

## DAILY CURRENT AFFAIRS (DCA)

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## SC CLEARED 10 BILLS USING ARTICLE 142

### Context

- The Supreme Court invoked **Article 142** to pass **10 Bills** pending with **Tamil Nadu Governor** effectively **granting assent to them**.

### About

- The Court exercised its **rare powers** to do **“complete justice,”** bypassing the Governor’s role in the lawmaking process.
- The Supreme Court ruled that **Governors cannot delay or withhold assent to Bills indefinitely** once they are passed or re-passed by the state Assembly.
- The ruling set a timeline for the Governor to act on Bills:**
  - One month for re-passed Bills.
  - Three months if the Bill is withheld contrary to Cabinet advice.
- Significance:** The ruling redefines the relationship between the Centre and states, curbing the power of Governors and **reinforcing the authority of state legislatures**.

### What is Article 142?

- Article 142 of the Indian constitution** is a provision that empowers the Supreme Court to pass any decree or order necessary for doing complete justice in any case or matter pending before it.
  - It also makes such decree or order enforceable throughout the territory of India.
- The importance of Article 142 lies in the following aspects:**
  - It enables the Supreme Court to **exercise executive and legislative functions in certain situations**, such as issuing guidelines, directions, or orders to the government or other authorities.
  - It allows the Supreme Court to **intervene in matters of public interest, human rights, constitutional values, or fundamental rights**, and to protect them from any violation or infringement.
  - It enhances the Supreme Court’s role as the **guardian of the constitution and the final arbiter of the law**.
- Criticism:** It may encroach upon the **principle of separation of powers** and the domain of the executive and the legislature, and may **invite criticism of judicial overreach or activism**.

### How are the Bills Passed by the Governor?

- Article 200** provides that when a Bill passed by the State Legislature, is **presented to the Governor, the Governor shall declare:**
  - that he assents to the Bill;
  - or that he withholds assent there from;
  - or that he reserves the Bill for the President’s consideration;
  - or the Governor may return the Bill (other than a Money Bill) with a message for re-consideration by the State Legislature.
- Reconsidered Bill:** If the bill is returned by the Governor for reconsideration and the Legislature passes it again without any change, the Governor is constitutionally bound to give assent.
  - The Governor cannot then reserve it for the President’s consideration under Article 200.
- Reserving the Bill:** If the Governor reserves a Bill for President’s consideration, the enactment of the Bill then depends on the assent or refusal of assent by the President.
- Article 201:** The President shall, under Article 201—, either declare his assent or withhold his assent thereto.
  - Instead of following either of these courses, the President may (if the Bill is not a Money Bill) direct the Governor to return the Bill together with a message to the State Legislature for reconsideration.
  - The State Legislature shall then reconsider the Bill within 6 months of its receipt and, if it is again passed, it shall be presented again to the President for his consideration.
  - In contrast with the power of the Governor** regarding a reconsidered Bill, it is **not obligatory for the President to give his assent** to a reconsidered Bill.

### Concerns of the States

- Interference in State Autonomy:** States argue that the Governor’s role in reserving bills for the President undermines the autonomy of state legislatures, especially when the bills are in the State List.
- Misuse of Discretion:** There are concerns that Governors reserve bills contrary to the advice of the State Council of Ministers, leading to misuse of discretionary powers.
- Subordination to Union Executive:** States view the Governor’s ability to refer bills to the President as subordinating state legislative authority to the Union Executive.

- **Delays in Decision-Making:** Many states complain of delays in the President's decision on reserved bills, which affects the timely enactment of laws.
- **Lack of Clear Guidelines:** States suggest that there should be clear guidelines for the Governor and Union Government to prevent arbitrary use of discretion.
- **Impact on Federalism:** Some states believe that Articles 200 and 201, which allow the Governor to reserve bills, are inconsistent with the true federal structure of India.

### Conclusion

- There were demands to establish clear, uniform guidelines for the Governor's discretion in reserving bills, ensuring transparency and consistency in decision-making.
- Introducing time-limits on the duration of passage of bills will ensure timely formation and implementation of policy and will also strengthen the federal structure of India.

Source: IE

## REPORT- DEATH SENTENCES AND EXECUTIONS 2024

### Context

- Amnesty International has released its report, **Death Sentences and Executions 2024**.

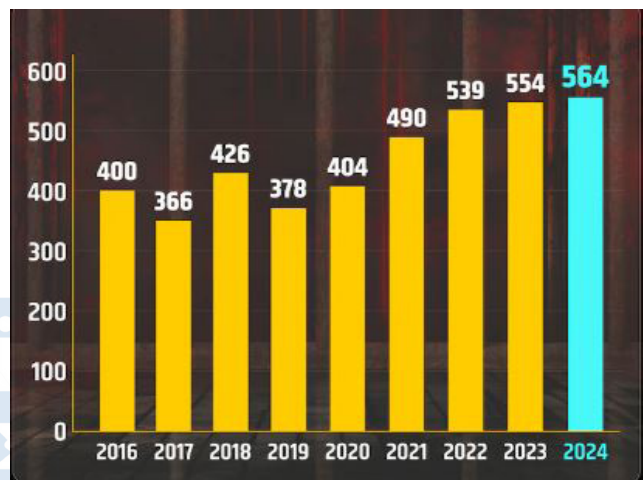
### Major Findings

- **Global Execution Statistics:** In 2024, 1,518 people were executed **across 15 countries**, marking the **highest number since 2015**.
  - ♦ It is an increase by **32%** in recorded executions **compared to 2023**.
  - ♦ **Reason for Spike:** Weaponization of the death penalty to silence dissent, punish minorities, and crack down on drug-related offences.
- **Key Countries Leading the Surge:** Iran, Saudi Arabia, and Iraq were responsible for 91% of global executions.
- **Death Penalty as a Tool of Fear:** The report condemned the use of the death penalty as a political tool rather than for justice.
- **China topped the global list for executions**, followed by Iran, Saudi Arabia, Iraq, and Yemen.
  - ♦ The authorities of China continued to balance secrecy on information on the death penalty with occasional disclosures around certain types of cases.

- **Drug-Related Executions:** Over 40% of global executions in 2024 were for drug-related offences.
- **Declining Global Use of the Death Penalty:** Despite the rise in executions, the number of countries carrying out executions remained low at 15 for the second consecutive year.
  - ♦ 145 countries have abolished the death penalty in law or practice.

### Death Sentence in India

- **In 2024, for the second consecutive year**, the Supreme Court of India **didn't confirm any death sentence**, revealed a report from **Project 39A of the National Law University Delhi**.
- **Prisoners on Death Row in India**



- In India, capital punishment, also known as the death penalty, is carried out by **“hanging by the neck until death”**.
- **Several countries like Portugal, the Netherlands, France and Australia** have moved towards **abolishing executions**, countries like the **US, Iran, China and India** have retained a **legal framework** to enable the death penalty.
- Capital punishment, which the Supreme Court has repeatedly stated should be used only in the **rarest of rare cases**, was **last carried out in 2020 in the Nirbhaya case**.

### 'Rarest of rare' Doctrine in India:

- **1972 - Jagmohan Singh vs. State of U.P.:** The Supreme Court upheld the constitutionality of the death penalty.
- **1980 - Bachan Singh vs. State of Punjab:** The Court introduced the **'rarest of rare' doctrine**, stating the death penalty should be imposed only in exceptional cases.
- **1983 - Machhi Singh vs. State of Punjab:** The Supreme Court clarified the 'rarest of rare' doctrine and identified **five categories of crimes where the death penalty may be justified**:



- ♦ **Manner of committing the murder:** Extremely brutal and dastardly murders.
- ♦ **Motive of the murder:** Committed for a motive showing total depravity.
- ♦ **Socially abhorrent nature of the crime:** When a murder targets a minority community and raises social wrath.
- ♦ **Magnitude of the crime.**
- ♦ **Victim:** When the victim is particularly vulnerable, such as a child, woman, or elderly person.

### Global Framework on Death Penalties

- **Article 6 of the International Covenant on Civil and Political Rights (ICCPR):** Allows the death penalty in limited circumstances but stresses that nothing in this article should delay or prevent the abolition of capital punishment by any State Party.
- **1984 - UN Safeguards:** The UN Economic and Social Council adopted Safeguards guaranteeing the rights of individuals facing the death penalty.
- **1989 - Second Optional Protocol to the ICCPR:** The UN General Assembly adopted this protocol, urging member states to abolish the death penalty.
  - ♦ States that ratified agreed not to execute anyone within their jurisdiction.
- **UN General Assembly Resolutions (2007-2018):** It urged countries to:
  - ♦ Respect international standards protecting the rights of those facing the death penalty.
  - ♦ Progressively restrict its use.
  - ♦ Reduce the number of crimes punishable by death.
- **For the first time, more than two thirds of all UN member states** voted in favour of the tenth General Assembly resolution on a moratorium on the use of the death penalty.

Source: DTE

## PANCHAYAT ADVANCEMENT INDEX (PAI) BASELINE REPORT

### Context

- Recently, the **Ministry of Panchayati Raj** has unveiled the first-ever **Panchayat Advancement**

**Index (PAI) Baseline Report** for the **fiscal year 2022–23**.

### About Panchayat Advancement Index (PAI)

- It is a **composite Index** & has been compiled based on 435 unique local Indicators (331 mandatory & 104 optional) consisting of 566 unique data points **across 9 themes** of **Localization of Sustainable Development Goals (LSDGs)**.
  - ♦ It reflects India's commitment to achieving the **SDG 2030 Agenda** through participatory, bottom-up development.
- It is aligned with the **National Indicator Framework (NIF)** of the Ministry of Statistics and Programme Implementation (MoSPI).
- It is a collaborative effort of various **Union Ministries, State Governments and UN Agencies**.

### Key Factors in Panchayat Advancement Index (PAI)

- **Infrastructure:** Availability of basic amenities like roads, electricity, water supply, sanitation facilities, etc.
- **Health and Education:** Access to healthcare services, educational institutions, literacy rates, and enrollment in schools.
- **Economic Indicators:** Income levels, employment opportunities, agricultural productivity, and economic activities.
- **Social Indicators:** Poverty rates, gender equality, social inclusion, and overall quality of life.
- **Governance and Administration:** Efficiency and transparency of local governance, delivery of public services and citizen participation.
- **Environmental Sustainability:** Measures related to ecological balance, conservation, and sustainable practices.

### Key Features of the PAI

- **Localized SDG Themes:** The PAI evaluates Panchayats across **nine themes**, including poverty alleviation, health, child welfare, water sufficiency, environmental sustainability, infrastructure, social justice, good governance, and women's empowerment.



**Poverty-Free and Enhanced Livelihoods Panchayat**



**Healthy Panchayat**



**Child Friendly Panchayat**



**Water Sufficient Panchayat**



**Clean and Green Panchayat**



**Panchayat with Self-Sufficient Infrastructure**



**Socially Just and Socially Secured Panchayat**



**Panchayat with Good Governance**



**Women Friendly Panchayat**

- **Performance Categories:** Panchayats are categorized into five tiers based on their scores:
  - ♦ **Achiever (90+ points):** None qualified this year.
  - ♦ **Front Runner (75–90 points):** 699 Panchayats (0.3%).
  - ♦ **Performer (60–75 points):** 77,298 Panchayats (35.8%).
  - ♦ **Aspirant (40–60 points):** 1,32,392 Panchayats (61.2%).
  - ♦ **Beginner (below 40 points):** 5,896 Panchayats (2.7%).
- **Data Validation:** Out of 2,55,699 Gram Panchayats, 2,16,285 submitted validated data through the dedicated PAI portal.

### State-Level Insights

- **Top Performers:** Gujarat led with 346 Front Runner Panchayats, followed by Telangana with 270 Front Runners.
  - ♦ States like Maharashtra, Madhya Pradesh, and Uttar Pradesh recorded high numbers of Performer Panchayats.
- **Developmental Gaps:** States such as Bihar, Chhattisgarh, and Andhra Pradesh showed a larger share of Aspirant Panchayats, highlighting areas requiring focused developmental efforts.

### Purpose and Impact

- **Evidence-Based Planning:** The PAI fosters transparency and accountability, enabling policymakers to identify developmental gaps and prioritize resource allocation.
- **Empowering Panchayats:** By providing a standardized framework, the index empowers Panchayats to craft effective development plans tailored to local needs.
- **Commitment to SDGs:** The initiative reflects India's dedication to achieving the 2030 SDG Agenda through participatory, bottom-up development.

### Conclusion

- The rollout of the **Panchayat Advancement Index Baseline Report** marks a significant milestone in rural governance, bridging global SDG ambitions with local realities.
- By promoting evidence-based planning and fostering competition among Panchayats, the PAI is set to transform grassroots development and empower rural communities across India.

Source: PIB

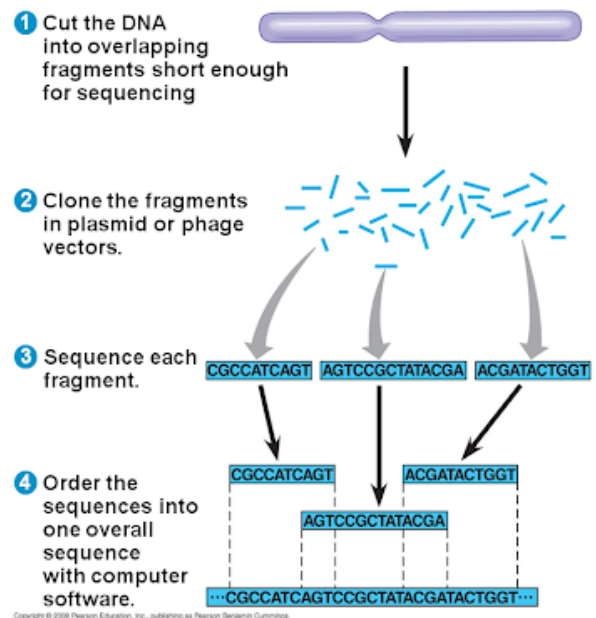
## INDIA'S GENOME MAPPING REVEALS 180 MILLION DNA VARIANTS

### Context

- The GenomeIndia project has published preliminary findings based on genome sequencing of 9,772 individuals across 85 diverse Indian populations.

### What is genome sequencing?

- It is the process of **determining the complete DNA sequence** of an organism's genome, which includes all its genes and non-coding regions.
- It involves identifying the exact order of the **four nucleotide bases (adenine, cytosine, guanine, and thymine)** that make up the DNA.



### Key Findings of the study

- **180 million** genetic variants discovered:
  - ♦ **130 million** in autosomes (non-sex chromosomes).
  - ♦ **50 million** in sex chromosomes (X and Y).
- **Population-specific uniqueness:** Certain variants are found exclusively in specific communities, pointing to localized genetic adaptations.
- **Disease-related variants:** Some variants indicate susceptibility or resistance to infectious diseases, while others relate to environmental adaptations, e.g., high altitude, low oxygen.

### Importance of the study

- It enables **personalized treatment protocols** based on individual genetic makeup.
- It identifies **genetic markers** for complex diseases like diabetes, cancer, cardiovascular disorders.

- It helps in **predicting drug response**, minimizing adverse effects through pharmacogenomics.

#### What is GenomeIndia Project?

- The **objective** of GenomeIndia is to build a comprehensive catalogue of genetic variations that **reflect the unique diversity of the Indian population**.
- It is a collaborative effort of **20 institutions** and funded by the **Department of Biotechnology**, Ministry of Science and Technology.
- Goals of the project:**
  - Establish a Robust Biobank for Future Research:** Collect and store 20,000 blood samples to enable cutting-edge biological research and advancements.
  - Enable Open Access to Genomic Data:** Provide publicly accessible genomic datasets through the Indian Biological Data Centre (IBDC), fostering global research collaborations and innovation.

Source: TH

## NATIONAL CRITICAL MINERAL MISSION

### In Context

- The **National Critical Mineral Mission (NCMM)** was launched in 2025 to establish a robust framework for self-reliance in the critical mineral sector.

### About

- Critical minerals are **essential for clean energy technologies** like solar panels, wind turbines, EVs, and energy storage systems. To secure these resources, **India launched the NCMM** to ensure their long-term availability and processing.



- The NCMM mission aims to establish a **robust framework for self-reliance in the critical mineral sector**. Under this mission, the Geological Survey of India (GSI) has been tasked with conducting 1,200 exploration projects from 2024-25 to 2030-31.
- A committee formed by the Ministry of Mines in November 2022 identified **30 critical minerals**, with 24 included in **Part D of Schedule I of Mines and Minerals Development and Regulation Act, 1957 (MMDR Act, 1957)**.
- The Union Government now has the exclusive authority to auction mining leases and composite licenses for these specific minerals.

### What are Critical minerals?

- Critical minerals are essential for a country's economic development and national security, and their lack of availability or concentration in a few geographical locations can lead to supply chain vulnerabilities.

### Uses of Critical Minerals

- Energy Security & Clean Transition:** Lithium, cobalt, nickel, and REEs are crucial for renewable energy systems (e.g. solar panels, wind turbines).
  - Support India's targets:** 50% electric power from non-fossil sources by 2030
    - Net-zero emissions by 2070
    - Increases wind energy capacity from 42 GW to 140 GW by 2030
- Boost to Electric Vehicles (EVs) and Storage:** Essential for manufacturing lithium-ion batteries, the backbone of EVs and energy storage systems.
  - Reduce India's dependency on imported oil.
  - Aligns with the National Electric Mobility Mission Plan (NEMMP) and FAME scheme.
- Economic Development & Job Creation:** Mining, processing, and R&D in critical minerals can:
  - Attract domestic and foreign investment.
  - Create jobs in exploration, engineering, refining, and technology sectors.
  - Strengthen MSMEs and startups in the clean-tech value chain.
- National Security:** Critical minerals like rare earths, titanium, and tungsten are used in:
  - Defense (missile systems, stealth aircraft, radar)
  - Electronics (telecom, semiconductors, satellites)
  - Reduces strategic vulnerabilities by minimizing import dependence.

- **Infrastructure & Digital Economy Backbone:** Minerals like silicon, gallium, indium are essential for:
  - ♦ Semiconductors
  - ♦ 5G/6G tech
  - ♦ Smart grids, smart cities, and digital India initiatives

#### IREL (India) Limited

- It is a key public sector enterprise under the **Department of Atomic Energy**, and plays a vital role in India's critical minerals value chain.
- With a processing capacity of **6 lakh tonnes per annum**, it produces essential beach sand minerals such as ilmenite, rutile, zircon, sillimanite, and garnet.
- The company operates a **Rare Earth Extraction Plant in Chatrapur, Odisha**, and a **Rare Earth Refining Unit in Aluva, Kerala**, contributing to the indigenous processing of rare earth elements (REEs).

#### International Engagements

- **KABIL-CAMYEN Agreement (Argentina, 2024):** Lithium exploration over 15,703 hectares.
- MoU with **Australia's Critical Minerals Office (2022)**.
- Talks with Democratic Republic of Congo (DRC) for cobalt and copper.
- Strategic tie-ups with Africa, Latin America, and ASEAN countries for secure sourcing.

#### Challenges

- **Geopolitical Risks:** Dependence on imports from China, DRC, and South America.
- **Lack of Domestic Processing Capacity:** India currently lacks advanced REE separation technologies.
- **Low Private Investment:** Mining sector faces regulatory and financial entry barriers.
- **Environmental Concerns:** Mining and refining can damage local ecosystems.
- **Recycling Ecosystem:** Still nascent and lacks scale.

#### Way Forward

- Strengthen domestic exploration and incentivize the private sector via PPP.
- Forge long-term strategic partnerships with mineral-rich countries.
- Boost R&D and recycling to close the mineral loop.
- Skilling and capacity-building for critical mineral-specific technologies.

Source: PIB

## THE ARCTIC BOREAL ZONE (ABZ) REJECTS MORE CARBON

#### Context

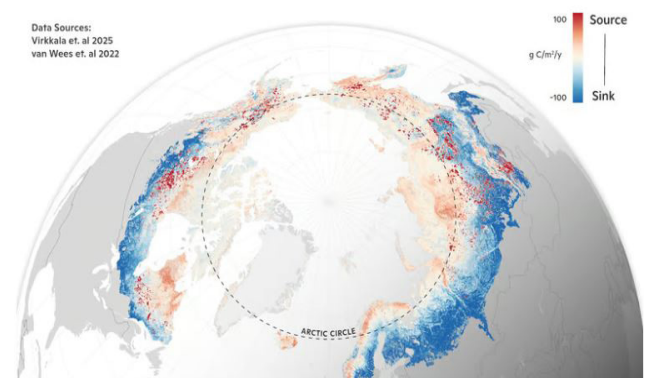
- According to a new study published in Nature, the increasing ferocity of wildfires means that **more than 30% of the Arctic Boreal Zone (ABZ)** has now **stopped capturing carbon and is instead releasing it**.

#### About

- The findings align with the **National Oceanic and Atmospheric Administration (NOAA's) 2024 Arctic Report Card**.
  - ♦ It also highlighted that the Arctic tundra, a treeless region, is becoming a net carbon source, largely due to warming temperatures and escalating wildfire activity in the Northern polar region.

#### The Arctic Boreal Zone (ABZ)

- ABZ is a critical region in the northern hemisphere, characterized **by its unique ecosystems and significant role in regulating global carbon cycles**.
- **Geographical Location:**
  - ♦ The ABZ spans across the Arctic Circle, including parts of **Alaska, northern Europe, and Siberia**.
  - ♦ It includes **tundra, coniferous forests, wetlands, and permafrost regions**.
- **Carbon Sink:** The ABZ has historically acted as a significant carbon sink, absorbing large amounts of carbon dioxide (CO<sub>2</sub>) from the atmosphere through its forests, soil, and permafrost.
  - ♦ The tundra and wetlands in the ABZ sequester carbon in the form of organic material frozen in permafrost, which helps mitigate global warming.



#### Recent Wildfires:

- Multiple U.S. states (Texas, Oklahoma, California) and Japan (Ofunato) faced severe wildfires in early 2025.



- India's forest fire hotspots dropped, but the number of fires remains high, particularly in Uttarakhand, Odisha, and Chhattisgarh.
- Rising land temperatures and prolonged heat waves contribute to more intense fires.

#### Carbon Emissions:

- Wildfires in January 2025 released 800,000 tonnes of carbon, **nearly four times the amount released a decade ago.**
- Wildfires worldwide significantly contribute to carbon emissions, **including 69 million tonnes annually in India.**

#### Carbon Sinks and the Arctic Boreal Zone (ABZ):

- Oceans, forests, and soil are carbon sinks, but wildfires have **disrupted their ability to absorb carbon.**
- The ABZ, once a significant carbon sink, has **started releasing carbon, especially due to thawing permafrost and increased wildfires.**
- **Over 30% of the ABZ now releases carbon,** reversing its long-standing role as a carbon sink.

Source: TH

- It must also prove that the **accused knew or** that their action, whether negligent or malignant, **may cause an infection to spread.**

Source: IE

## 50 YEARS OF INDIA-PORTUGAL DIPLOMATIC TIES

#### Context

- President Murmu held **delegation-level talks with the Portuguese President**, commemorating **50 years of diplomatic relations between India and Portugal.**

#### About

- President Murmu's visit **was the first** by an Indian President to Portugal since President **K. R. Narayanan's trip in 1998.**
- President Murmu was awarded the **'City Key of Honour'** by **Lisbon's Mayor.**

#### Portugal

- Portugal is the **westernmost point of Europe** and lies on the west coast of the Iberian Peninsula.
- It is **bordered by Spain to the east and north and the Atlantic Ocean to the west and south.**



## NEWS IN SHORT

### SECTIONS 271 AND 272 OF THE BNS

#### Context

- An FIR was registered against a restaurant owner in Noida **under Section 271 of the Bharatiya Nyaya Sanhita (BNS).**

#### About

- **Sections 269 and 270 of the Indian Penal Code, 1870,** have been identically reproduced as **Sections 271 and 272 of the BNS.**
  - ♦ These punish acts that are **"likely to spread the infection of any disease dangerous to life".**
- **Section 271 of the BNS,** carries a **maximum punishment of six months imprisonment,** punishes those who **"negligently"** commit such acts.
- **Section 272** punishes those who do so **"malignantly",** implying that the accused intended to spread the infection. It carries a **punishment of six months imprisonment.**
  - ♦ Both are **bailable offences.**
- Under both provisions, the **prosecution must establish that the infection is of a "disease dangerous to life"** — ruling out non-lethal infections.

- The country includes the **Azores and Madeira archipelagos** in the Atlantic.
- The **capital city is Lisbon,** which is also the largest city in the country.
- **Age of Exploration:** Portugal was a global maritime power in the 15th and 16th centuries, leading the Age of Exploration.
  - ♦ Famous explorers like Vasco da Gama and Ferdinand Magellan played pivotal roles.
- **Colonial Era:** Portugal established colonies across the globe, including Brazil, Angola, Mozambique, and Goa (India).
- **EU Membership:** Portugal is a member of the European Union (EU).

Source: AIR



## WORLD HOMOEOPATHY DAY

### Context

- In 2025, India is hosting its largest Homoeopathic symposium on the occasion of World Homoeopathy Day in Gandhinagar, Gujarat.

### World Homoeopathy Day

- World Homoeopathy Day is observed on **April 10** every year, to commemorate the birth anniversary of **Dr. Samuel Hahnemann**, the founder of homeopathy.
- In India, Since 2016, the **Central Council for Research in Homoeopathy (CCRH)** has been celebrating World Homoeopathy Day.

### What is Homoeopathy?

- Homoeopathy is the **world's second-largest medical system**, developed in the late 18th century in Germany.
- Core Principle:** "Similia Similibus Curentur" or "like cures like."
  - A substance causing symptoms of a disease in a healthy individual would cure similar symptoms in a sick individual.

### Legal Framework in India

- Homoeopathy in India was governed by the **Homoeopathy Central Council Act, 1973**.
- To reform and modernize the system, the **National Commission for Homoeopathy Act, 2020** was enacted and came into force in 2021.
- The system is recognized under the National Health Policy (2017) and is governed by the Ministry of AYUSH.

### Institutional Framework in India

- National Commission for Homoeopathy (NCH):** A statutory body under the Ministry of AYUSH, the NCH is responsible for ensuring regulation of homoeopathic education and practice.
- Central Council for Research in Homoeopathy (CCRH):** It leads scientific validation and research in homoeopathy.
  - It operates a network of over **35 research centres** and clinical treatment facilities across the country.
- Pharmacopoeia Commission for Indian Medicine & Homoeopathy (PCIM&H):** It ensures the quality and standardization of homoeopathic medicines.

Source: PIB

## NIVESHAK DIDI INITIATIVE

### Context

- Investor Education and Protection Fund Authority (IEPFA) and India Post Payments Bank (IPPB) have signed a MoA to **jointly launch Phase 2 of the "Niveshak Didi" initiative**.

### Niveshak Didi Initiative:

- Under the initiative, **women postal workers and community leaders** are trained to act as **financial educators in local regions**.
- Phase 1:** It was launched in **2018**, over 55,000 beneficiaries participated in IPPB Financial Literacy Camps across India, with 60% female participants, mainly from rural areas.
- Phase 2:** Over 4,000 new financial literacy camps will be set up, led by nearly 40,000 women postal workers (Niveshak Didis).
- Topics covered:** Responsible investing, fraud awareness, savings habits, and digital banking tools.

### Investor Education and Protection Fund Authority (IEPFA):

- It is a **statutory body** under the **Ministry of Corporate Affairs**, established in **2016**.
- Role:** Promotes financial literacy, educates people on managing personal finances, and informs about rights and responsibilities as investors.
- Focus:** Special outreach to rural and underserved communities to empower individuals with financial knowledge.

### India Post Payments Bank (IPPB):

- Established:** In 2018, under the Department of Posts, Ministry of Communication.
- Vision:** To provide accessible, affordable, and trusted banking services for all, especially the unbanked and underbanked.
- Operating Model:** Focuses on paperless, cashless, and presence-less banking through smartphones and biometric devices.

Source: PIB

## ARTEMIS ACCORDS

### Context

- Bangladesh became the **54th country** to sign the Artemis Accords, a U.S.-led initiative for peaceful and cooperative space exploration.

### About the Artemis Accords

- **Launched:** October 13, 2020
- **Founding Nations:** Australia, Canada, Italy, Japan, Luxembourg, UAE, UK, and the **United States**.
- **Legal Basis:** Based on the **Outer Space Treaty of 1967 (OST)**.
- **Nature:** **Non-binding** set of principles for civil space exploration and utilization.
- **Key Principles:**
  - ♦ Peaceful purposes, Transparency, Interoperability, Emergency Assistance, Registration of Space Objects, Release of Scientific Data, Protecting Heritage, Utilization of Space Resources, Deconfliction of Activities, and Orbital Debris and Spacecraft Disposal.
- **Scope of Activities:** Applies to civil space operations on the **Moon, Mars, comets, and asteroids** — including their **surfaces & sub-surfaces**, as well as **orbital, Lagrangian points**, and **transit operations** between these bodies.



Source: AIR

## PROJECT VARSHA

### Context

- India is set to establish a new naval base under Project Varsha for nuclear submarines and warships in coastal Andhra Pradesh by 2026.

### About

- **Located:** The new base will be located near the village of **Rambilli**, approximately 50 kilometers from Eastern Naval Command headquarters in Visakhapatnam.
- **Stealth capabilities:** The naval base will feature underground pens and tunnels to house nuclear submarines, ensuring stealthy operations in the Bay of Bengal.
  - ♦ The stealth capabilities are vital for **SSBNs (nuclear-powered ballistic missile submarines)**, which need to remain hidden during their long patrols.
- Similarly **Karwar base in Karnataka** under **Project Seabird** safeguards the west coast.

### Nuclear-powered submarines of India

- The Indian Navy is going to commission **INS Aridhaman**, the third nuclear-powered submarine in India's fleet.
- The submarine, with a displacement of 7,000 tonnes, will be slightly bigger than the first two SSBNs — **INS Arihant** and **INS Arighaat**.

Source: BS

## NILGIRI TAHR CENSUS TO BE CONDUCTED

### Context

- **Kerala and Tamil Nadu** will jointly conduct a Nilgiri Tahr census, commemorating the **50th anniversary of Eravikulam National Park's establishment**.

### Eravikulam National Park

- Originally declared a sanctuary in **1975**, it was established as Kerala's first National Park in 1978.

- This park has **numerous endangered species**, including the Nilgiri Tahr (an endangered mountain goat species), Lion-tailed Macaques, and Nilgiri Langurs.
- Park's primary aim was to **safeguard the endangered Nilgiri tahr**.
- It is also known as the "**Land of Neelakurinji**", purplish-blue Neelakurinji flowers **blossom every 12 years**.
- **The Nilgiri tahr** is the only **mountain ungulate in southern India** amongst the 12 species present in India. It is also the **state animal of Tamil Nadu**.
  - ♦ It is the **endemic species** of the Western Ghats and is found in **Kerala and Tamil Nadu**.
  - ♦ It is listed as **Endangered** in the IUCN Red List of Threatened Species and is protected under **Schedule I** of the Wildlife (Protection) Act of India, 1972.



Source: TH

## OZONE POLLUTION

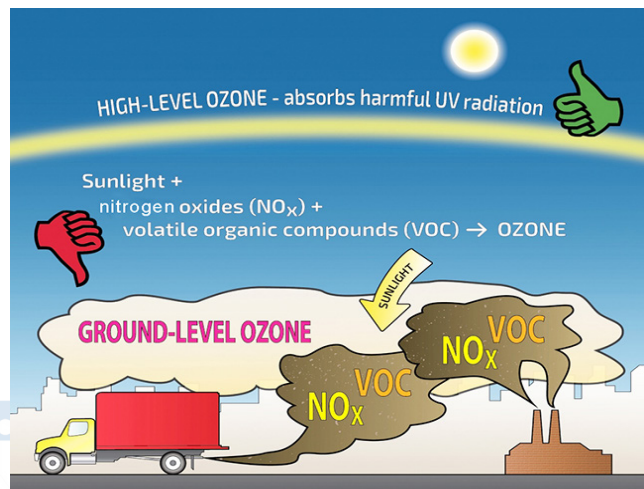
### Context

- According to a study by the IIT Kharagpur, surface ozone pollution is impacting India's major food crops, particularly in the Indo-Gangetic Plain and central India.

### What is Ozone Pollution?

- **Ozone ( $O_3$ )** is a gas composed of three oxygen atoms.
  - ♦ It occurs both in the Earth's upper atmosphere (**stratosphere**) and at ground level (**troposphere**).
- **Stratospheric ozone** is beneficial as it forms the ozone layer that **shields the Earth** from the sun's harmful ultraviolet radiation.

- **Tropospheric ozone**, however, is a harmful air pollutant and greenhouse gas.
  - ♦ It is not emitted directly but is formed by chemical reactions between **oxides of nitrogen ( $NO_x$ )** and **volatile organic compounds (VOCs)** in the presence of sunlight.
- **The World Health Organization (WHO)** recommends a maximum ozone level of **100 micrograms per cubic meter ( $\mu g/m^3$ )**, measured as an 8-hour maximum moving average within a day



### Impact on Crops

- Ozone enters plants through stomata and causes oxidative stress, **reducing photosynthesis and damaging cell membranes**.
- According to the IIT Kharagpur study;
  - ♦ **Wheat yields** could **decline by an additional 20%** under high-emission scenarios.
  - ♦ **Rice and maize** yields may drop by around **7%**.
  - ♦ Exposure in the Indo-Gangetic Plain and Central India may exceed safe ozone limits by up to **six times**.
- Ozone Pollution is hindering the country's progress towards achieving the United Nations Sustainable Development Goals (SDGs) of '**no poverty**' and '**zero hunger**' by 2030.

Source: TH

