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EARTHQUAKE IN AFGHANISTAN

Context

- The recent earthquake in Afghanistan, with a 6.0 magnitude, resulted in over 800 deaths and 2,000 injuries due to shallow depth and poor building structures.

What is an Earthquake?

- An earthquake is the shaking of the ground caused by movement beneath the earth's surface when **two blocks slip past each other** along a fault.
- This sudden movement **releases stored elastic strain energy** in the form of seismic waves, which causes ground shaking.
- The location below the earth's surface where the earthquake starts is called the **hypocenter**, and the location directly above it on the surface of the earth is called the **epicenter**.
- Earthquakes are measured** using the **Richter scale** for magnitude and the **Mercalli scale** for intensity based on visible damage.

Reasons for Earthquake in Afghanistan

- The Himalaya and Hindu Kush mountains**, and their foothills, where the impacted area in Afghanistan is located, are **seismically active** because of the ongoing **friction** between the **Eurasian and Indian tectonic plates**.

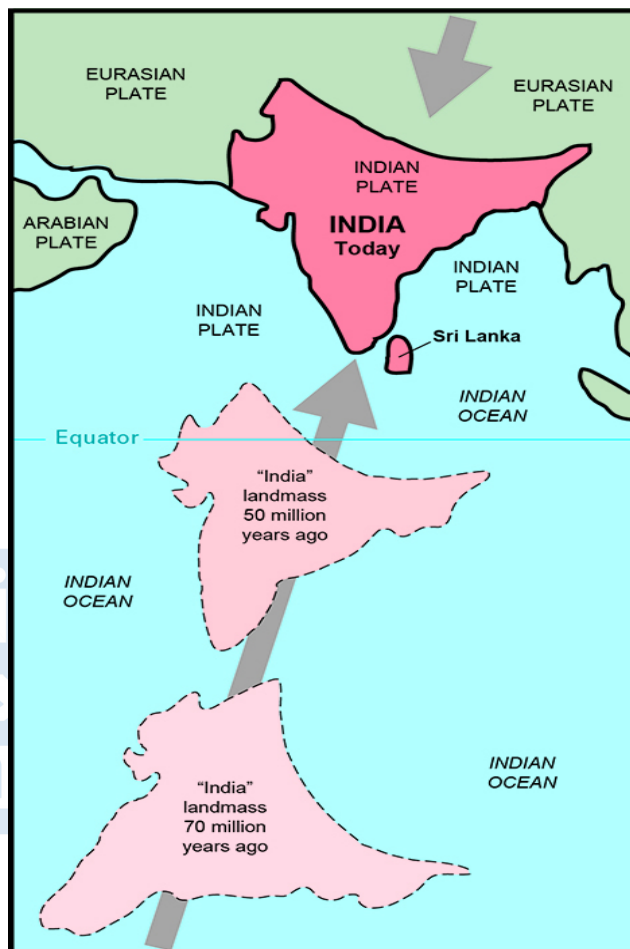


- The northward movement of the Indian Plate (approx. 5 cm per year) exerts immense pressure, creating multiple **fault lines across Afghanistan, Pakistan, and northern India**.

- The recent quake's epicenter was **shallow**, approximately **8 km deep**, which amplified the surface impact.

Impact of earthquakes

- Earthquakes cause large-scale casualties** due to collapsing buildings, landslides, tsunamis, and fires triggered by shaking.



Displacement of people, loss of community structures, and psychological trauma are common consequences.

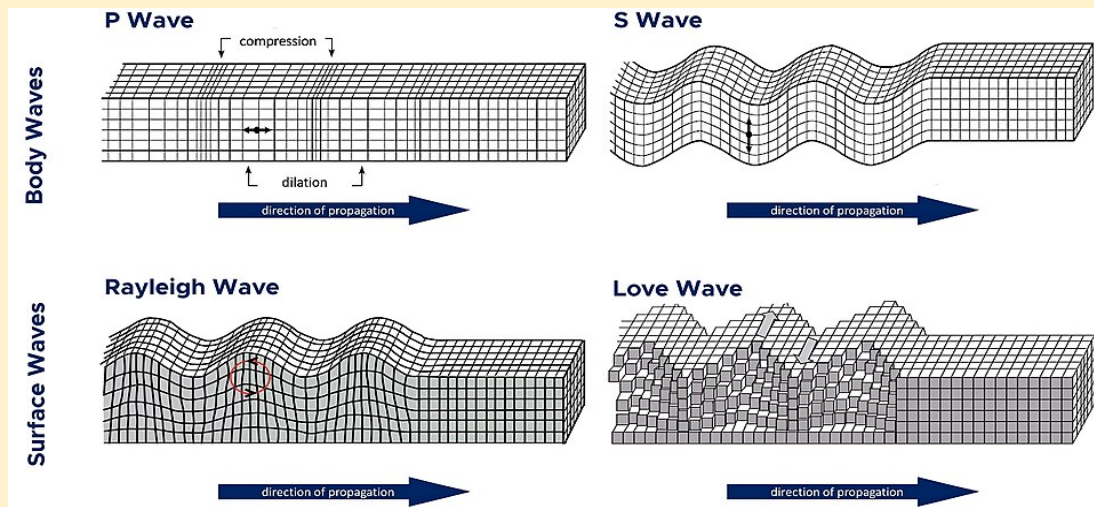
- In the case of Afghanistan** the quake struck at a shallow depth, intensifying ground shaking and damage.
 - Fragile Construction:** Use of mud-brick and stone in rural areas without engineering standards made buildings collapse-prone.

Seismic Waves

- Seismic waves are **energy waves generated by an earthquake** that travels through the Earth's layers, causing ground shaking.
- They are mainly classified into two types: **body waves and surface waves**.
 - Body Waves:** These waves travel through the interior of the Earth. They are faster and arrive before surface waves during an earthquake.
 - Surface waves** travel along the Earth's surface and are slower than body waves but cause the most damage due to their larger amplitude.

Types of Body Waves

- **P-Waves (Primary Waves):** They are the fastest seismic waves and the first to be recorded by seismographs. They move in a compressional or longitudinal manner.
 - ♦ P-waves can travel through solids, liquids, and gases.
- **S-Waves (Secondary Waves):** They move in a transverse manner, where particles move perpendicular to the wave's direction of propagation.
 - ♦ S-waves can travel only through solids, as liquids and gases do not support shear stress.



Source: DTE

WHY SOME RIVERS STAY SINGLE WHILE OTHERS SPLIT?

Context

- Researchers at the University of California, analysed 36 years of satellite data across 84 rivers worldwide to identify why some rivers maintain a single-thread channel, while others develop into braided or multi-thread systems.

Fluvial Processes and Channel Types

- **Rivers are broadly classified** as single-thread or multi-thread (braided/ anastomosing).
- **In a single-thread river**, lateral **erosion of one bank** is roughly **matched** by **sediment deposition** on the opposite bank.
 - ♦ This balance keeps the channel width constant and lets the river meander across its floodplain.
- **Multi-threaded rivers** occur where **bank erosion exceeds deposition**.
 - ♦ The extra sediment eroded from the banks accumulates mid-channel as bars and islands, forcing the flow to **split into multiple shallow threads**.

Factors influencing erosion and deposition balance

- **Slope and discharge:** Steeper slopes and high flows increase stream power, promoting bank

erosion. Multi-thread channels “favour higher water discharge, coarser sediment, and steeper slopes”

- ♦ Many Himalayan and volcanic rivers are braided for these reasons.
- **Sediment size and load:** Rivers carrying a lot of coarse sediment (gravel, sand) tend to overload their channels and deposit bars, triggering braiding.
- **Vegetation and bank material:** Stable, vegetated banks **resist erosion** and encourage single channels.
- **Human interventions:** Dams, embankments and channelization **constrain a braided river into one thread**. In fact, many rivers that are single-thread today were braided before human interference

Examples of river braiding

- **Amazon River (South America):** Mostly **single-threaded** due to fine sediment and strong bank vegetation.
- **Mississippi River (USA):** Meandering single channel, controlled by fine sediment and engineering works.
- **Indian rivers:**
 - ♦ **Ganga in Plains:** Single-thread with meandering, due to fine alluvium and flat topography.

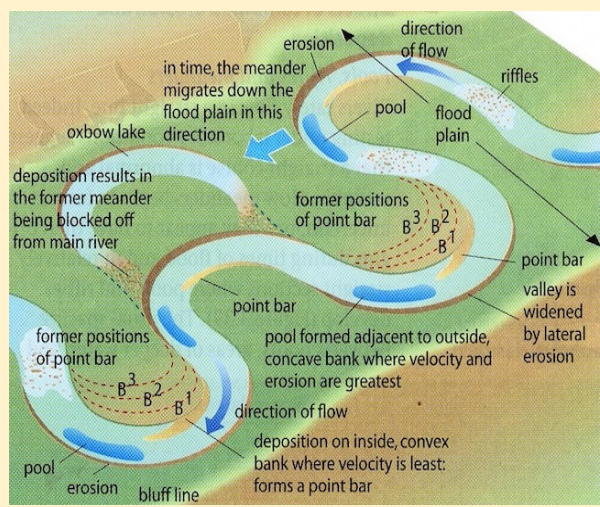
- ♦ **Brahmaputra in Assam:** Multi-thread braided system, leading to frequent floods and erosion.
- ♦ **Kosi River (Bihar):** Known as the “Sorrow of Bihar” because its unstable, sediment-heavy channels keep shifting.

Significance of the Study

- The study helps **predict flood risks** in braided river regions, providing insights for disaster management, especially in flood-prone states like Assam and Bihar.
- ♦ **Braided rivers** constantly **shuffle their channels**, changing course across the floodplain. This makes them **dynamic and unpredictable**.
- It is useful in **river engineering projects** such as dams, barrages, and embankments.
- It assists in **environmental conservation**, since river splitting affects wetlands, fisheries, and livelihoods.

What are Meanders?

- Meanders are large bends or curves in the **middle and lower course** of a river, formed due to both erosion and deposition processes.
- A meander is formed when the **water flow velocity diminishes in the river**, reducing its ability to cut downwards. Instead, it begins to erode laterally (sideways).
 - ♦ **On the outer concave bank**, the river's current is stronger, causing erosion.
 - ♦ **On the inner convex bank**, the current is weaker, leading to deposition of sediments (point bars).
- This combination of erosion and deposition creates a winding channel, forming meanders.



Source: TH

SHANGHAI COOPERATION ORGANISATION (SCO) SUMMIT 2025, TIANJIN

In News

- The **Shanghai Cooperation Organisation (SCO)** held its annual Heads of **State Summit in Tianjin, China**, in 2025.
- ♦ The summit deliberated on pressing **regional and global challenges**—terrorism, conflicts, UN reforms, AI governance, sustainable development, and institutional strengthening.

Key Highlights

- **Regional Conflicts and Non-Proliferation:** Rejected double standards in counterterrorism and emphasized preventing cross-border movement of terrorists.
 - ♦ Condemned the terrorist attack in Pahalgam (J&K).
 - ♦ Criticized military strikes by Israel and the U.S. on Iran, highlighting West–Asia tensions.
- **Sustainable Development & Social Agenda:** Backed equal rights for all nations in AI development and usage, countering technological monopolies.
 - ♦ Endorsed India's global vision of “One Earth, One Family, One Future” as a principle for inclusive growth.
- **China's Push for SCO Institutional Expansion:** SCO members are permitted to use BeiDou satellite system (China's GPS alternative).
 - ♦ China pledged \$1.4 billion in loans over 3 years to SCO members.
 - ♦ Proposed the creation of an SCO Development Bank to fund infrastructure and development projects.
- **UN Reform:** Called for adapting the UN system to modern realities, particularly by expanding the representation of developing countries in governing bodies.
- **SCO Plus Format:** China chaired the SCO+ Summit, which included member states, observers, dialogue partners, honored guests, and heads of major international organisations, signaling an expanded role for SCO in global governance.

India's Position at the Summit

- PM of India emphasized that the SCO rests on three pillars:
 - ♦ **Security:** Ensuring regional peace and counterterrorism cooperation.

- ♦ **Connectivity:** Transforming SCO into a hub for cross-regional connectivity (digital, physical, and energy).
- ♦ **Opportunity:** Promoting mutual growth and cooperation.

About Shanghai Cooperation Organisation (SCO)

- **Formation:** 2001 (Shanghai Summit) by Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, Uzbekistan
- **Membership:** 10 member states, 2 observers, 15 dialogue partners (Laos latest entrant)
- **Official Languages:** Russian, Chinese
- **Structure:**
 - ♦ **Council of Heads of State** – apex decision-making body
 - ♦ **Council of Heads of Government** – second-highest body
- **Headquarters:** Beijing, China
- **Permanent Bodies:** Secretariat in Beijing, China & Regional Anti-Terrorist Structure (RATS) in Tashkent, Uzbekistan.

Challenges Ahead

- India–Pakistan rivalry dilutes consensus.
- China's dominance may marginalize Indian interests.
- Balancing SCO commitments with QUAD, I2U2, and Indo-Pacific partnerships.
- Skepticism on feasibility of SCO Development Bank vis-à-vis BRICS Bank (NDB) and AIIB.

Way Forward

- India must leverage SCO as a regional security platform, especially for counterterrorism.
- Push for digital public infrastructure (DPI) partnerships within SCO to counter China's BeiDou narrative.
- Balance multilateral alignments by engaging SCO without undermining Indo-Pacific strategies.
- Use SCO as a forum to strengthen ties with Central Asia, Russia, and Iran, countering the China-Pakistan axis.

Source: TH

IMMIGRATION AND FOREIGNERS ACT, 2025

In News

- The **Immigration and Foreigners Act, 2025** comes into effect bringing a comprehensive

overhaul of **India's immigration and foreigner management regime.**

Key Provisions of the Act

- **Consolidation of Laws:** The Act repeals and replaces the Foreigners Act (1946), Registration of Foreigners Act (1939), Passport (Entry into India) Act (1920), and Immigration (Carriers' Liability) Act (2000), establishing a unified legal framework for immigration.
 - ♦ Entry, stay, and exit of foreigners are now governed by a single law, with digital integration for registration and tracking (e.g., DigiYatra, FRRO systems); carrier liability ensures airlines/shipping companies are accountable for transporting undocumented passengers.
- **Registration of foreigners:** The Act provides that on arrival in India, foreigners must register with a Registration Officer.
- **Immigration:** The Act provides that persons entering or departing from India must also have a valid visa (for foreigners) along with valid passports or other valid travel documents. These documents may be examined by the immigration officer.
- **Punishment for Fraudulent Entry/Exit:** Entering, staying, or exiting India using forged or fraudulently obtained passports or visas can result in imprisonment for up to 7 years and a fine of up to 10 lakh.
- **Power of arrest:** The Act empowers police officers not below the rank of a Head Constable to arrest without warrant.

Significance

- **National Security:** Imposes stricter penalties to counter fake documents used by terror and trafficking networks, helping prevent illegal immigration and overstays.
- **Administrative Efficiency:** Unifies fragmented, colonial-era statutes, minimizing duplication and improving the management roles of immigration authorities.
- **Global Best Practices:** Incorporates global standards such as carrier liability, biometric verification, and digital tracking.
- **Economic & Social Impact:** Enhances tracking of foreign students, workers, and tourists, and addresses pressing regional migration concerns, such as those from Bangladesh, Myanmar, and West Asian conflict zones.

Source: PRS

PM URGES INDIANS TO EMBRACE 'VOCAL FOR LOCAL' MANTRA

Context

- Recently, in his latest Mann Ki Baat address, the Prime Minister of India renewed his call for citizens to adopt the **mantra of 'Vocal for Local'**, emphasizing the importance of supporting indigenous products to build a self-reliant India.

About the 'Vocal for Local' Initiative

- It was **launched by NITI Aayog** under its **Aspirational Blocks Programme** in 2024. It emphasizes supporting **locally made products, artisans, and industries** to boost India's economy and reduce dependency on imports.
- It draws inspiration from the **Swadeshi Movement led by Mahatma Gandhi**, but it is framed in the modern context of globalization and digital markets.
- Government platforms like **india.gov.in, Government e-Marketplace (GeM), and Open Network for Digital Commerce (ONDC)** actively promote local procurement and showcase indigenous innovations.

Objectives: Why Vocal for Local?

- Economic Independence:** By promoting Indian goods, the campaign strengthens domestic industries, MSMEs, and start-ups.
- Employment Generation:** Local manufacturing creates jobs, especially in rural and semi-urban areas.
- Cultural Identity:** Encourages preservation of traditional crafts, handlooms, and indigenous practices.
- Reducing Import Dependency:** Supports India's vision of becoming a manufacturing hub while cutting reliance on foreign supply chains.
- Global Competitiveness:** The aim is to make 'local go global' by building brands that represent India internationally.

Key Examples of 'Vocal for Local'

- Khadi & Village Industries:** Sales surged past 1.25 lakh crore, with Khadi becoming a symbol of national pride and emerged as a symbol of self-reliance.
- GI-Tagged Products:** From Pochampally Ikat, Pashmina, Darjeeling tea to Madhubani paintings, traditional crafts are gaining global recognition.
- Handloom & Handicrafts** – Schemes such as One District One Product (ODOP) and PM

Vishwakarma Yojana encourage artisans and craftsmen.

- Digital India Products:** UPI, RuPay, and Indian-made fintech apps are now widely adopted.
- Startups and MSMEs:** Government schemes like Startup India and Make in India have helped thousands of local entrepreneurs scale up.
- Festival Campaigns** – Citizens are urged during Diwali, Raksha Bandhan, and Holi to purchase locally produced diyas, sweets, and handicrafts.

Key Concerns

- Quality Standards:** Local products often face criticism for inconsistent quality compared to global brands.
- Price Competitiveness:** Imported goods, especially from countries like China, are sometimes cheaper, challenging Indian manufacturers.
- Digital Marketing Gap:** Many local artisans and MSMEs lack access to modern e-commerce tools.
- Supply Chain Gaps:** Infrastructure and logistics bottlenecks hinder local producers.
- Sustainability Issues:** Over-commercialization of traditional crafts may risk authenticity and ecological balance.
- Global Trade Pressure:** Protectionist approaches may create friction in international trade agreements.

Road Ahead

- For Vocal for Local to succeed long-term, India needs to invest in:
 - Skill development and innovation;
 - Digital infrastructure for small businesses;
 - Policy support for quality and competitiveness;
 - Consumer education and brand storytelling;
- By making conscious choices, every Indian can contribute to a more resilient and self-sustaining economy.

Source: TH

AIR QUALITY LIFE INDEX (AQLI) 2025

In News

- According to the Air Quality Life Index, India is the second most polluted country in the world.

The Air Quality Life Index (AQLI)

- The Air Quality Life Index (AQLI) is developed by Professor Michael Greenstone and the Energy Policy Institute at the University of Chicago (EPIC).

- It translates air pollution levels into their impact on life expectancy, offering hyper-local data to help users see how much longer people could live if pollution met various standards.
- It supports EPIC's Clean Air Program, which aims to inform policy and public action with high-quality pollution data.

Key Findings of recent report

- **South Asia, including Bangladesh, India, Nepal, and Pakistan**, remains the most polluted region.
 - ♦ **Bangladesh** is the worst globally, with air 12 times dirtier than WHO limits.
- China, though still above WHO limits, has cut its pollution by 40.8% since 2014 through aggressive policies, including traffic restrictions, cleaner heating, and reduced coal use.
- **North America saw major pollution spikes** in 2023 due to wildfires, and Bolivia became the most polluted Latin American country.
- **In Africa, pollution** now poses a greater life expectancy threat than HIV/AIDS or malaria in countries like Cameroon and the Democratic Republic of the Congo.

Status In India

- **Air pollution is India's most severe health threat**, reducing average life expectancy by 3.5 years — nearly twice the impact of malnutrition and over five times that of unsafe water and sanitation.
- **All 1.4 billion Indians live** in areas exceeding the **WHO's safe PM2.5 limit (5 µg/m³)**.
- The worst-hit region is Northern India, especially Delhi-NCR, where residents could lose up to **8.2 years of life**.
 - ♦ Other states like Bihar (5.6 years), Haryana (5.3 years), and Uttar Pradesh (5 years) also show severe losses.
- **46% of Indians live in areas** that exceed even India's own weaker PM2.5 limit of 40 µg/m³.

Suggestions

- The AQLI 2025 highlights the urgent need for strong, evidence-based policies to combat air pollution.
- It stresses that cleaning the air is vital not just for the environment, but for extending human life.
- The report calls for expanding clean energy, stricter emission norms, and investment in green infrastructure, while promoting public awareness and policy action to address this growing health crisis.

Do you know?

- The government had launched the **National Clean Air Programme (NCAP)** in 2019 to reduce particulate pollution levels from 2017 baselines by 20-30 per cent by 2024.
 - ♦ In 2022, this target was revised upwards, with the government setting a more ambitious goal of achieving a 40 per cent reduction by 2026 in 131 non-attainment cities — urban areas that consistently fail to meet national air quality standards.
- **Particulate matter (PM)** refers to a mix of solid particles and liquid droplets in the air, including visible particles like dust and soot, as well as tiny particles only detectable with an electron microscope.
 - ♦ PM is categorized mainly into **PM10**, which includes inhalable particles 10 micrometers or smaller, and **PM2.5**, which consists of finer inhalable particles 2.5 micrometers or smaller.

WHO Air quality guidelines

- The World Health Organization's Air quality guidelines (AQG) serve as a global target for national, regional and city governments to work towards improving their citizen's health by reducing air pollution.

Pollutant	Averaging Time	2005 AQGs	2021 AQGs
PM _{2.5} , µg/m³	Annual	10	5
	24-hour ^a	25	15
PM ₁₀ , µg/m³	Annual	20	15
	24-hour ^a	50	45
O ₃ , µg/m³	Peak season ^b	-	60
	8-hour ^a	100	100
NO ₂ , µg/m³	Annual	40	10
	24-hour ^a	-	25
SO ₂ , µg/m³	24-hour ^a	20	40
CO, mg/m³	24-hour ^a	-	4

Source :TH

NEWS IN SHORT

2-SYSTEM INTERACTION BEHIND HEAVY RAINS IN THE HIMALAYAS

Context

- The India Meteorological Department (IMD) has warned of heavy to extremely heavy rainfall across North India due to an unusual weather phenomenon termed **"2-System Interaction."**

What is 2-System Interaction?

- **Definition:** 2-System Interaction refers to the simultaneous occurrence and convergence of two distinct weather systems, which amplify each other and produce severe weather outcomes.
- **In Current Case:**
 - ♦ **Southwest Monsoon Trough:** A low-pressure belt that channels moisture-laden winds from the Arabian Sea and Bay of Bengal.
 - ♦ **Western Disturbance:** A cyclonic circulation originating in the Mediterranean region, carrying extra-tropical moisture and energy, usually active in winters but occasionally overlapping with monsoon.
- **Result:** When both interact, the combined energy and moisture lead to intense rainfall activity, often beyond normal seasonal patterns.

Why is it Significant?

- **Geographical Vulnerability:** The Himalayan terrain is steep, fragile, and densely populated in valleys, making it highly prone to landslides and flash floods.
- **Climatic Shift:** Such interactions, once occasional, are being reported more frequently due to changing monsoon dynamics and rising global temperatures.
- **Hydrological Impact:** Sudden surges in rainfall increase risks for rivers and reservoirs, threatening infrastructure and communities downstream.

Source: TOI

GUJARAT'S KUTCH VILLAGE YIELDS RARE JAROSITE DISCOVERY

Context

- Researchers confirm the presence of jarosite, in Matanomadh village of Kutch, Gujarat, similar to what was discovered on Mars a couple of decades ago.
 - ♦ It is believed that this site could serve as a potential field analogue for the Indian Space Research Organisation's (ISRO) upcoming **Mangalyaan-2 mission**.

About Jarosite

- **On Earth:** Jarosite is a **yellow mineral**, formed when **oxygen, iron, sulphur**, and potassium-rich minerals react with water, often under volcanic conditions.
- **On Mars:** First detected by **NASA's Opportunity rover in 2004** at Meridiani Planum, jarosite

provided one of the strongest pieces of evidence for the presence of water in the planet's past.

- **In Matanomadh:** The mineral, dated to about **55 million years ago (Paleocene period)**, closely resembling Martian geology.
 - ♦ In India earlier it was found in **Kerala's Varkala cliffs**.
 - ♦ Globally deposits have been found in **Mexico, Canada, Japan, Spain, and in Utah and California in the US**.



Source: IE

DIGIPIN INITIATIVE

In News

- The Department of Posts has signed a Memorandum of Understanding (MoU) with ESRI India to Strengthen the **DIGIPIN Initiative**.

The DIGIPIN (Digital Postal Index Number)

- It is an **open-source, interoperable, geo-coded**, grid-based digital address system developed by the Department of Posts in collaboration with IIT Hyderabad and NRSC, ISRO.
- It divides India into approximately **4m x 4m grids** and assigns each grid a unique 10-character alphanumeric code based on latitude and longitude coordinates.
- It is a cornerstone of the Department of Posts' vision to offer Address-as-a-Service (AaaS) — an array of services associated with address data management to support secure and efficient interactions between users, government entities, and private sector organisations.

Importance

- It simplifies addressing for public and private services, improving logistics efficiency and emergency response capabilities.

Source :PIB

BUILDINGS TO BE GEO-TAGGED IN CENSUS 2027

In News

- The 2027 Census will mark India's first fully digital enumeration, featuring the **geo-tagging of over 33 crore buildings**—residential and non-residential—using **Digital Layout Mapping (DLM)** and GIS coordinates during the Houselisting Operations.

Geo-tagging of buildings in Census 2027

- This initiative **replaces earlier hand-drawn sketches** and aims to **improve workload management and data accuracy**.
- Enumerators will **classify buildings** by usage and **collect data on housing conditions, amenities, and assets**.
 - The data collected will include the number of Census Houses, households, and building classifications (residential, non-residential, partly residential, landmarks).
- The **Census Monitoring & Management System (CMMS)** will enable real-time oversight, while geo-referenced **Houselisting Block boundaries** will be created using satellite imagery and administrative maps.

Geo-tagging

- It is the process of assigning a **unique latitude-longitude coordinate** to a specific building on a **Geographical Information System (GIS)** map.

Houselisting block

- It means “a well-defined area in a village or in a ward of the town which can be clearly demarcated on the ground and for which a notional map is drawn for the purpose of the Census Operations.
 - Such blocks created for the Houselisting Operations (HLO) and Population Enumeration (PE) are called the Houselisting Blocks (HLBs) and Enumeration Blocks (EBs) respectively.

Source :IE

BOND YIELDS

In News

- India's 10-year government bond yield has increased by 26 basis points (bps) in the past month, even though the Reserve Bank of India

(RBI) has cut the repo rate by 100 bps over seven months, bringing it down to 5.50%.

Key Concepts

- Repo Rate:** The rate at which RBI lends short-term funds to commercial banks.
 - Cutting repo rate → signals monetary easing, usually lowers borrowing costs and bond yields.
- Government Bond Yield:** Yield = effective return an investor earns from a government security (G-Sec).
 - Inverse relation:** Bond prices ↑ → Yields ↓; Bond prices ↓ → Yields ↑.
 - 10-year G-Sec yield = benchmark for overall borrowing costs in the economy.

Why are Yields Rising Despite Rate Cuts?

- High Fiscal Deficit and Borrowing Needs:** Government's large borrowing program raises supply of bonds → pushes prices down → yields rise.
- Inflationary Concerns:** Even with repo cuts, sticky inflation expectations can drive investors to demand higher yields.
- Global Factors:** Rising US Treasury yields, stronger dollar, and capital outflows from emerging markets impact Indian bond yields.
- Liquidity Conditions:** Despite RBI's easing, if banking system liquidity is tight, demand for G-Secs falls.

Source: TH

CEREBO

Context

- The Indian Council of Medical Research (ICMR) has introduced **CEREBO**, for the rapid diagnosis of **traumatic brain injuries (TBI)**.

What is CEREBO?

- It is a handheld, **non-invasive, and radiation-free device** aimed to address diagnostic delays in rural and resource-poor settings where CT (computerised tomography) and MRI (magnetic resonance imaging) scans are inaccessible or unaffordable.
- It uses **near-infrared spectroscopy (NIRS) technology** powered by machine learning.
- It can detect intracranial bleeding and edema within one minute and can be operated by paramedical staff or unskilled personnel after 30 minutes of training.

Why is it needed?

- **High TBI burden:** India records over 100,000 TBI-related deaths annually. Half of these occur within the first two hours of injury.
- **Challenges with current methods:**
 - ♦ **Glasgow Coma Scale:** Subjective and prone to errors.
 - ♦ **CT/MRI scans:** Require advanced infrastructure, trained professionals, and are cost-intensive.

Source: TH

PRATUSH MISSION**In News**

- India has developed a credit-card sized computer for space missions, designed to catch the extremely faint signals from the universe's earliest moments.

What is PRATUSH?

- Precise Radio Astronomy for Transient Universe Studies from High-lunar orbit (reported in concept stage).
- It envisions placing a payload in **lunar orbit around the far side of the Moon**.
- The mission harness the radio-quiet environment on the far side to conduct low-frequency radio astronomy free from Earth's radio interference and ionospheric distortion.

Why the Far Side of the Moon?

- **Radio Quiet Zone:** The Moon shields its far side from Earth's radio frequency interference.
- **No Ionosphere Disturbance:** Earth's ionosphere blocks or distorts radio waves below ~30 MHz, limiting ground-based observations.
- **Unique Observational Advantage:** Allows study of cosmic dawn (formation of first stars and galaxies), interstellar plasma, and detection of ultra-low-frequency radio bursts.

Source: DST

ROSEWOOD TREE POPULATION IN INDIA**In News**

- According to recent habitat modelling by the Institute of Wood Science and Technology (IWST), Bengaluru, **only 17.2% of India's suitable habitat** for Indian rosewood lies within protected areas.

Indian Rosewood (Dalbergia latifolia)

- It is also known as the **ivory of the forests** and is valued for its rich grain, deep color, and durability.
- It is a premium timber used in furniture and handicrafts and plays a key ecological role by **improving soil fertility** through **nitrogen fixation**, supporting bird and insect diversity, and acting as a long-term carbon sink.
- It is native to India, Nepal, Bangladesh, Myanmar, Java, and Indonesia.
- In India, it is found from eastern Uttar Pradesh to Sikkim in the sub-Himalayan region, as well as in central, western, and southern parts of the country.
- It grows in various soil types but **thrives best in well-drained, deep, moist soils**.
- It is listed under Appendix II of CITES and has been classified as **Vulnerable** by the IUCN since 2018.

Source :TH

EXERCISE YUDH KAUSHAL 3.0**Context**

- The Indian Army conducted **Exercise Yudh Kaushal 3.0** in the high-altitude Kameng region, Arunachal Pradesh.

About the exercise

- The exercise featured large-scale manoeuvres with drone surveillance, precision strikes, real-time target acquisition, air-littoral operations and synchronized battlefield tactics.
- A major highlight was the **operational debut** of the newly raised **ASHNI platoons**, designed to integrate advanced technology with traditional combat skills for decisive battlefield advantage.

Source: TH