



December - 17

TNPSC BITS

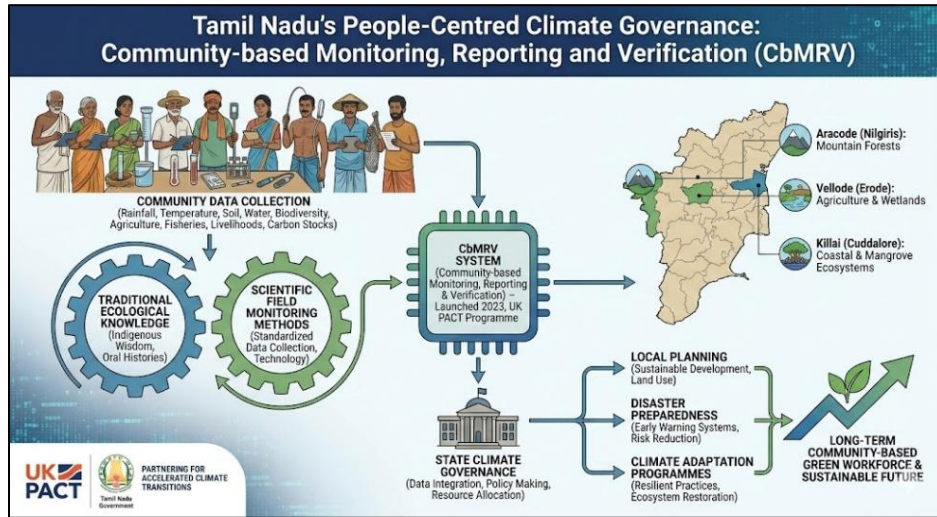
- ❖ IIT Madras inaugurated the IITM C-DOT Samanya Technologies Foundation, India's National Hub for Quantum Communication, which operates under the National Quantum Mission.
- ❖ The Asian Development Bank (ADB) has approved a fresh loan of USD 240 million for the expansion of the Chennai Metro network to provide cleaner, safer and more dependable public transport across the Chennai Metropolitan Area.
 - This tranche is part of ADB's \$780 million multi tranche financing facility for the project, approved in 2022,
- ❖ The Indian Navy will commission DSC A20, first indigenously built Diving Support Craft, at Kochi.
- ❖ A commemorative postage stamp in honour of Emperor Perumbidugu Mutharaiyar II (also known as Suvaran Maran) was released recently.
 - He belonged to the Mutharaiyar dynasty, which ruled the central regions of Tamil Nadu between the 7th and 9th centuries CE.

TAMIL NADU NEWS

People-Centered Climate Governance

- ❖ Tamil Nadu has launched a people-led climate intelligence system through Community-based Monitoring, Reporting and Verification (CbMRV).
- ❖ Monitoring, Reporting and Verification (MRV) is used to track climate change impacts, adaptation actions, and environmental outcomes.
- ❖ The initiative began in 2023 under the United Kingdom Partnering for Accelerated Climate Transitions (UK PACT) programme.
- ❖ It integrates community-generated environmental data into State climate governance.
- ❖ These three areas were selected as pilot:
 - Aracode in the Nilgiris (mountain forests),
 - Vellode in Erode (agriculture and wetlands), and
 - Killai in Cuddalore (coastal and mangrove ecosystems).
- ❖ Communities collect data on rainfall, temperature, soil, water, biodiversity, agriculture, fisheries, livelihoods, and carbon stocks.

- ❖ Traditional ecological knowledge is used along with scientific field monitoring methods.
- ❖ The data support local planning, disaster preparedness, and climate adaptation programmes.
- ❖ The initiative aims to build a long-term community-based green workforce in Tamil Nadu.



Top Tourist Destinations

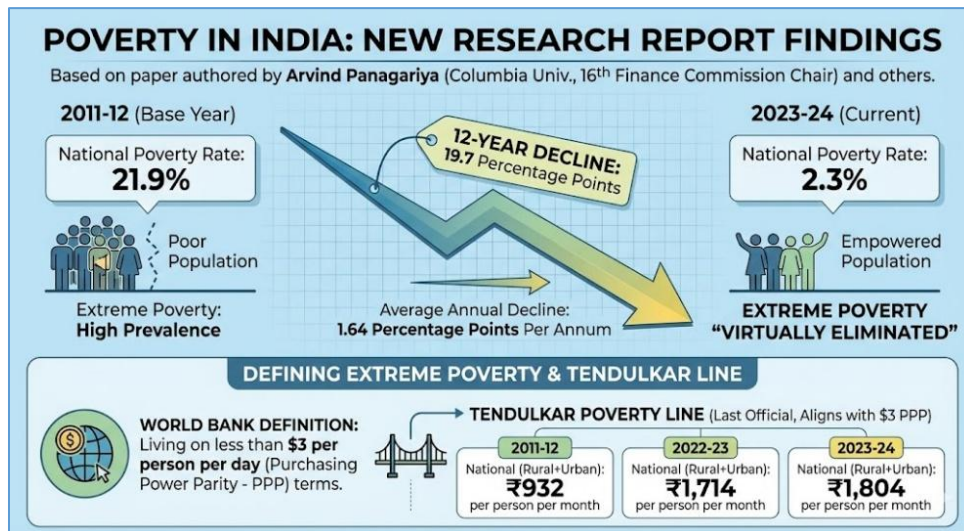


- ❖ Tiruchi district remained the top tourist destination in Tamil Nadu in August 2025.
- ❖ According to the Department of Tourism, Tiruchi attracted 23.09 lakh tourists in August.

- ❖ Of the total visitors to Tiruchi, 22.94 lakh were domestic tourists, and 14,706 were foreign tourists.
- ❖ Madurai district ranked second with 21.65 lakh tourists and recorded the highest number of foreign tourists at 1.53 lakh.
- ❖ Thoothukudi ranked third with 21.10 lakh tourists, followed by Ramanathapuram with 20.16 lakh tourists.
- ❖ Major tourist districts such as Tiruchi, Madurai, Thanjavur, and Tiruvannamalai are known for historic temples and religious sites.

NATIONAL NEWS

Poverty in India - New research report



- ❖ The new paper authored by Columbia University professor and Sixteenth Finance Commission Chairman Arvind Panagariya and others.
- ❖ India has “virtually eliminated” extreme poverty between 2011-12 and 2023-24.
- ❖ The national poverty rate fell from 21.9% (of the population) in 2011-12 to 2.3% in 2023-24.
- ❖ It is a decline of 19.7 percentage points over 12 years, or 1.64 percentage points per annum.
- ❖ The World Bank defines extreme poverty as living on less than \$3 per person per day in purchasing power parity (PPP) terms.
- ❖ As per the authors, it is close to the Tendulkar poverty line, the last officially adopted poverty line.

- ❖ The national (Rural+urban) poverty line based on the Tendulkar method was set at Rs 932 per person per month in 2011-12, Rs 1,714 in 2022-23 and Rs 1,804 in 2023-24.
- ❖ The rate of poverty among Hindus is estimated at 2.3%, for Muslims it is 1.5%, for Christians 5%, for Buddhists 3.5%, and for Sikhs and Jains 0%.

SCIENCE AND TECHNOLOGY NEWS

First AI Tool for Liver Disease

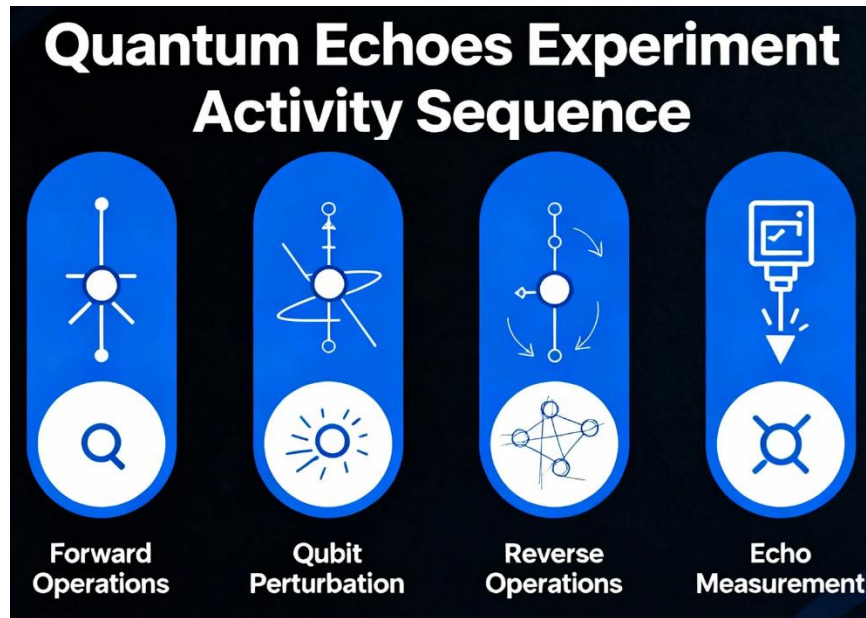
- ❖ AIM-NASH is the first AI tool qualified by the U.S. Food and Drug Administration (FDA) for assessing severe fatty liver disease.
- ❖ It analyses liver biopsy images to detect fat accumulation, inflammation, and scarring in metabolic dysfunction-associated steatohepatitis (MASH).
- ❖ The tool uses deep learning algorithms to generate standardized scores reviewed by doctors for final diagnosis.
- ❖ FDA qualification will accelerate MASH clinical trials, reduce trial timelines, and lower reliance on multiple human readings.
- ❖ AIM-NASH demonstrates the growing role of AI in drug development while maintaining human oversight for accuracy.



Google's Quantum Echoes Experiment

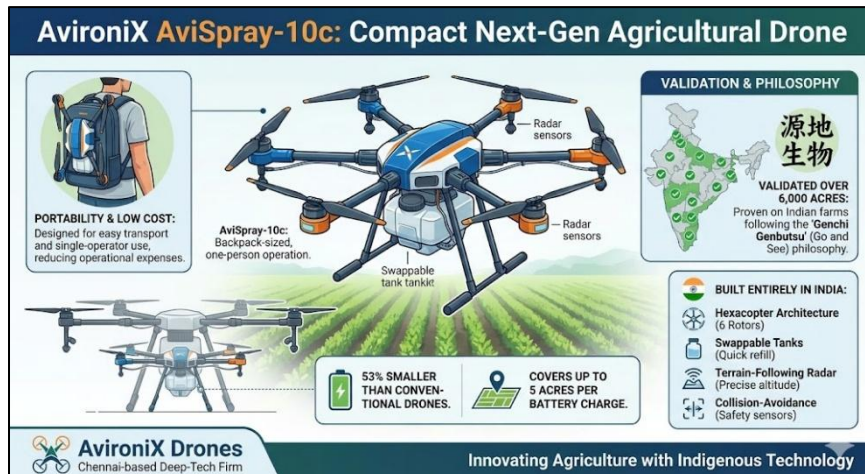
- ❖ Google has conducted a Quantum Echoes experiment using its 65-qubit Willow quantum processor.

- ❖ The experiment studied how quantum information spreads and returns inside a quantum system.
- ❖ Scientists used an Out-of-Time-Order Correlator (OTOC) to measure this information flow.
- ❖ The experiment increased concern about Q-Day, when quantum computers may break present-day encryption.



AviSpray-10c Agricultural Drone

AvironiX AviSpray-10c: Compact Next-Gen Agricultural Drone



PORTABILITY & LOW COST: Designed for easy transport and single-operator use, reducing operational expenses.

AviSpray-10c: Backpack-sized, one-person operation.

Swappable tank tankit.

53% SMALLER THAN CONVENTIONAL DRONES.

COVERS UP TO 5 ACRES PER BATTERY CHARGE.

VALIDATION & PHILOSOPHY

源 地 生 物

VALIDATED OVER 6,000 ACRES: Proven on Indian farms following the 'Genchi Genbutsu' (Go and See) philosophy.

BUILT ENTIRELY IN INDIA:

- Hexacopter Architecture (6 Rotors)
- Swappable Tanks (Quick refill)
- Terrain-Following Radar (Precise altitude)
- Collision-Avoidance (Safety sensors)

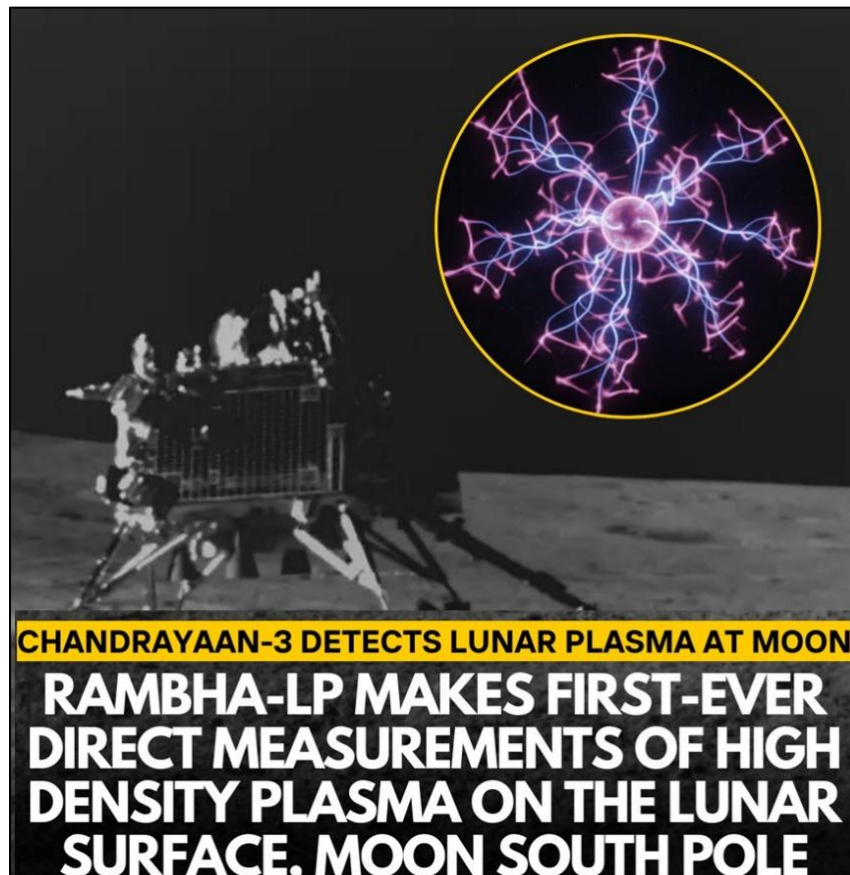
AvironiX Drones
Chennai-based Deep-Tech Firm

Innovating Agriculture with Indigenous Technology

- ❖ AvironiX Drones, a Chennai-based deep-tech firm, launched the AviSpray-10c, a compact next-generation agricultural drone.
- ❖ The drone is backpack-sized and designed for one-person operation, improving portability and lowering operational costs.

- ❖ AviSpray-10c is 53% smaller than conventional agricultural drones and covers up to 5 acres per battery charge.
- ❖ The drone was validated through spraying over 6,000 acres of Indian farms following the Japanese 'Genchi Genbutsu' philosophy.
- ❖ It is built entirely in India with features like hexacopter architecture, swappable tanks, terrain-following radar, and collision-avoidance.

Active Plasma on Moon

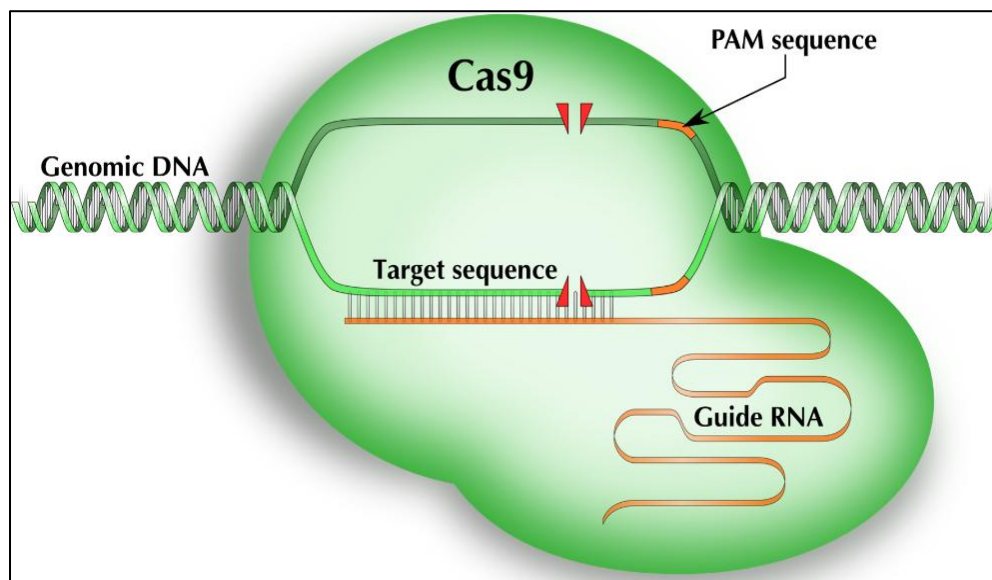


- ❖ RAMBHA-LP of ISRO's Chandrayaan-3 mission detected an active plasma environment in the Moon's south polar region.
- ❖ It is a payload on the Vikram lander.
- ❖ RAMBHA-LP stands for Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere – Langmuir Probe
- ❖ Plasma is the fourth state of matter, consisting of charged particles like ions and free electrons.
- ❖ RAMBHA-LP measures electron density and electron temperature near the lunar surface.

- ❖ Electron densities recorded were 380–600 particles per cubic centimetre, and electron temperatures were 3,000–8,000 Kelvin.

GlowCas9 protein

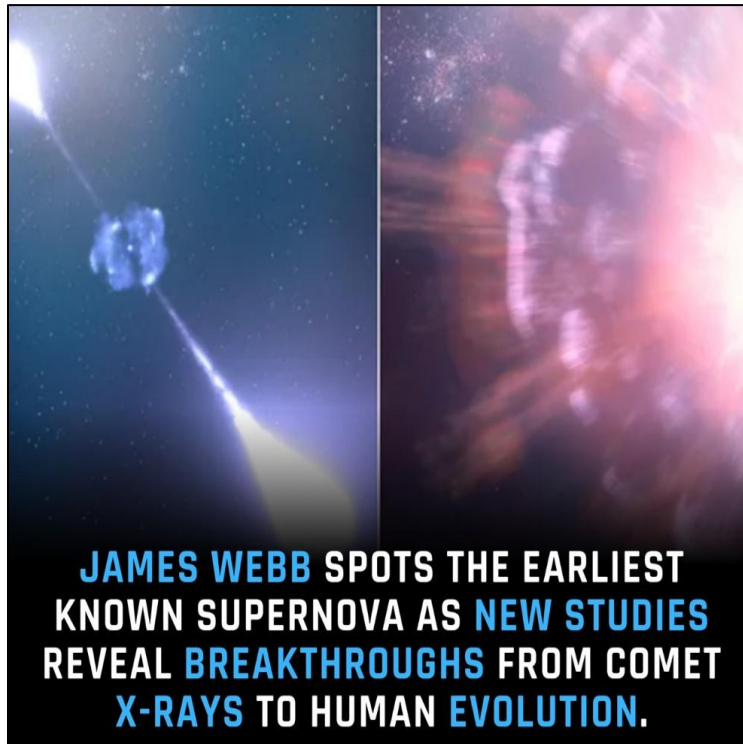
- ❖ GlowCas9, a bioluminescent CRISPR-Cas9 protein engineered by the Bose Institute, Kolkata.
- ❖ It fuses Cas9 with split nano-luciferase fragments from deep-sea shrimp, which emit light when Cas9 becomes active.
- ❖ The system allows real-time monitoring of gene-editing activity inside living cells, tissues, and plant leaves without harming them.
- ❖ GlowCas9 shows greater thermal stability and enhances homology-directed repair, improving precise DNA correction.
- ❖ The technology enables theratracking, allowing scientists to observe therapeutic gene editing as it occurs in real time.



First Billion-Year-Old Supernova

- ❖ The James Webb Space Telescope (JWST) detected the earliest recorded supernova in the universe.
- ❖ The supernova occurred within the universe's first billion years after the Big Bang.
- ❖ Evidence indicates a core-collapse explosion of a massive, low-metallicity star.
- ❖ Early supernovae supplied heavy elements essential for planets and complex chemistry.

- ❖ The event occurred in a dense, rapidly star-forming galaxy, providing insights into early galaxy evolution.



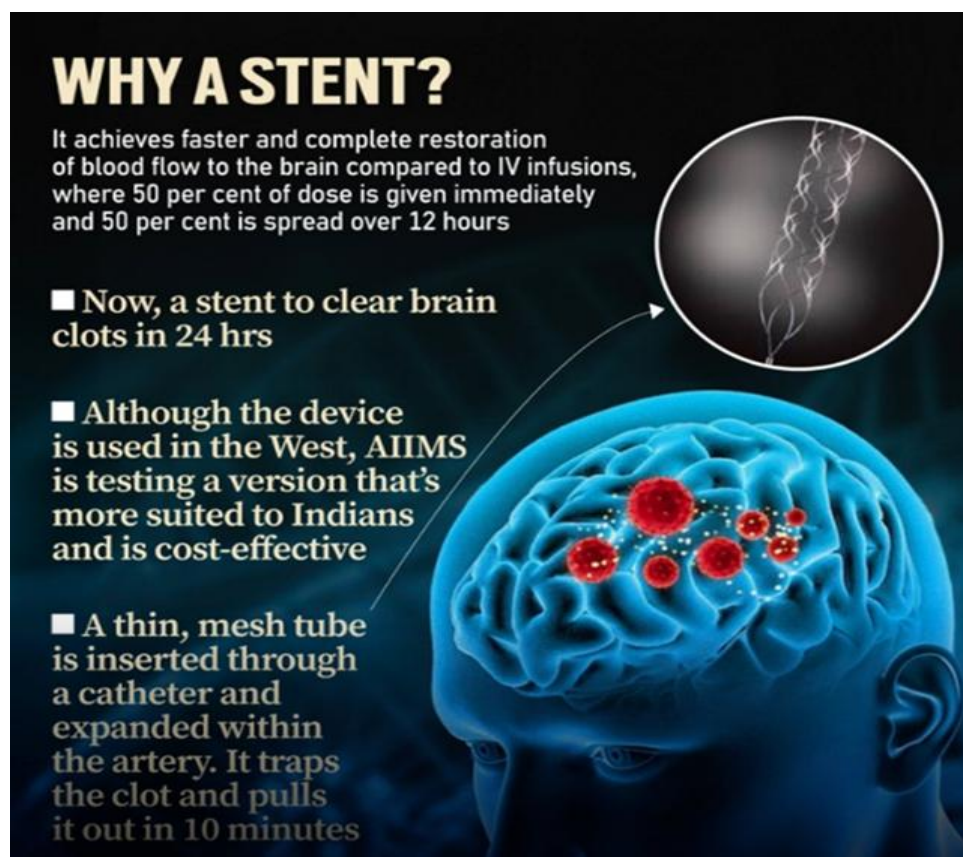
MAVEN Mars Mission Update



- ❖ NASA has lost contact with the MAVEN (Mars Atmosphere and Volatile EvolutionN) spacecraft.

- ❖ MAVEN stopped communicating after passing behind Mars during its normal orbit.
- ❖ The spacecraft was launched in 2013 and entered Mars orbit in 2014.
- ❖ MAVEN studied the Martian upper atmosphere and its interaction with the solar wind.
- ❖ It helped explain how Mars lost much of its atmosphere over billions of years.
- ❖ MAVEN also served as a communication relay for Mars rovers like Curiosity and Perseverance.

GRASSROOT Stroke Trial



WHY A STENT?

It achieves faster and complete restoration of blood flow to the brain compared to IV infusions, where 50 per cent of dose is given immediately and 50 per cent is spread over 12 hours

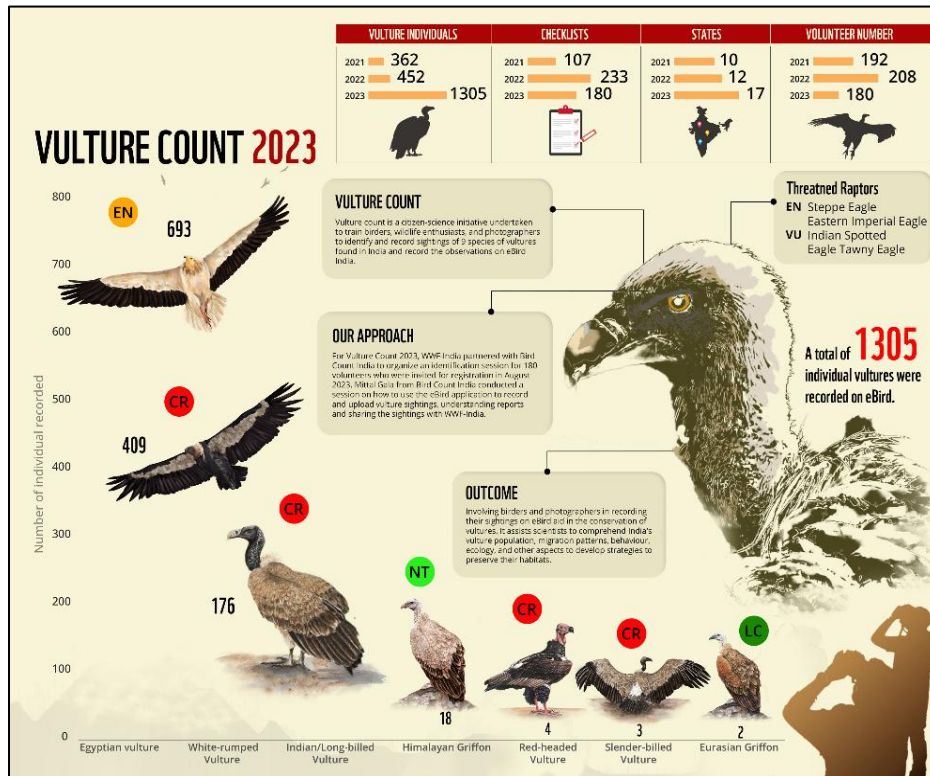
- Now, a stent to clear brain clots in 24 hrs
- Although the device is used in the West, AIIMS is testing a version that's more suited to Indians and is cost-effective
- A thin, mesh tube is inserted through a catheter and expanded within the artery. It traps the clot and pulls it out in 10 minutes

- ❖ AIIMS Delhi conducted India's first dedicated clinical trial of an indigenous brain stent for severe stroke care.
- ❖ The trial, named GRASSROOT, evaluated the Supernova stent-retriever developed by Gravity Medical Technology.
- ❖ GRASSROOT stands for Gravity Stent-Retriever System for Reperfusion of Large Vessel Occlusion Stroke Trial

- ❖ It has focused on large vessel occlusion (LVO) strokes, a life-threatening form of ischemic stroke.
- ❖ The Supernova device is a stent-retriever used to remove blood clots from brain arteries.
- ❖ Results showed high safety and efficacy.
- ❖ Based on domestic data, CDSO (Central Drugs Standard Control Organisation) approved the Supernova stent for clinical use.

ENVIRONMENT NEWS

BNHS Vulture Release Program

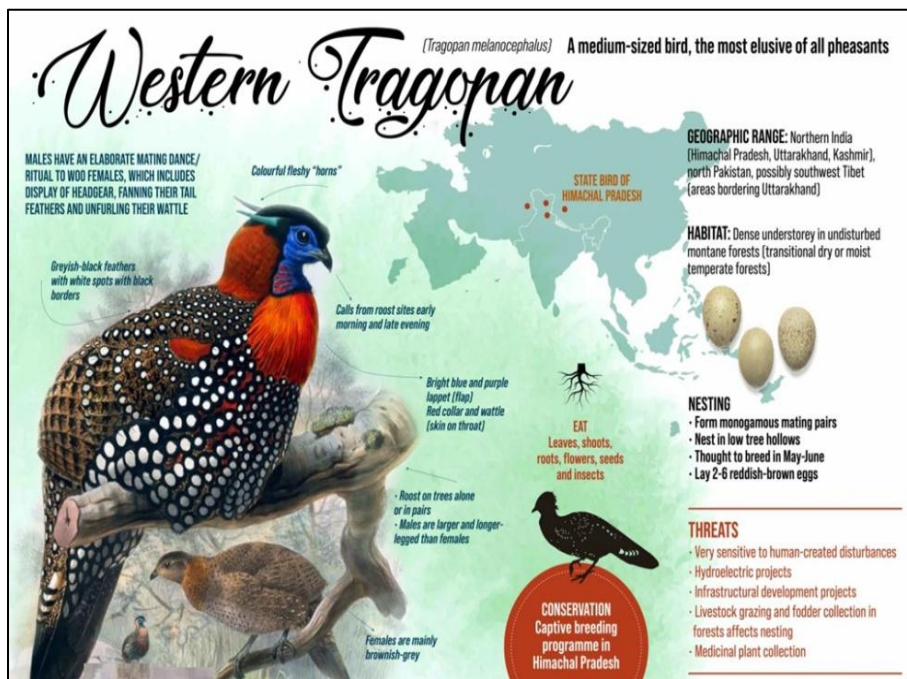


- ❖ The Bombay Natural History Society (BNHS) will release six critically endangered vultures in Assam in January 2026.
- ❖ The release includes three Slender-billed vultures and three White-rumped vultures bred in captivity.
- ❖ The vultures were bred at the BNHS Vulture Conservation Breeding Centre in Rani, Kamrup district.
- ❖ They will be released through a soft-release method in the Kamrup and Biswanath districts of Assam.

- ❖ The aim is to restore vulture populations in their natural habitat and strengthen the ecosystem.

Western Tragopan Conservation

- ❖ Captive breeding of the Western Tragopan has helped stabilise its population, but habitat protection is essential for its long-term survival.
- ❖ The Western Tragopan (*Tragopan melanocephalus*) is one of India's rarest pheasants and the state bird of Himachal Pradesh.
- ❖ It is found in small forest pockets of Jammu & Kashmir, Himachal Pradesh, and Uttarakhand.
- ❖ The species is listed as Vulnerable (VU) on the IUCN (International Union for Conservation of Nature) Red List.
- ❖ About 3,000–9,500 mature individuals are estimated to survive in the wild.
- ❖ The first successful captive breeding was achieved in 2005 at Sarahan Pheasantry, Himachal Pradesh.

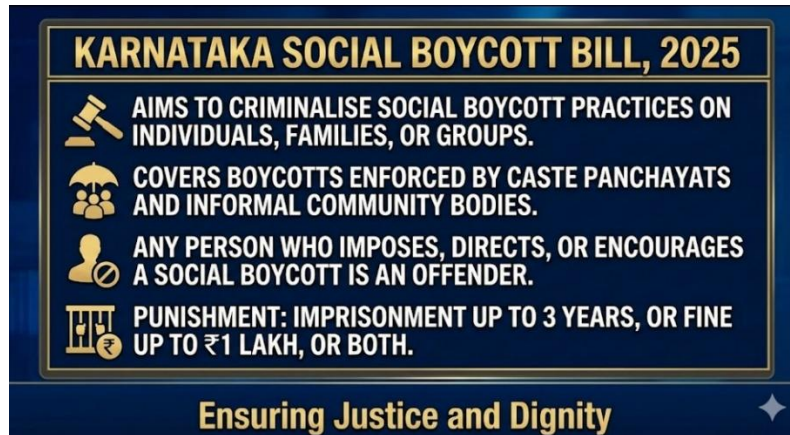


STATES' NEWS

Karnataka Social Boycott Bill 2025

- ❖ Karnataka Social Boycott (Prevention, Prohibition and Redressal) Bill, 2025, aims to criminalise social boycott practices imposed on individuals, families, or groups.

- ❖ It covers boycotts enforced by caste panchayats and informal community bodies.
- ❖ Any person who imposes, directs, or encourages a social boycott will be treated as an offender.
- ❖ The punishment includes imprisonment up to three years, or a fine up to ₹1 lakh, or both.
- ❖ The Bill provides for the appointment of a Social Boycott Prohibition Officer to support victims and ensure enforcement.



MISCELLANEOUS NEWS

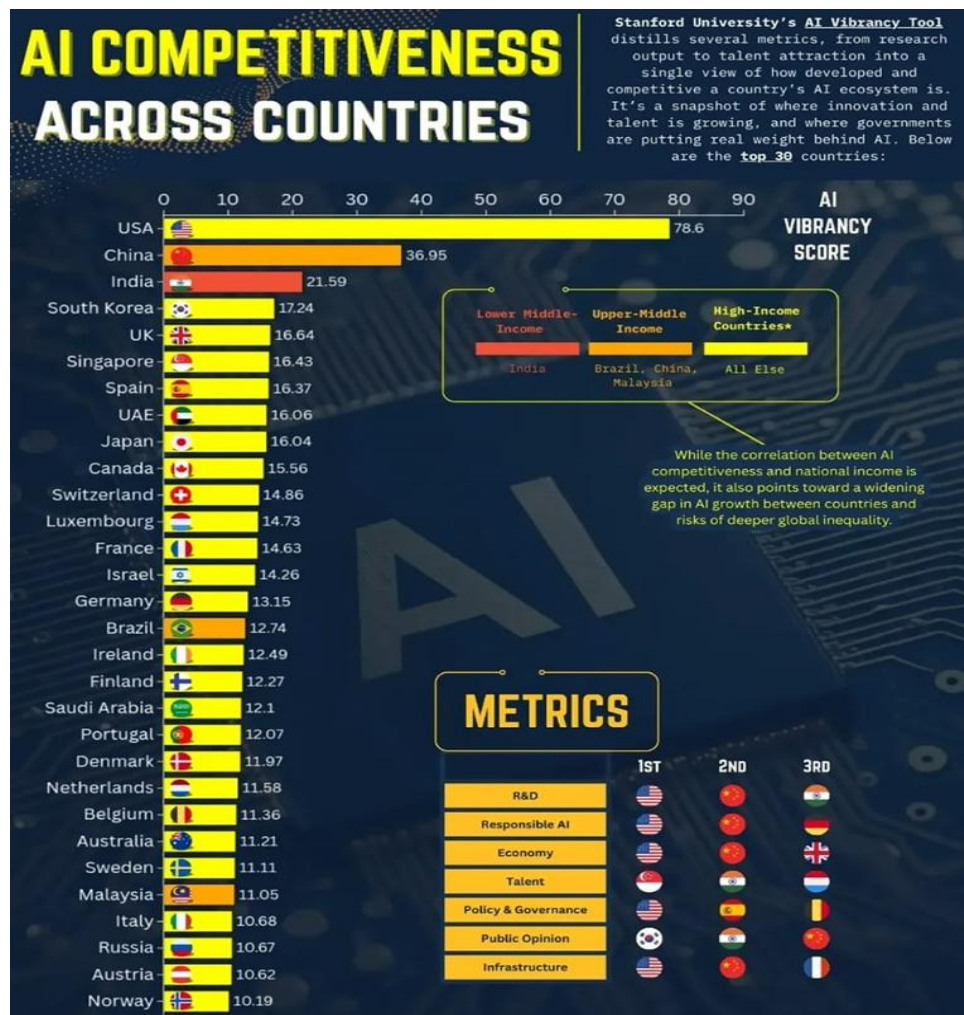
Oldest-known evidence of fire-making



- ❖ Researchers have discovered the earliest known instance of human-created fire, which took place in the east of England 400,000 years ago.

- ❖ The site, a former clay pit near the village of Barnham, contains a hearth made by Neanderthals about 415,000 years ago.
- ❖ They discovered a baked earth that formed a hearth, heat-shattered flint axes and two fragments of pyrite - a type of stone used to create sparks for lighting tinder.
- ❖ Until now, the earliest known evidence of humans making fire dated to around 50,000 years ago at a site in northern France, also linked to Neanderthals.

Global AI Rankings



- ❖ India is the world's third-most competitive country in AI.
- ❖ The ranking is based on the Global AI Vibrancy Tool by Stanford University.
- ❖ India scored 21.59, ranking behind the United States of America (78.6) and China (36.95).

- ❖ The ranking considers factors such as talent, research and development, investment, policy, infrastructure, and economic impact.
- ❖ India's score is higher than countries like South Korea, Japan, Singapore, the United Kingdom, and Germany.

Vijay Diwas 2025

- ❖ It marks India's victory over Pakistan in the 1971 war, leading to the creation of Bangladesh.
- ❖ 93,000 Pakistani troops surrendered, ending a 13-day war.
- ❖ The day honours the bravery and sacrifice of the Indian Armed Forces.
- ❖ In West Bengal and among Bengali communities, it is observed as Bijoy Dibosh.
- ❖ A related observance, Kargil Vijay Diwas, is celebrated on 26 July to commemorate the 1999 Kargil War.

