurrence:** Most active during the boreal winter months (December to March), but can also affect weather patterns during the pre-monsoon and post-monsoon periods.
- **Geographical impact:**
 - Affect weather in northwestern India, northern Pakistan, parts of Afghanistan, and Tajikistan.
 - In India, they bring winter rainfall to states like Punjab, Haryana, Rajasthan, Himachal Pradesh, Uttarakhand, and parts of Uttar Pradesh.
 - Often responsible for snowfall in the Himalayas and cold wave conditions in the plains.
- **Importance for Agriculture:**
 - *Beneficial for Rabi crops*, especially wheat, by providing much-needed winter rainfall.
 - However, excessive rainfall or untimely storms can damage standing crops and disrupt normal life

Indo-Pacific Maritime Domain Awareness (IPMDA)

News- The United States has approved a military hardware and logistics support package for India to bolster the Indo-Pacific Maritime Domain Awareness (IPMDA) initiative. **Indo-Pacific Maritime Domain Awareness (IPMDA).**



About Indo-Pacific Maritime Domain Awareness (IPMDA)

Specifications	Details
Launched by	Quad grouping (India, Australia, Japan and U.S) at the Tokyo summit in 2022
Aim	To enhance maritime security and shared domain awareness in the region via technology and training support.
Objectives	<ol style="list-style-type: none"> 1.To establish a comprehensive system for monitoring and securing maritime activities in the Indo-Pacific 2.To ensure the safety of critical sea lines of communication 3.Promote cooperation among like-minded nations in the region
Significance	<p>The initiative will help the Indo-Pacific partners to rapidly detect and respond to wide range of challenges such as dark shipping, humanitarian crisis among other.</p> <p>Note: Dark ships are vessels that switch off their Automatic Identification System (AIS)—a transponder system—to avoid detection.</p>

Genome-Edited Rice Varieties

News: Union Agriculture and Farmers Welfare Minister has announced the development of **two genome-edited rice varieties**, marking a new beginning in the field of scientific research and innovation. **Genome-Edited Rice Varieties.**



About Genome-Edited Rice Varieties

- **Developed by:** ICAR – Indian Agricultural Research Institute (IARI), New Delhi and the **Indian Rice Research Institute (IRRI)**, Hyderabad
- They are **world's first genome-edited rice varieties**, named as – **DRR Rice 100 (Kamla)** and **Pusa DST Rice 1**.

About DRR Dhan 100 Kamala

- It was developed by **ICAR-IIRR, Hyderabad**, based on **Samba Mahsuri (BPT 5204)**.
- **Objective:** Its objective is to **increase the number of grains per panicle** (450 to 500 more grains) and it matures **20 days earlier (~130 days)**.
 - The yield is **almost 25% more**, which is about **eight tonnes more per hectare**.
- Due to its **shorter duration**, it helps **save water and fertilizers** and **reduces methane** gas emissions.
- Its **stalk is strong** and does **not fall**.
- The rice **quality is similar** to the original variety, **Samba Mahsuri**.

About Pusa DST Rice 1

- It was developed from **MTU1010** and is a '**salinity tension tolerant**'
- When cultivated under areas that have **national average of salinity**, the new variety produced **66% additional yield than MTU1010**.
- Similarly, in **alkaline conditions**, the new variety gave **66% more yield** than its original and under '**salinity tension**' conditions; the yield of the new variety was **30.36%**.

Technique involved

- These new varieties were developed using **genome-editing technology** based on **CRISPR-Cas**, which makes **precise changes** in the organism's genetic material **without adding foreign DNA**.

Not a GM Crop

- Current genome technology involves **using living organisms from native crop species** (known as SDN 1 and SDN2 types of genome editing) to enhance productivity and achieve desired results, **rather than incorporating alien organisms or bacteria**.
- The two new varieties **incorporate no foreign DNA**, so they are **not** genetically modified (GM).
- Hence, these varieties are **exempt from the biosafety regulations** outlined in Rules 7-11 of the **1989 Environment (Protection) Act**.

Background

- **National Agricultural Science Fund:** In 2018, ICAR initiated **genome-editing research** to improve **two major rice varieties** – Samba Mahsuri and MTU 1010 – under the **National Agricultural Science Fund**.
- In the **2023-24 budget**, the Government of India allocated **₹500 crores** for genome editing in agricultural crops.
- ICAR has initiated **mega genome editing projects** for **horticulture crops, animals, fish, and microbes**.

ECINET- ECI Single Digit Platform

News: The **Election Commission of (ECI)** India will soon launch a single-point App ECINET for stakeholders. **ECINET- ECI Single Digit Platform**.



About ECINET- ECI Single Digit Platform

- It is a **new one-stop platform** that will **integrate and reorient** over **40** of EC's **existing mobile and web applications**.
- **Aim:** It aims to **alleviate the burden of the users** for downloading and navigating multiple Apps and remembering different logins.

Features

- It has an **aesthetic User Interface (UI)** and a simplified **User Experience (UX)** by providing a singular platform for all electoral-related activities.
- It will also **enable users to access relevant electoral data** on their desktops or smartphones.
- The **data** on ECINET will be entered solely by the **authorized EC official** to ensure that data is as accurate as possible.
 - In case of any **conflict**, the **primary data as duly filled in statutory forms** will prevail.
 - The **data provided** through ECINET will be strictly **aligned within the legal framework** established by the Representation of People Act 1950, 1951, Registration of Electoral Rules, 1960 Conduct of Election Rules, 1961 and instructions issued by ECI from time to time.
- It will **subsume existing Apps** like the Voter Helpline App, Voter Turnout App, cVIGIL, Suvidha 2.0, ESMS, Saksham and KYC App which together have clocked over **5 crore downloads**.

Satavahana Dynasty

News: The **Satavahana-era inscriptions** found in Peddapalli District of **Telangana**.



About Satavahana Dynasty

- The Satavahana dynasty was a prominent ancient Indian dynasty that ruled large parts of the **Deccan region** from the **1st century BCE to early 3rd century AD**.
- **Founder: Simuka** is regarded as the founder of the Satavahana dynasty.
- **Capital:** Pratishthana (Paithan)
- **Expanse:** Their kingdom included present-day Maharashtra, Andhra Pradesh, Telangana, Karnataka, and at times extended into Gujarat and Madhya Pradesh.
 - It was the **first dynasty** to build an empire in Daksinapatha—i.e. the southern region.
- **Rise:** The dynasty emerged **after the decline of the Mauryan Empire**, establishing its initial power base in Maharashtra before expanding into Andhra Pradesh and Karnataka.
- **Important Ruler:** They reached their zenith under the reign of **Gautamiputra Satakarni (c. 106-130 AD)**.
 - He is remembered for his successful **campaigns against the Shakas** and for restoring the kingdom's glory after a period of decline.

About the Inscriptions Found

- **Two inscriptions** are found from the **Gundaram rock shelter**—
 - **One inscription** is written in **early Brahmi script** and records that a person of the **Hāritiputra lineage** — possibly of the **Chutu dynasty** — excavated a cave for Buddhist monks and describes himself as a **friend of Kumāra Hakusiri, a Satavahana prince**.
 - **Another** inscription begins with a **trident and damaru** — auspicious **religious symbols** — and states that the land east of the **hill belonged to Siri Devarāna**.
- This is the **first known occurrence** of such religious iconography accompanying early inscriptions in South India, indicating an early association of political authority with symbolic religious elements.

Orange Economy

News: At the WAVES Summit in Mumbai, Prime Minister Narendra Modi spotlighted India's booming orange economy and urged India's youth to ride this creative wave. **Orange Economy.**



About Orange Economy

- It is also known as the **creative economy**.
- It is a **production model** where **goods and services have intellectual value** because they are the product of the **ideas and expertise** of their creators.
- The **United Nations Conference on Trade and Development (UNCTAD)** defines it as an **evolving concept** which builds on the **interplay between human creativity and ideas and intellectual property, knowledge and technology**.
 - Essentially it is the **knowledge-based economic activities** upon which the '**creative industries**' are based.
 - The **first mandate on creative economies** came from the **UNCTAD XI's outcome document** – the **Sao Paulo consensus** – in **2004**.
- **Creative Industries under Orange Economy:** The creative industries – which include **advertising, architecture, arts and crafts, design, fashion, film, video, photography, music, performing arts, publishing, research & development, software, computer games, electronic publishing, and TV/radio** – are the lifeblood of the creative economy.
- Creative industries deal with the **interplay of various subsectors** ranging from **traditional crafts, books, and visual and performing arts**, to **more technology-intensive and services-oriented fields** such as the music and film industries, television and radio broadcasting, new media and design.
- People **conceptualize and arrange this work**, the **produce and/or publish** it and **get paid** for it.
- This is **no different** from other production processes, **except** that the major input stems from original or copyrightable intellectual property (IP).
- According to **United Nations Educational, Scientific and Cultural Organization (UNESCO)**, the Orange Economy accounts for **3% of global gross domestic product (GDP)** and **30 million jobs worldwide**.

Bioswales

News- The recent downpour in Gurgaon highlighted the importance of bioswales, as areas along the Aravalli Creek showed positive results.

About Bioswales



Source- Michigan State University

- **Description:** Bioswales are *shallow, vegetated channels designed to collect, filter, and manage stormwater runoff.*
- **Primary role:** They play a crucial role in *preventing erosion, removing pollutants, and promoting groundwater recharge.*
- **Structural composition:** These systems typically consist of native vegetation, gravel, and sand, which work together to naturally filter and treat stormwater.
- **Key advantages:** Bioswales provide efficient stormwater management, help mitigate urban flooding, and contribute to biodiversity conservation.
- **Urban application:** Commonly used in urban areas, bioswales are ideal for managing runoff from roads, parking lots, and building rooftops.
- **Diverse forms:** The dimensions and design of bioswales can be tailored to local site conditions and precipitation patterns.

Key facts about Angola

News- President Droupadi Murmu recently welcomed Angolan President João Lourenço to Rashtrapati Bhavan during his inaugural State visit to India.

Key Facts about Angola



Source- Britannica

- **Location:** Angola is a country situated on the *west coast of Southern Africa*.
- **Capital:** Luanda
- **Borders:** It is bordered by Namibia to the south, the Democratic Republic of the Congo to the north, Zambia to the east, and the Atlantic Ocean to the west.
- **Major Rivers:** The *Cuango and Cuanza rivers* are vital for hydropower generation and inland water transport.
- **Highest Peak:** *Mount Moco*, located in Huambo Province, is the highest point in Angola.

Piprahwa Relics of Buddha

News: Ministry of Culture takes steps to halt auction of Piprahwa relics by Sotheby's Hong Kong. **Piprahwa relics of Buddha.**

About Piprahwa Relics of Buddha



The Guardian

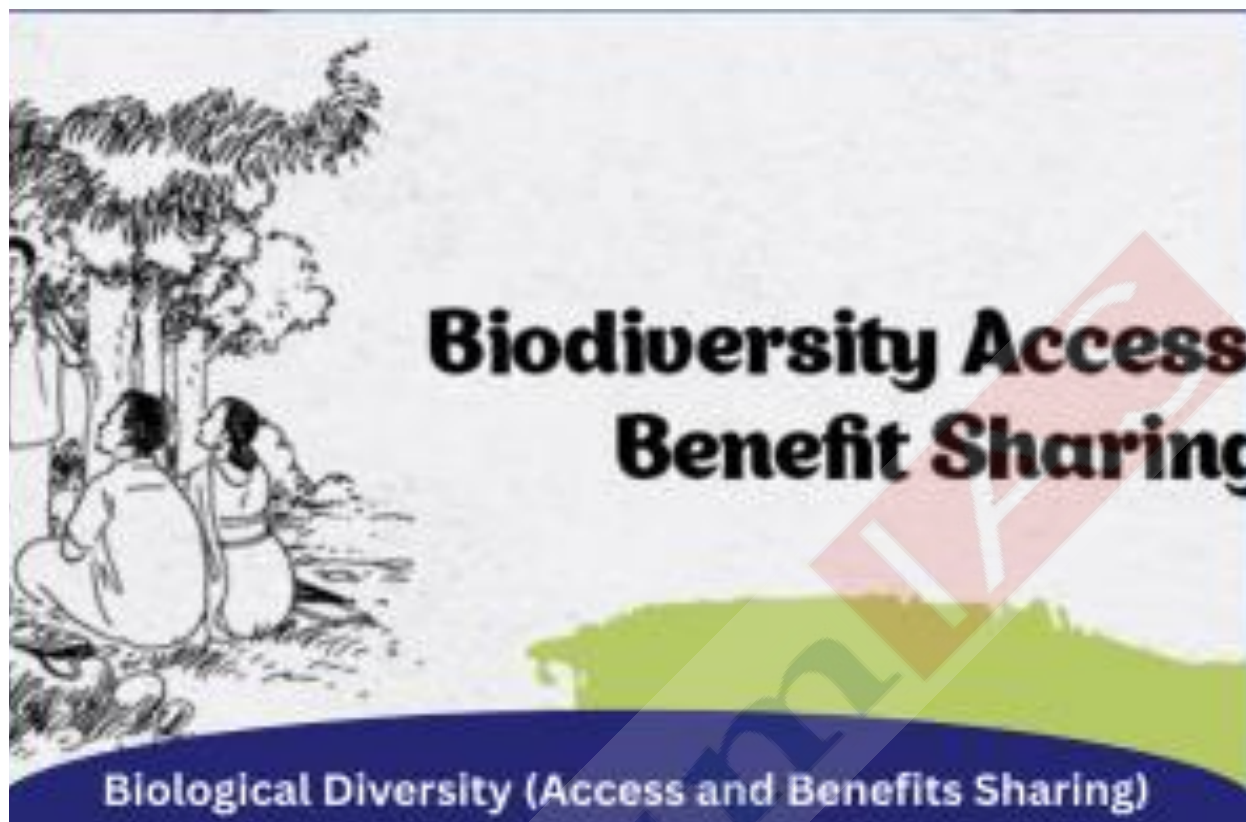
- These are the **Buddha's relics** which were excavated from the **Piprahwa Stupa in present-day Uttar Pradesh** — widely recognised as the **ancient city of Kapilavastu**, the **birthplace** of Lord Buddha.
 - **Relics** include **bone fragments, soapstone and crystal caskets**, a sandstone coffer, an offerings such as gold ornaments and gemstones.
- The Relics were excavated by a British colonial engineer and an estate manager **William Claxton Pepp** in **1898**.
- An inscription in **Brahmi script** on one of the caskets **confirms** these as relics of the Buddha, deposited by the **Sakya clan**.

Historical Background of Relics of Buddha

- At the age of 80, Buddha attained **salvation in Uttar Pradesh's Kushinagar**
- The **Mallas of Kushinagar cremated** his body with ceremonies befitting a universal king.
- His **relics from the funeral pyre were collected and divided into eight shares** to be distributed among the Ajathasatrus of Magadha, the Licchavis of Vaishali, the **Sakyas of Kapilavastu**, Mallas of Kushinagar, Bullies of Allakappa, the Mallas of Pava, the Koliyas of Ramagrama and a Brahmana of Vethadipa.
- The purpose was erecting stupas over the sacred relics.

Biological Diversity (Access and Benefits Sharing) Regulation, 2025

News: The **National Biodiversity Authority (NBA)** has released a new set of rules to manage sharing of benefit generated through the use of biological resources. **Biological Diversity (Access and Benefits Sharing) Regulation, 2025.**



About Biological Diversity (Access and Benefits Sharing) Regulation, 2025

- It is a **new set of rules to manage sharing of benefits** generated through the **use of biological resources**, including **digital sequence information or knowledge** associated with it.
- The Regulation **replaces** The **Guidelines Regulations of 2014**.
 - The **2014 Regulation did not include digital sequence information** in the ambit of genetic resources. This addition is crucial, considering they can be used instead of a physical form of biodiversity.

Key Highlights

- **Benefit sharing is linked to turnover:** The Regulation has set **slabs based on the annual turnover of the person or the industry accessing the resource**.

Turnover (in Cr. Rs.)	Amount of Benefit Sharing (% of the annual gross ex-factory sale price of the product, excluding government taxes)
Upto Rs 5 crores	Not applicable
Rs 5 crore – Rs 50 crore	0.2 %
Rs 50 crore -250 crore	0.4 %

Above Rs 250 crore

0.6 %

Note – All users who have an annual turnover of over 1 crore need to share a statement with information on the resources used per year.

- **In case of biological resources that have high conservation or economic value**, the benefit sharing shall **not be less than five per cent** of the proceeds of the auction or sale amount or the purchase price.
 - The benefit sharing component could go up to **more than 20 per cent in case of commercial use**.
 - These resources include **red sanders, sandalwood, agarwood and threatened species** notified under **Section 38 of the Biodiversity Act 2002**.
- **Digital Sequence Information:** The Regulation includes **digital sequence information** in the ambit of genetic resources.
 - A multilateral **mechanism** for sharing benefits accrued from the use of **digital sequence information** was put in place during **COP16 of the Convention on Biological Diversity in Cali, Colombia, in 2024**.
- **Exemption to cultivated medicinal plants:** The Regulation **exempts users of cultivated medicinal plants** in line with the **Biological Diversity (Amendment) Act 2023**.
 - The **Amendment Act** promoted cultivation of medicinal plants and **freed the practitioners of Indian systems of medicine from the need to take approvals** for access or share benefits.
 - In case a product contains both **cultivated and uncultivated plants**, benefits would not need to be shared on products identified by the **MoEFCC in consultation with the AYUSH**.
- **Benefit sharing by researchers:** The Regulation also puts in place, the requirements for benefit sharing by **researchers** and for those who want to **apply for intellectual property rights**.
- The Regulation also outlines **how benefits would be shared with the claimants**.
 - Of the total collected, around 10-15 per cent would be retained by the National Biodiversity Authority.

About Access and Benefit-Sharing (ABS)

- ABS refers to the **way in which genetic resources may be accessed**, and how users and providers reach agreement on the **fair and equitable sharing** of the benefits that might result from their use.
- **Origin: Article 15 of the Convention on Biological Diversity (CBD)** sets out **rules** which govern access and benefit-sharing.
- **Nagoya Protocol to CBD:** The **Nagoya Protocol, adopted in 2010** under the CBD, provides a **legally binding framework** for access to genetic resources and fair benefit-sharing.
 - In India, ABS is implemented through the **Biological Diversity Act, 2002) and ABS Regulation 2025**.

Igla-S

News: Indian Army gets new **Russian** missiles Igla-S to counter drones, choppers, jets.

About Igla-S



Source – Business Today

- The Igla-S is a **man-portable, shoulder-launched surface-to-air missile (SAM)** system that use **infrared (IR) homing to lock** onto the heat signatures of aerial targets.
- It is also known as **Very Short Range Air Defence Systems (VSHORADS)**.
- **Working:** Once fired, the missile homes in on the target's engine heat, making it **effective even against small, fast-moving threats** like drones and helicopters.
- **Range:** It is capable of engaging **targets up to 6 km away** and at **altitudes of up to 3.5 km**.
- This missile is in use by Indian Army since 1990s but this advanced variant **improves upon the earlier Igla models**— offering **better resistance to countermeasures and improved seeker accuracy**.

Stratospheric Airship Platform

News: The Defence Research and Development Organisation (DRDO) successfully carries out maiden flight trials of Stratospheric Airship Platform from Sheopur Trial site, in Madhya Pradesh.

About Stratospheric Airship Platform



Source – PIB

- It is a **high-altitude, lighter-than-air unmanned system** designed to carry instrumentation payloads to the stratosphere—approximately 17 km above the earth's surface.
- **Developed by:** Agra-based Aerial Delivery Research and Development Establishment under supervision of Defence Research and Development Organisation (DRDO)

Key Features of Platform

- It was positioned **above commercial air traffic and weather systems**.
- It was launched with an **instrumental payload** to an altitude of around **17 km**.
- It completed the **62-minute endurance flight** successfully.
- **Technology:** The Platform used **helium-filled envelopes** for buoyancy.
 - The airships **use propulsion systems**, using **electric motors**, to maintain station-keeping and navigate over specific regions.

Significance: It will deliver telecommunications, intelligence, surveillance, reconnaissance (ISR), and scientific research at a fraction of the cost of traditional satellites.

Kaleshwaram Lift Irrigation Project (KLIP)

News- The National Dam Safety Authority (NDSA) reported substantial damage to the Kaleshwaram Lift Irrigation Project (KLIP) barrages following the 2023 flooding incident.

About Kaleshwaram Lift Irrigation Project (KLIP)

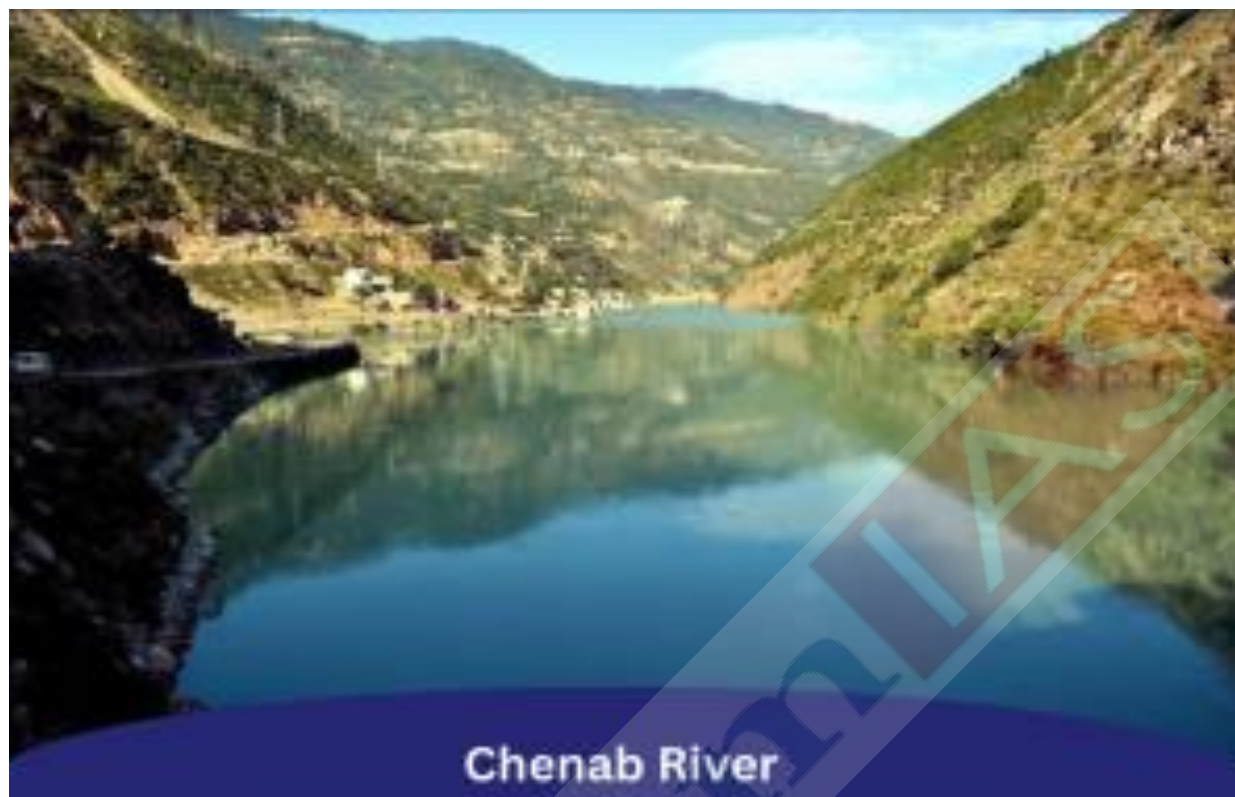


Source- Indian Express

- It is a *multi-purpose irrigation project located on the Godavari River in Kaleshwaram, Telangana.*
 - The Godavari River, often referred to as the '*Dakshin Ganga*', is the largest river in Peninsula India. It originates from the slopes of the *Western Ghats in Maharashtra's Nasik district*, eventually drains into the Bay of Bengal.
- KLIP is set to become the world's largest multi-stage lift irrigation project.
 - In lift irrigation projects, water is not transported by gravity from higher to lower elevation through canals. Instead, it is *pumped or raised using surge pools to a main delivery chamber* located at the highest point of the project, from where it is then distributed to the beneficiary fields.
- The project stretches approximately 500 km *across 13 districts* and includes a canal network spanning 1,800 km.

Chenab River

News– India has halted the flow of water from the Chenab River through the Baglihar Dam in Jammu and Kashmir. This move comes after the suspension of the Indus Waters Treaty following the Pahalgam terror attacks. **Chenab River.**



About Chenab river

Aspect	Details
Origin	It is formed by the union of two headwaters, Chandra and Bhaga. These headwaters rise in the upper Himalayas in the Lahaul region of Himachal Pradesh, India
Mouth	It flows through the Jammu region of Jammu and Kashmir, then into the plains of Punjab, Pakistan, before ultimately flowing into the Indus River.
Tributaries	Right Bank: Marusudar (largest tributary), Miyar Nalla, Bhut Nalla, Bichleri, Ans, and Kalnai Left Bank: Niru, Tawi, Neeru, and Liddrari
Major dams	1) Baglihar dam-near Ramban(Jammu & Kashmir) 2) Salal dam-near Reasi(Jammu & Kashmir) 3)Dul Hasti-near near Drabshalla in Kishtwar District 4)Pakal Dul Dam – a proposed dam on a tributary Marusadar River in Kishtwar District.

OTE-The Chenab river was called **Asikni** in the **Rigveda**.

India's Performance in Human Development Index

News- The Human Development Report 2025, published by the United Nations Development Programme (UNDP) for 2023 Human Development Index, measures global human progress across health, education, and income indicators. **India's Performance in Human Development Index.**



Key Findings of the Report

1. India's Rank and HDI Score

- India ranks **130 out of 193 countries**, improving by 3 positions.
- HDI score: Increased to 0.685 in 2023 (up from 0.676 in 2022).
- India remains in the medium human development category.

2. Regional Comparison

- Higher than: Nepal (145), Pakistan (168).
- Same as: Bangladesh.
- Lower than: Sri Lanka (89).

3. Top Global Performers- Ireland, Norway, Switzerland, Denmark, Germany rank highest.

4. Life Expectancy- Reached a record 72 years—the highest ever for India.

5. Education:

- Expected years of schooling in India : Improved to 13 years from 8.2 in 1990.
- Key educational reforms include: Right to Education Act, Samagra Shiksha Abhiyan, and NEP 2020.

6. Artificial Intelligence and Technology

- India has the highest global AI skill penetration.
- Ranks 4th in the Global AI Index among 36 countries.
- 20% of Indian AI researchers now stay in India (up from 0% in 2019).
- AI is aiding in farming, skilling, and local language access.

IMF Executive Board

News- The Appointments Committee of the Cabinet has appointed Parameswaran Iyer as the new Executive Director, representing India at IMF's Executive Board.



About IMF Executive Board

The Executive Board of the IMF is **responsible for the daily operations of the Fund**. It exercises powers given by the **Board of Governors** and those **under the IMF's Articles of Agreement**. It plays a key role in shaping IMF's policy discussions and country-specific economic assessments.

Structure and Composition

- It is **composed of 25 Directors**, who are **elected by member countries or by groups of countries, and the Managing Director, who serves as its Chairman**.
- The Board meets several times a week.
- Each member's vote is the sum of basic votes (equal for all) and quota-based votes.
- The Board operates mainly on papers prepared by IMF staff.
- Decisions are mostly by consensus, though formal votes occur.

Functions and Powers

- Conducts the Fund's daily business and oversees staff assessments of member economies.
- Discusses policy issues relevant to the global economy.
- Exercises powers delegated by the Board of Governors, except for those specifically reserved.
- Responsible for implementing decisions as per the IMF's Articles of Agreement.
- Role is operational and decision-making within delegated powers.

Pass-Through Certificates (PTCs)

News: Pass-Through Certificates (PTCs) have become a highly innovative tool in structured finance, addressing liquidity challenges while offering investors diversified exposure to a pool of underlying assets.

Pass-Through Certificates (PTCs).



About Pass-Through Certificates (PTCs)

- These are debt instruments that allow investors to earn returns from a pool of underlying loans or receivables.
- These could include assets such as home loans, auto loans, microfinance loans, commercial loans, or trade receivables.
- The loans are bundled together and sold to a Special Purpose Vehicle (SPV) or Trust, which then issues the PTCs to investors.
- These certificates give investors the right to receive payments from the future cash flows generated by the underlying loans.
- PTCs are typically preferred by High Net Worth Individuals (HNIs), Ultra-HNIs, and institutional investors who are looking for investment opportunities that offer better returns than traditional fixed-income products.

How Do PTCs Work?

- The process begins when a lender, such as a bank or non-banking financial company (NBFC), sells a pool of its loans to a Special Purpose Vehicle (SPV) or Trust. This SPV becomes the legal owner of those loans.
- The SPV then issues Pass-Through Certificates to investors, who effectively become entitled to receive the repayments made by the borrowers of those loans.
- As borrowers repay their EMIs (Equated Monthly Instalments), the SPV distributes these payments proportionately to the PTC holders.
- This entire process is known as securitisation — converting illiquid loans into marketable securities.

Key Features of Pass-Through Certificates (PTCs)

1. **Short-Term Tenure:** PTCs usually have a tenure of 6–12 months, ideal for investors seeking short-term returns without long capital lock-in.
2. **Higher Returns:** They offer better returns compared to traditional options like FDs or some debt mutual funds, for similar risk levels.

3. **Regulated & Transparent:** Governed by RBI and SEBI, PTCs ensure investor protection, transparency, and adherence to securitisation norms.
4. **Risk Diversification:** Backed by a pool of loans, PTCs spread risk across borrowers. Credit enhancements further safeguard investments.
5. **Digital & Accessible:** PTCs are issued digitally, allowing online access to documents and a seamless subscription process.

Appointment of the CBI Director

News: On May 5, Prime Minister Narendra Modi presided over the meeting of the committee tasked with appointing the Director of the Central Bureau of Investigation (CBI). **Appointment of the CBI Director.**



About the Appointment of the CBI Director

- The appointment of the Director of the Central Bureau of Investigation (CBI) is governed by the amended provisions of the Delhi Special Police Establishment (DSPE) Act, 1946, as introduced through the Lokpal and Lokayuktas Act, 2013.
- The Director is selected by a **high-level committee** consisting of the Prime Minister as the Chairperson, the Leader of the Opposition in the Lok Sabha, and the Chief Justice of India or a Judge of the Supreme Court nominated by him.
- In the absence of a recognized Leader of the Opposition, the leader of the largest opposition party in the Lok Sabha serves as a committee member.
- **Tenure:** 2 years, extendable to 3 more years (1 year at a time).

About Central Bureau of Investigation (CBI)

- The Central Bureau of Investigation (CBI) is India's premier investigative agency, primarily responsible for tackling corruption and high-profile criminal cases.
- It has developed specialized expertise in investigating conventional crimes, economic offences, and complex banking and financial frauds.
- The CBI also handles cases that involve cross-border or international dimensions, underscoring its role in upholding the integrity of India's legal and financial systems.

Palaeofires

News: Recent findings show that palaeofires played an important role in shaping Earth's history. Scientists have found evidence of these fires from about 250 million years ago in the Godavari Basin, India. **Palaeofires.**



About Palaeofires

- Palaeofires refer to **wildfires that occurred in ancient geological times**, significantly impacting vegetation, climate, and coal formation processes.
- These fires have been recorded from as early as the **Late Silurian period (approx. 443.8 to 419.2 million years ago) up to the Quaternary period (from 2.58 million years ago to present)**.
- The study spans a vast geological range from the **Late Silurian Period (443.8–419.2 million years ago)** to the **Quaternary Period (2.58 million years ago to the present)**.
- This extensive timeline highlights how wildfires have historically shaped landscapes, influenced vegetation patterns, and contributed to the development of coal deposits.
- Researchers employed a combination of advanced techniques to analyze the fossilized evidence of fire. These included **Palynofacies Analysis** to study organic particles, **Raman Spectroscopy** to examine molecular structures, **Rock-Eval Pyrolysis** to assess hydrocarbon potential, and **FTIR Spectroscopy** to identify chemical bonds in organic matter.
- The analysis identified **three main types of organic particles:**

- **Translucent Organic Matter (TrOM)**, which includes pollen and fragmented plant material.
- **Palaeofire Charcoal (PAL-CH)**, representing direct evidence of vegetation burning.
- **Oxidised Charcoal (OX-CH)**, which likely indicates charcoal that was reworked or transported after the initial fire event.
- One of the key findings of the study was the successful distinction between **in situ** (on-site) and **ex situ** (transported) charcoal.
- This distinction resolves a longstanding geological debate about whether charcoal found in coal-bearing formations originated at the site of discovery or was carried there by environmental processes.

Civil Defence under the Civil Defence Act, 1968

News: Amidst heightened tensions between India and Pakistan, the **Union Ministry of Home Affairs (MHA)** issued instructions to all states and UTs to conduct a **Civil Defence Mock Drill** on **May 7, 2025**. **Civil Defence under the Civil Defence Act, 1968.**



About Civil Defence

- Civil defence (or civil protection) refers to organized government efforts aimed at **protecting civilians** during emergencies—be it war, terrorism, natural disasters, or accidents.
- It involves key emergency operations such as: Prevention, Mitigation, Preparedness, Response, Evacuation and Recovery
- In India, civil defence units are designed to protect people and infrastructure from hostile attacks or disasters.
- It is governed by the **Civil Defence Act, 1968**, later amended in **2009** to incorporate **disaster management** functions.

- It was initially developed under the Emergency Relief Organisation (ERO) during the 1962 Indo-China War and formalized after the **1965 Indo-Pak conflict**.
- Civil defence responsibilities now cover: Traditional wartime roles, Natural and man-made disasters and assistance in emergencies before official agencies arrive
- Civil defence primarily relies on **volunteers**, with a minimal permanent staff nucleus. Volunteers come from various walks of life and undergo formal training.
- Though the Act applies nationwide, civil defence units are set up in **strategically sensitive locations**, especially areas prone to enemy attacks or hosting critical infrastructure.
- These include areas with: Nuclear plants, Refineries, Military bases and hydroelectric dams
- These drills are essential to: Enhance public awareness, train volunteers and residents in emergency protocols, evaluate coordination among civil and emergency services and ensure operational readiness of bunkers, sirens, and evacuation plans

Cashless Treatment Scheme for Road Accident Victims, 2025

News: Recently, the Ministry of Road Transport and Highways notified the Cashless Treatment of Road Accident Victims Scheme, 2025. **Cashless Treatment Scheme for Road Accident Victims, 2025.**



About Cashless Treatment of Road Accident Victims Scheme, 2025

- The scheme was launched by Ministry of Road Transport and Highways (MoRTH) based on the powers given by the Motor Vehicles Act, 1988.

Key provisions of the Scheme:

Eligibility: Any person injured in a road accident involving a motor vehicle on any road.

Coverage: ₹1.5 lakh per victim, for **up to seven days** from the accident date.

Hospital Network and Reimbursement:

- Victims must be taken to **designated hospitals** empanelled under the scheme or Ayushman Bharat PM-JAY.

- Hospitals submit claims via a **dedicated portal** managed by State Health Agencies.
- Claims may be approved or rejected with reasons documented online.

Implementing Bodies:

- **National Health Authority (NHA) and State Road Safety Councils**
- **State Health Agency** approves, rejects, or partially accepts claims with reasons

Monitoring and Oversight

- A **17-member Steering Committee** oversees implementation
- Headed by the **Road Secretary**, with members including CEO, NHA; Additional Secretary, MoRTH; Joint Secretaries from the Ministries of Home, Finance, and Health.
- Includes **six state/UT representatives (on rotation)**, a **General Insurance Council member**, and **three NGO representatives**.
- Meets **at least twice a year** and may seek reports from any implementing body

Global Space Exploration Conference (GLEX) 2025

News– India will host the 12th edition of the Global Space Exploration Conference (GLEX 2025) in New Delhi from 7 to 9 May 2025. **Global Space Exploration Conference (GLEX) 2025.**



About the Global Space Exploration Conference (GLEX) 2025

- GLEX 2025 is **themed “Reaching New Worlds: A Space Exploration Renaissance,”** focusing on innovation, global cooperation, and future space missions.
- It is jointly **organised by:** the International Astronautical Federation (IAF), ISRO (as host), and Astronautical Society of India (ASI) (as co-host).

- **GLEX 2025 is designed to:**
 - Share latest programme updates, technologies, and policy insights.
 - Encourage international collaboration in space science and exploration.
 - Reflect on developments since GLEX 2021 and chart a global roadmap for the future.
 - It brings together engineers, scientists, educators, entrepreneurs, and policymakers for productive dialogue and partnership-building.

International Astronautical Federation (IAF)

- It is a **global space advocacy body with over 500 members from 78 countries**, including major space agencies, private companies, universities, and research institutions.
- It was founded in 1951.
- With the motto “Connecting @ll Space People” and the vision of “A space-faring world cooperating for the benefit of humanity,” the IAF promotes international cooperation in space research, policy, and exploration.
- The IAF organizes the Global Space Exploration Conference (GLEX) series, which serves as a platform for sharing technical, programmatic, and policy-level insights and for fostering collaborative space missions across countries.