

Climate Change May Shift Earth's Poles by Up to 27 Meters

A new study has found that **Earth's geographic poles** may shift their positions due to alarming levels of ice melt caused by climate change.

- Geographical poles are the **points at which the Earth's axis of rotation intersects the surface**.
- The motion of the **Earth's rotational pole** with respect to the **crust** is called polar motion.

Why Poles are Shifting?

- Earth's rotation is not perfectly stable. It **wobbles** due to **changes in how mass is spread across the planet**.
- These wobbles can come from:
 - ⊕ **Fluctuations in atmospheric pressure, or ocean currents**
 - ⊕ **Core- mantle dynamic**
 - ⊕ **Fusion of glacial caps and glaciers**
 - ◆ According to the study, melting ice and shifting ocean mass could cause the North and South Poles to move **by 12 to 27 meters by 2100**.
 - ◆ The leading cause is **ice loss in Greenland and Antarctica, followed by smaller glaciers**.

Effects of Shifting Poles

- **Navigation Problems:** Shifting poles can affect **satellites and space telescopes**, which depend on Earth's rotation for accurate positioning.
- **Longer Days:** Melting ice moves mass from the poles to the equator, making Earth slightly more **flattened**.
 - ⊕ This slows down its spin, causing **longer days**.
 - ◆ Since 2000, days have been getting longer by **1.33 milliseconds every 100 years**, faster than in the past century.

India's first Fast-Breeder Nuclear Reactor (500 MWe) set for commissioning by 2026

Located at **Kalpakkam in Tamil Nadu**, this will mark the beginning of the **second stage of India's three-stage nuclear power programme**.

About Fast Breeder Reactor

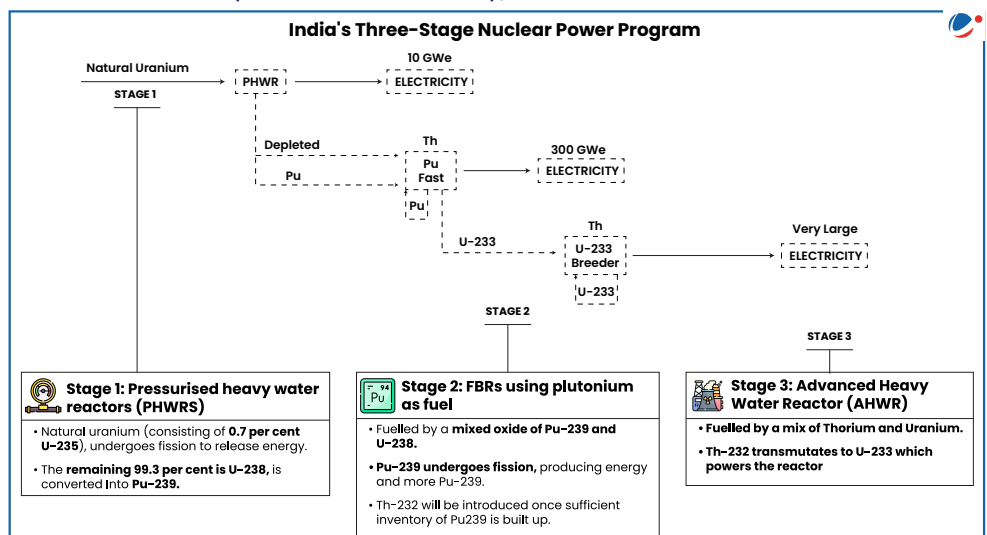
- **Genesis:** In 2003, government established **Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI)** to construct and operate **Prototype Fast Breeder Reactor (PFBR)**.
 - ⊕ Earlier **first stage** was implemented by **Nuclear Power Corporation of India Limited (NPCIL)**.
- **Functioning:**
 - ⊕ It uses indigenously produced **Uranium-Plutonium Mixed Oxide (MOX)** fuel and utilizes liquid sodium as a coolant.
 - ⊕ **Uranium-238 "blanket"** surrounding fuel core will undergo nuclear transmutation to produce more fuel, thus earning the name '**Breeder**'.

Significance of FBR

- **Paves way for third stage:** It also marks use of **Thorium-232 (a non fissile material)**, which creates **fissile Uranium-233** to be used as fuel in **third stage**.
- **Technological Advancement:** India becomes **second country after Russia** with a commercial FBR.
- **Reduced Nuclear Waste:** Uses **spent fuel from Stage-I**.
- **Utilization of Thorium Reserve:** Paves the way for the **full utilization of India's abundant thorium reserves**.

India's 3 stage Nuclear Power Programme:

- **Dr Homi J Bhabha (Father of India's nuclear programme)** devised a **three-stage nuclear power programme** in the 1950s to make the most of India's limited uranium reserves and abundant thorium reserves.



Two South African cheetahs released in Gandhi Sagar Sanctuary

Cheetahs have been relocated to **Gandhi Sagar Sanctuary in Mandsaur district of Madhya Pradesh** from Kuno National Park (M.P).

➤ These Cheetahs were originally brought to the Kuno National Park from South Africa in **February 2023 under Project Cheetah**.

About Project Cheetah

➤ It is a **landmark wildlife conservation** initiative launched in **2022**.

➤ **Aim:** At reintroducing cheetahs to India after their extinction in the late **1940s and early 1950s**.

➤ **Implementing agency:** National Tiger Conservation Authority (NTCA)

➤ **Technical Assistance:** Provided by Wildlife Institute of India (WII)

➤ **Cheetah Project Steering Committee:** Established by **NTCA** in 2023 to oversee, evaluate, and advise on implementation of Project Cheetah.

⊕ **NTCA** is a **statutory body** under Ministry of Environment, Forests and Climate Change constituted under enabling provisions of Wildlife (Protection) Act, 1972, as amended in **2006**.

➤ **Prime Objectives:**

⊕ To **establish breeding cheetah** populations in safe habitats across its historical range.

⊕ To use cheetah as a **charismatic flagship** and **umbrella species** to garner resources for restoring open forest and savanna systems.

⊕ To use the ensuing opportunity for **eco-development and ecotourism** to enhance local community livelihoods.

About Cheetah

➤ World's **fastest Mammal** and the only large carnivore to be extinct in India (1952).

➤ Protected under **Appendix 1 of CITES**.

➤ Unlike **other big cats (lions, tigers, leopards, and jaguars)** cheetahs don't roar.

➤ **Geographical range:**

⊕ **Asia:** Found only in arid regions of eastern Iran and India (**After Reintroduction**).

⊕ **Africa:** Found in grasslands, scrublands and open forests across the continent, especially in Botswana, Namibia and South Africa.

➤ **Two Species of Cheetahs exists :**

⊕ **African Cheetah** (IUCN Status- Vulnerable).

⊕ **Asiatic Cheetah** (IUCN Status- Critically Endangered).

RBI Governor highlights issues in India's Financial Markets functioning amidst Shifting Global Tides

Financial markets are marketplace for **raising capital and trading financial assets** like **bonds, stocks, foreign exchange, and derivatives**.

Issues with Financial markets in India

➤ **Government securities (G-Secs) Market:**

⊕ **Lack of Diversity:** **Liquidity** is concentrated in **few securities**, thinning out for longer maturities.

⊕ **Secondary market trading** is **dominated by banks and Primary Dealers**, with a low Turnover Ratio (Annual turnover to outstanding stock of securities).

➤ **Money Market:**

⊕ **Call Money Market:** **Dwindling liquidity** in call money market.

◆ **'Call Money'** is borrowing or lending of funds for **1 day**.

⊕ **Term Money Market:** **Over-reliance** on **overnight** market and **lack of development** of a risk-free term structure vital for **benchmarking prices of interest rate** products.

◆ **'Term Money'** refers to borrowing/lending of funds for a period **exceeding 14 days**.

⊕ **Asymmetries between different money market rates:** **E.g.** in the call money rate, the market repo rate and Tri Party Repo Dealing System (TREPS) rate.

◆ A tri-party repo is a **repurchase agreement (repo)** where a **third party acts as an intermediary between borrower and lender**, managing aspects like collateral selection, payment, and settlement.

➤ **Foreign Exchange (FX) Market:** **Divergence** in pricing for the **small and large customers** and **non-compliance** with **regulatory mandates** ensuring **transparency**.

➤ **Derivatives Market:** Remains **small in absolute terms** and **relative to GDP** with **Lack of diversity and limited liquidity**.

Way Forward

➤ Development of a **Secured Overnight Rupee Rate (SORR)** based on the **secured overnight market in derivative markets**.

➤ **Increase retail participation** in the G-Sec market. **E.g.** **'RBI Retail Direct'** facility.

➤ **Proactive role of banks** to transmit RBI's liquidity measures to the broader market.

UNESCO designated 16 new Global Geoparks as Global Geoparks Network (GGN)

During the 10th Anniversary of **UNESCO Global Geoparks (UGGPs)**, 16 new sites across 11 countries were added to the GGN.

- GGN is a **non-profit International Association founded under UNESCO**.
- It establishes **ethical standards** that must be adopted by Global Geoparks.

Major Geoparks added to GGN

- **Kanbula (China)**: Located on the edge of the **Qinghai-Tibet Plateau**, it features the **ancient Maixiu volcanoes**, which are exceptionally well-preserved, and the Yellow River.
- **Mt Paektu (North Korea)**: It was the location of one of the **largest eruptions in recorded history** (Millennium Eruption around 1000 CE).
- **North Riyadh (Saudi Arabia)**: Obaitharan Valley (Wadi Obaitharan), located at the base of Tuwaiq Mountain, is a lush reserve that supports the region's water supply.
 - ⊕ Valley is also **home to ancient coral reef systems**.

UNESCO Global Geoparks (UGGP)

- **Genesis**: Introduced in 2015 as a key component of the **International Geosciences and Geoparks Programme (IGGP)**.
- **Geoparks**: UGGPs are **single, unified geographical areas** where **landscapes of international geological significance** are managed with a holistic concept of
 - ⊕ **protection,**
 - ⊕ **education and**
 - ⊕ **sustainable development.**
- **Management**: Managed by a body having a **legal existence recognised under national legislation**.
- **Reassessment Period**: UGGP status is not permanent; it is reassessed **every four years**.
- **Mandatory Networking**: Membership of the GGN is obligatory for UGGPs.
- **Current Status**: There are **229 UNESCO Global Geoparks in 50 countries (none in India)**.

NITI Aayog Member Calls for Adopting GM Crops for Self-Sufficiency in Edible Oils

About GM Crops

- GM Crops are the **Genetically modified organisms (GMOs)**, i.e. their **genetic material (DNA)** has been **altered artificially** for desirable features like robustness, pest resistance among other.
 - ⊕ **Transgenics** are a subset of GMO where **one or more DNA sequences from another species** have been introduced artificially
 - ◆ E.g., **Bt. Cotton**- contains a gene from a bacterium.
- **Adoption Status in India**
 - ⊕ In India, Bt cotton is the only GM crop approved for cultivation.
 - ⊕ In 2022, the **Centre conditionally approved** herbicide-tolerant **GM mustard (DMH-11) for release into the environment**.
 - ◆ However, this approval is currently **under review by the Supreme Court**. The SC has called for evolving National Policy on GM Crops.

Why is the Adoption of GM Edible Oil Crop needed?

- **Rising Consumption, Lagging Production**: Per capita edible oil consumption has surged to **19.7 kg/year**, outpacing domestic production.
 - ⊕ Growing population and urbanisation will further boost the demand.
- **High Import Dependence**: Imports now cover **55–60% of India's edible oil demand**. This rising dependence poses **risks to food security and economic stability**.
- **Short-Lived Self-Sufficiency**: India achieved oilseed self-sufficiency during the **Yellow Revolution** in the early 1990s, but it did not last long.

Adoption of genome editing is one of the strategies of National Mission on Edible Oils – Oilseeds (NMEO-Oilseeds) launched to increase **domestic edible oil production to 25.45 million tonnes by 2030-31**.

Also In News



BrahMos Missile

India has dispatched a second batch of batteries of **BrahMos Missile system to the Philippines**.

About BrahMos

- **Jointly developed** by India and Russia.
- **A long-range supersonic cruise missile** that can be launched from **land, sea and air**.
- **Two-stage system**:
 - ⊕ **1st stage (Solid propellant booster)**: Gives the initial supersonic speed.
 - ⊕ **2nd stage (Liquid ramjet)**: Takes the missile closer to **3 Mach** speed in cruise phase.
- **Range**: Up to **290 km**
- **Special Capabilities**
 - ⊕ **"Fire and Forget" technology**,
 - ⊕ Shorter flight times lead to lower target dispersion and quicker engagement
 - ⊕ Pin point accuracy.



EVolutionS Programme

Government provided grants for EV startups under Project EVolutionS. **About Electric Vehicle Solutions led by Startups (EVolutionS) Programme**

- Launched by the **Department of Science and Technology (DST), Ministry of Science & Technology**.
 - ⊕ Implemented in **collaboration with Ministry of Heavy Industry (MHI)** and Automotive Component Manufacturing Association of India (ACMA).
- **Objective**: To aid selected startups in pilot demonstration, testing, validation of components and establishing industry connects for **speedy translation of EV solutions to market**.
- It covers **components for electric two-, three- and four-wheelers** (including L5, e-rickshaw and e-cart), e-buses and EV public charging infrastructure.
- Startups that have demonstrated indigenous capability in developing materials/components will get a **grant of ₹50 lakh, including ₹30 lakh in the form of equity-linked instruments**.



Aryabhata Satellite

India's first satellite, Aryabhata, completed 50 years.

About Aryabhata Satellite

- Built by ISRO to conduct experiments in **X-ray astronomy, aeronomics, and solar physics.**
- Named after the **ancient Indian mathematician and astronomer.**
- Launched in 1975, by Soviet Kosmos-3M rocket from **Volgograd Launch Station** (present **Russia**).
- Made India the **11th country in the world to send a satellite into orbit.**



Comprehensive Remote Sensing Observation on Crop Progress (CROP)

ISRO satellite CROP estimated wheat Crop Area and production in India.

- It has estimated that the total wheat production from 8 major wheat growing States of India would be **122.724 million tonnes** as on March 31, 2025.

About CROP

- It is a semi-automated, scalable framework, developed by **National Remote Sensing Centre (NRSC)/ISRO.**
- It enables the **near real-time monitoring of crop sowing and harvesting** during the Rabi season across India.
- It **uses** Optical and Synthetic Aperture Radar (SAR) remote sensing datasets from **EOS-04 (RISAT-1A), EOS-06 (Oceansat-3), and Resourcesat-2A**, for the Rabi season, 2024-25.



Kokborok

Kokborok Sahitya Parishad sought inclusion of Kokborok language in the Eighth Schedule of the Constitution.

About Kokborok Language:

- The word "Kokborok" comes from "Kok," meaning **"verbal,"** and "Borok," meaning **"people" or "human."**
- It is the language of **Borok people** who are **geographically known as Tripuris.**
- It is the **mother tongue** of communities namely **Debbarma (Tripuri) Reang, Jamatia, Noatia, Kalai, Rupini, Murasing, Uchoi** etc.
- It is recognised as **one of the State languages of Tripura.**
- It is part of the **Sino-Tibetan language family.**
- It is classified as **Vulnerable by the UNESCO Atlas of the World's Languages in Danger.**



Scarborough Shoals

China alleged intrusion by the **Philippines** in the contentious **Scarborough Shoal** waters of the **South China Sea (SCS).**

- SCS is a **marginal sea** in the **western Pacific Ocean** bordering Brunei Darussalam, Malaysia, Indonesia, the Philippines, Singapore, Thailand, Vietnam and China.

About Scarborough Shoals

- **Scarborough** is the **largest atoll** in the South China Sea, located about 220kms to west of Philippines.
- It is located inside **Exclusive Economic Zone (EEZ) of Philippines** but has been claimed by **China** as its ancestral territory (demarcated by **nine-dash line**) since the 13th century.
- **Other disputed islands in SCS:** Paracel and Spratly island.



Exercise Desert Flag-10

Indian Air Force is participating in **Exercise Desert Flag-10.**

- It is a premier **multinational air combat exercise** being hosted by the **United Arab Emirates (UAE).**



Trademarked Building In India

The Arts College building of Osmania University (OU), Hyderabad, Telangana, has become the **third structure in India to receive a trademark for its exterior design.**

- The first two were the **Taj Mahal Palace Hotel and the Bombay Stock Exchange.**

Benefits of Trademarking

- Gives OU **exclusive rights to use the building's image for commercial purposes** and protection from unauthorised copying.
- Helps preserve the **unique architectural identity.**

Architectural Significance of the building

- Built in December 1939, the building reflects the **Osman Shahi architectural style.**
 - ⊕ The Architecture is a blend of **Qutub Shahi and Mughal styles, with influences from Kakatiyan temples, Ajanta, and Ellora.**
- Uniquely, it **lacks a dome**, unlike other Nizam-era structures.

Place in News



Brazil (Capital:Brasília)

15th BRICS Agriculture Ministers' Meeting held in Brazil.

Political Features:

- It is the largest country in **South America** and the **fifth largest nation** in the world.
- **Faces Atlantic Ocean** and shares **inland borders with every South American country except Chile and Ecuador**

Geographical Features:

- Both the **Equator and the Tropic of Capricorn** pass through it.
- **Major River:** Amazon has the world's largest **river system** and the world's **largest remaining virgin rainforest.**
- **Climate:** Humid tropical and subtropical climate except for a **drier area** in the Northeast.
- **Mining:** World's **top producer of niobium** and **second-largest producer of iron ore, manganese, tantalite, and bauxite.**



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



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LUCKNOW



PRAYAGRAJ



PUNE



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