PRAJYA

MONTHLY NEWS MAGAZINE FOR CHILDREN

Volume: 04 Issue: 12 August 2025 Rs.85/-

International Day of Deafblindness

27th June

Helen Keller

The International Day of Deafblindness is observed annually on June 27th. This day was established by the United Nations to commemorate the birth of Helen Keller and to raise awareness and promote the rights of individuals with deafblindness.

THE PRAJYA TEAM

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FROM THE EDITOR'S DESK

"Ideas won't keep. Something must be done about them."

That's precisely what researchers from INST Mohali, IIT Bombay and Tata Memorial's ACTREC did recently in their quest to improve methods of treating deadly cancer. They came up with a simple and innovative way to create gold **"nano cups"** or semi shells which are effective in photo thermal therapy to specifically target and destroy cancer cells using heat.

Energy storage has for long posed challenges. High costs, limitations in technology, safety concerns, integration issues and environmental impact have been among the major concerns. Scientists from Bengaluru and Aligarh Muslim University had a breakthrough when they inventively introduced a rare earth element Lanthanum to silver niobate nanoparticles to increase the material's surface area and also electrical conductivity. The added advantage is quickening the charging / recharging process. The asymmetric **supercapacitor** prototype they developed has been effective.

The possibilities of application of this innovation are diverse – portable electronics, electric vehicles and renewable energy systems to name a few.

"A rock pile ceases to be a rock pile the moment a single man contemplates it, bearing within him the image of a cathedral."

— Antoine de Saint-Exupery

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

There have been requests from quite a few readers for hard copies of Prajya. We understand that quite a high percentage of our young readers keep revisiting some articles, and a handy print version within reach induces one to read more often, highlight things and make notes. This also partly contributes to students spending less screen time. The Prajya team is happy to bring to you the issue in print.

However, there are few things that we want to be careful about:

A. We don't want to print more than what is required and

B. Keep the cost of the print version (plus postage) within reasonable limits.

Please note that the access to free online e-version will continue.

So, it will greatly help us if you could fill in the details in the link provided.

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Happy Reading !

Watch out for the Monthly Prajya Quiz online

Visit https://davchennai.org/publications/prajya-news-magazine/

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National Current Affairs

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General Knowledge

Smt Anuradha V R

India among the most equal countries

- India ranks **fourth globally** in income equality with a Gini score **of 25.5.**
- Extreme poverty dropped to **2.3% in 2022-23,** says World Bank.
- **171 million Indians** moved out of extreme poverty between 2011–23.

India is not only the world's fourth largest economy; it is also one of the most equal societies today. According to the World Bank, **India's Gini Index stands at 25.5,** making it the fourth most equal country in the world, after the Slovak Republic, Slovenia and Belarus. This is a remarkable achievement for a country of its size and diversity. It reflects how India's economic progress is being shared more evenly across its population.

India's global standing in equality

India's score is much lower than China's 35.7 and far lower than the United States, which stands at 41.8. It is also more equal than every G7 and G20 country, many of which are considered advanced economies.

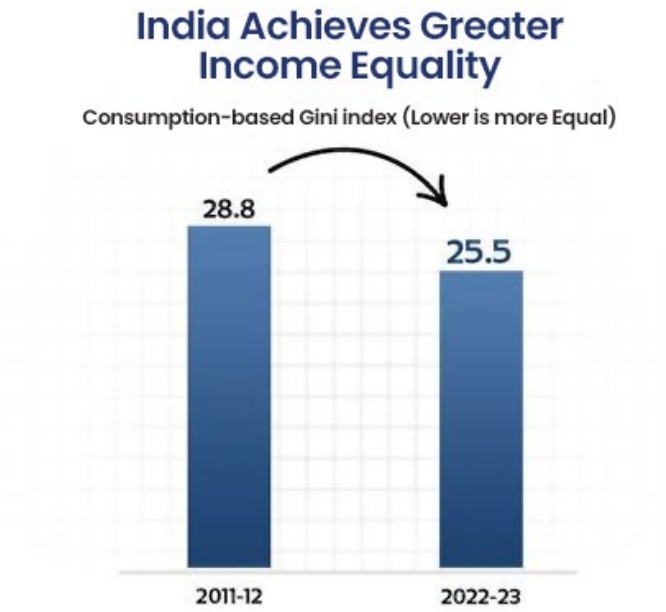
Poverty reduction driving greater equality

India's strong standing on the Gini Index is not a coincidence. It is closely linked to the country's sustained success in reducing poverty across both rural and urban regions. *The Spring 2025 Poverty and Equity Brief* by the World Bank highlights this achievement as one of the most significant in recent years.

According to the report, 171 million Indians have been lifted out of extreme poverty over the past decade. The share of people living on less than 2.15 USD a day, which was the global threshold for extreme poverty till June 2025, fell sharply from 16.2% in 2011-12 to just 2.3 % in 2022-23.

Under World Bank's revised extreme poverty threshold of USD 3.00 per day, the 2022-23 poverty rate would be adjusted to 5.3 %.

India's progress towards greater income equality is backed by a series of focused government initiatives. These schemes aim to improve financial access, deliver welfare benefits efficiently and support vulnerable and underrepresented groups. Together, they have helped bridge gaps, boost livelihoods and ensure that growth reaches all sections of society.



Some of the key schemes and initiatives are:

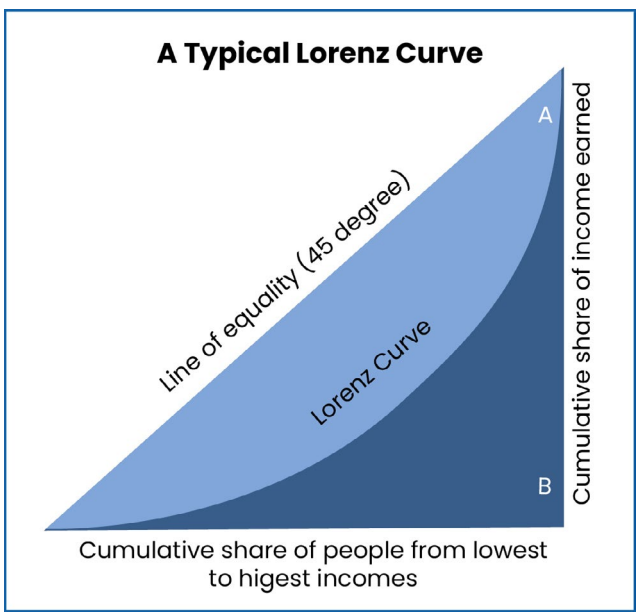
- PM Jan Dhan Yojana
- Aadhaar and Digital Identity
- Direct Benefit Transfer (DBT)
- Ayushman Bharat
- Stand-Up India
- Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)
- PM Vishwakarma Yojana

As the world looks for models that combine growth with fairness, India's example stands out. Its experience shows that equality and development are not separate goals. When supported by sound policy and inclusive intent, they move forward together.

Understanding the Gini Index

The Gini Index is a simple yet powerful way to understand how equally income, wealth or consumption is distributed across households or individuals in a country. It ranges in value from 0 to 100. A score of 0 means perfect equality. A score of 100 means one person has all the income, wealth or consumption and others have none, hence absolute inequality. **The higher the Gini Index the more unequal the country.**

Graphically Gini Index can be explained by the **Lorenz curve.** A Lorenz curve **plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household.** A perfectly equal distribution will be shown by a diagonal line, while the actual distribution will be shown by the Lorenz curve. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality or the gap between the two, expressed as a percentage of the maximum area under the line. The bigger the gap, the more unequal the income. This gives one clear number to show how fairly income is spread.



Behind this success is a consistent policy focus on reducing poverty, expanding financial access, and delivering welfare support directly to those who need it most.

Smt Gaayathiri G

Largest sand battery launched

In **June 2025**, Finnish startup **Polar Night Energy** and district heating provider **Loviisan Lämpö** commissioned what is officially recognised as the **world's largest industrial-scale "sand battery",** located in **Pornainen, southern Finland.**

The structure is a towering silo standing roughly **13 metres tall and 15 metres wide,** filled with around **2,000 tons of crushed soapstone**—a byproduct of Tulikivi's fireplace manufacturing—repurposed as the thermal storage medium. It delivers a **1 MW heat output** and stores up to **100 MWh of thermal energy,** making it nearly **ten times larger** than Polar Night's first commercial installation in Kankaanpää from 2022.

Functionally, the sand battery uses **electricity, often surplus renewable energy from solar or wind, to resistively heat sand to high temperatures (500–600°C)**. The stored heat is later released into Pornainen's **district heating network,** serving as the **primary heat source** for the town. In summer, it can meet heating demand for almost a month; in colder months, about a week.

The environmental impact is profound: **annual CO_2 emissions from local heating are projected to drop by around 160 tonnes,** representing about a **70% reduction.** It also enables **complete phasing out of heating oil** and **reduces wood chip combustion by about 60%**, while allowing the existing biomass boiler to remain as backup for peak demand.

Operational optimisation is powered by an **AI solution from Elisa,** which participates in Finland's electricity reserve markets and automatically times charging/discharging to maximise efficiency and profit. The system can adjust its charging power to participate in grid balancing markets, helping to stabilise the power grid and reduce dependence on fossil fuels. This is done by optimising operations based on electricity prices and reserve markets.

This Pornainen installation is not just a milestone—it is a scalable model in the transition toward a **circular economy and low emissions future.**

Polar Night Energy is a Finnish company developing high-temperature thermal energy storage systems for wind and solar power. Its patented Sand Battery technology enables a significant increase in renewable energy production while reducing reliance on fossil fuels.

Loviisan Lämpö is a Finnish district heating company providing heat to customers in Loviisa, Pukkila, Pornainen, Siltakylä and the village center of Pyhtää, as well as Lappohja.

Elisa is a pioneer in telecommunications and digital software services. It provides optimisation solutions for energy storage systems to telecom operators, utility companies such as district heating providers and households.

Times charging can refer to two main concepts: how many times a battery has been fully charged and discharged, or the duration it takes to charge a battery. "Times charging" in the context of battery life usually refers to charge cycles, which is the number of times a battery can be charged and discharged before its capacity degrades.

Shri Sampath D

World's cheapest manufacturing hub

India's affordable manufacturing costs are a game-changer. With lower expenses,India is becoming the preferred destination for global giants looking to cut costs.

India has for long been the world's fastest-growing economy and it has recently added another feather to its cap by claiming the number one spot among the countries with the lowest manufacturing costs.

India continues to shine in the global economic stage, despite turmoil on various fronts across the globe and is moving ahead in several sectors. The country recently leapfrogged Japan to become the world's 4th largest economy. India has not only made its mark in manufacturing and services but has also now claimed the title of the economically viable manufacturing destination in the world.

India's recent rise is not just about growth in GDP. According to new data released by World of Statistics from the U.S. News & World Report, India is now the most cost-effective country for manufacturing.

In the past, China dominated this space. Now Vietnam follows in third place, while Thailand, Philippines and Bangladesh are the other countries in that order.

India's affordable manufacturing costs are a game-changer. With lower expenses, India is becoming the preferred destination for global giants looking to cut costs. More companies are likely to set up manufacturing units in India, adding to its rising Foreign Direct Investment (FDI).

India's rising cost advantage is now attracting companies that previously only thought of China as their go-to destination. The new data signals a significant shift in the manufacturing landscape, with India taking over the mantle.

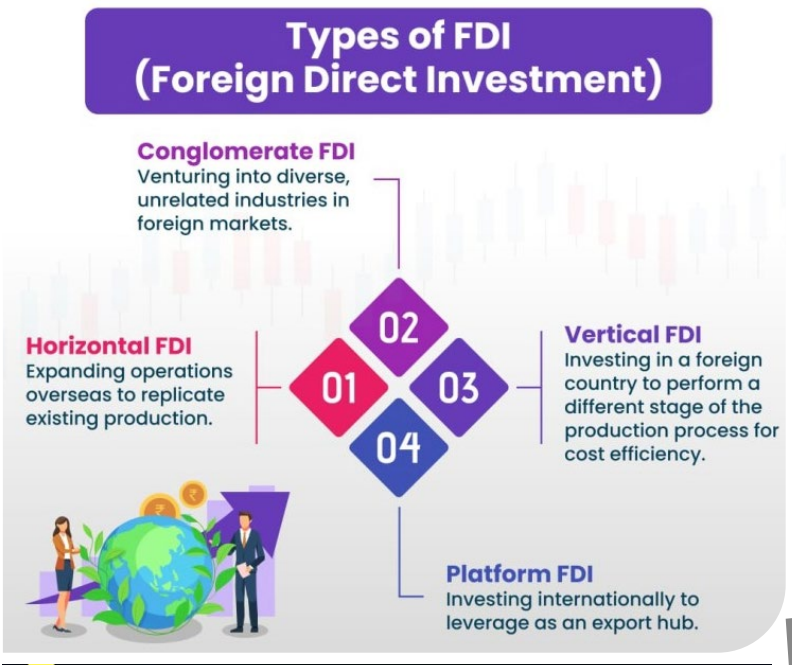
India's attaining the top spot was no flash in the pan. According to JP Morgan's Purchasing Managers' Index (PMI), India's manufacturing

PMI for April 2025 stood at 58.2, while the services PMI was at 58.7.

Both figures highlight India's strong growth and position it at the forefront of global markets. **By comparison, China, US and even France fall behind in the cost of manufacturing race.**

India's competitive advantage in manufacturing costs is a significant boost for its economy. As more businesses look for cost-effective production options, India stands to gain substantially. The potential rise in FDI and the relocation of manufacturing units will only accelerate India's economic growth.

And for China, this is a wake-up call. Its dominance in manufacturing is under serious threat as India begins to take its place as the world's factory of choice.



	Countries	2015 GDP	2025 GDP	Change
01	India	$2.1T	$4.3T	105%
02	United States	$18.3T	$30.3T	66%
03	China	$11.1T	$19.5T	76%
04	Germany	$3.4T	$4.9T	44%
05	Japan	$4.4T	$4.4T	0%
06	United Kingdom	$2.9T	$3.7T	28%
07	France	$2.4T	$3.3T	38%
08	Italy	$1.8T	$2.5T	39%
09	Canada	$1.6T	$2.3T	44%
10	Brazil	$1.8T	$2.3T	28%
11	Russia	$1.4T	$2.2T	57%
12	South Korea	$1.5T	$1.9T	27%
13	Australia	$1.2T	$1.9T	58%
14	Spain	$1.2T	$1.8T	50%

- **Purchasing Managers' Index (PMI) is a less well-known but unique measure of economic health. While other measures, like employment data, provide a view of the economy based on the past, the PMI delivers a future-looking perspective on economic trends.**
- **PMI score can range between 0 and 100, with a number over 50 citing expansion and under 50 noting contraction. A reading at 50 indicates that the number of manufacturers reporting better business is equal to those stating business is worse. Another key number to watch is 43.2, since a PMI index above this level over a period indicates an expansion of the overall economy.**

Shri Ramaswamy R

PM's visits and honours

PM Modi's historic Croatia visit

Yugoslavia as a nation in the Balkans existed before World Wars. After WWII became a Federation under their major Resistance leader Marshal Tito. Along with India, Tito founded the Non-Aligned Movement (NAM). After Tito's death in 1980, ethnic tensions resurfaced in their nation. The conflict, genocide and war crimes caused about 1,50,000 deaths and 2 million refugees. Following intervention by USA and NATO powers and resultant break up, Croatia came into existence in 1991 along with 6 other countries. Lying on the shores of Adriatic Sea at the junction of Central and Southeast Europe, the nation is famous for nature, culture, history and gastronomy.

PM Modi concluded 3-nation tour of Cyprus, Canada and Croatia in June. He was received by Croatia's PM Andrej Plenkovic. This was the first ever visit by an Indian PM and came on the eve of their empathy towards India on Pahalgam terror attacks and our response to terrorism. Croatia also supported our bid to find a permanent seat at the UN Security Council. EAM Shri Jaishankar accompanying our PM signed Agreements on Science, Technology and Agriculture.

PM gets Ghana's highest award

Ghana is a West African country on the shores Gulf of Guinea with Atlantic Ocean to the south. In 1957, Ghana was the first nation in Africa to receive independence from British rule and was one of the founder members of NAM.

PM Modi visited Ghana in July as the first leg of his 5-nation tour. He held talks with President of Ghana, John Mahama and discussed various ways to strengthen and deepen bilateral relations. Four MoUs were signed including in the areas of cultural exchange and traditional music. In his joint press statement following the talks, PM Modi announced that they have decided to give their relationship a form of **Comprehensive Partnership**. Our PM was conferred with Ghana's Highest Honour **"Officer of the Order of the Star"** for his Distinguished Statesmanship and

Country	Area (km^2) Ranking	Population (millions)	Language	Capital	Currency (For 1 USD)	Economy (Nominal/ PPP GDP GR)
Croatia	56,594 (127)	3.86	Croatian	Zagreb	Euro (0.85)	(74/79) High income
Argentina	2,780,400 (8)	45.54	Spanish	Buenos Aires	Argentine Peso(1282)	(23/28) Upper middle income
Brazil	8,500,000 (5)	218.8	Portuguese	Brasilia	Brazilian Real (5.56)	(10/7) Upper middle Income
Namibia	825,615 (34)	3.09	Native languages, Afrikaans & English official language	Windhoek	NAD 18.9	(146/145) Upper middle income with considerable inequality
Ghana	238,533 (80)	35.06	Official language English Over 80 languages spoken by ethnic groups	Accra	Ghanaian Cedi (10.42)	(79/68) Lower middle income
Trinidad & Tobago	5,128 (173)	1.51	English	Port of Spain	$ (TTD) 6.67	(115/134) High income

Influential Global Leadership. Stating that he "humbly accepted the award on behalf of 1.4 billion Indians", Modi dedicated the same "to the aspirations and bright future of the youth of India, its cultural traditions, diversity and the historical ties between Ghana and India."

PM receives Trinidad and Tobago's highest civilian award

Trinidad and Tobago (T&T) wealthy oil rich island nation in South Caribbean Sea, received independence from UK in 1962.

People here are descendants of Portugese, African Americans and Asians (mostly Indians) who were all brought as indentured labourers by the British in 19th century.

From Ghana, Prime Minister arrived in T&T. He was conferred with '**The Order of the Republic of Trinidad and Tobago'**—the nation's highest civilian honour. The award was presented by President Christine Carla Kangaloo and the event attended by PM, **Kamla Persad-Bissessar** and other dignitaries. **Our PM is the first foreign leader to receive this prestigious recognition, honoured for his statesmanship**, his strong advocacy for the Global South and for significantly strengthening the bilateral relationship between the two nations.

Accepting the honour on behalf of the people of India, the Prime Minister dedicated the award to the enduring bonds of friendship between the two nations. He highlighted the deep-rooted historical and cultural ties that trace back to the arrival of Indians in Trinidad and Tobago 180 years ago.

PM receives 'Key to the City of Buenos Aires'

Argentina in South America was discovered by Spanish travelers in 1516. The country declared independence from Spanish Crown in 1816. After Trinidad and Tobago, PM Modi visited Argentina.

This was the first after 6 decades, although our PM may have attended the G20 Summit held in Buenos Aires in 2018. PM held talks with President Javier Milei on further improving bilateral relations and enhance co-operation in key

sectors of Defence, Agriculture etc. He visited San Martin Memorial honouring their national hero and also the monuments dedicated to Mahatma Gandhi and Rabindranath Tagore.

PM Modi received **'Key to the City of Buenos Aires'** from Jorge Macri, Head of Government of the City of Buenos Aires. This was a symbolic honour signifying the friendship and mutual trust between the two countries. The city had received its name from 15th century Spanish sailors meaning 'good airs' or 'fair winds' experienced as they navigated and sailed into this part of South America.

PM gets Brazil's highest civilian award

Brazil in South America, discovered by Portuguese around 1500, declared their independence from Portugal in 1822.

PM Modi arrived here from Argentina. The purpose of his visit was:

1. To participate in BRICS Summit and
2. Hold bilateral talks.

BRICS Summit: Prime Minister sought more importance and representation to developing nations in global institutions. He said it is not about representation but also credibility and effectiveness. Mincing no words, he said that **"without Global South, these institutions are like a mobile phone with a SIM card but without a network."** Modi and other leaders condemned the Pahalgam terrorist attack of 22nd April, which killed 26 people. The leaders reaffirmed their commitment to combat terrorism in all its forms and manifestations. Speaking on environment conservation and global health, PM explained to the world forum in BRICS that planetary and human health are interconnected. Speaking at the BRICS summit on a session on "Environment, CoP 30* and Global Health" Modi emphasised that for India, climate justice is no alternative but a moral duty. He said that during the India Presidency next year, BRICS will be redefined as 'Building Resilience and Innovation for Cooperation and Sustainability'.

Bilateral Talks: Two days after the BRICS Summit, the Prime Minister travelled to Brasilia. He held a bilateral meeting followed by joint press conference with President Lula da Silva where he requested for market access for Indian exporters at Mercosur (a regional trade bloc comprising Brazil, Argentina, Paraguay and Uruguay). PM Modi announced plans to enable Unified Payments Interface adoption in Brazil on the lines of India's digital payments infrastructure. He also explored and identified other key sectors for enhanced bilateral cooperation. On this occasion, PM Modi was conferred with Brazil's highest civilian award, the **"Grand Collar of the National Order of the Southern Cross"**. Brazilian President Lula da Silva presented the award in recognition of PM Modi's notable contributions to strengthening bilateral relations and enhancing India-Brazil cooperation across key global platforms.

PM gets Namibia's top civilian honour

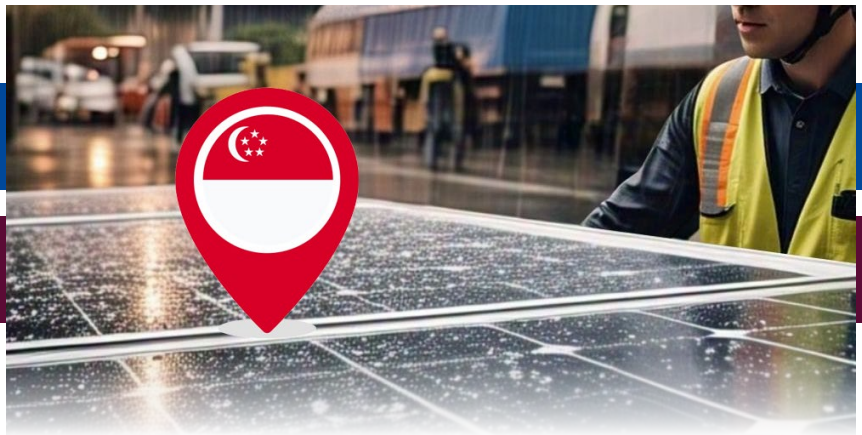
Namibia is located on the Atlantic coast in southwestern Africa. The country received freedom from South Africa in 1990.

PM Modi arrived in Namibia on 9th July on the final leg of his five-nation visit. This is Modi's first visit to the African nation and third by any Indian prime minister. The mineral-rich African nation is important to India, as it has extensive reserves of uranium, gold, diamond and rare earths.

India and Namibia signed two MoUs on Entrepreneurship Development and on Health and Medicine. The country also entered the global initiatives led by India, the Coalition for Disaster Resilient Infrastructure (CDRI) and Global BioFuel Alliance. Namibia is also the first country in the world where National Payments Corporation of India (NPCI) has done a technology agreement with a central bank for the implementation of a UPI-like payment system in the country.

In recognition of his efforts to strengthen India-Namibia ties, President Dr. Netumbo Nandi-Ndaitwah conferred on Prime Minister Modi Namibia's highest civilian award, **Order of the Most Ancient Welwitschia Mirabilis**.

Kum Pavithra S

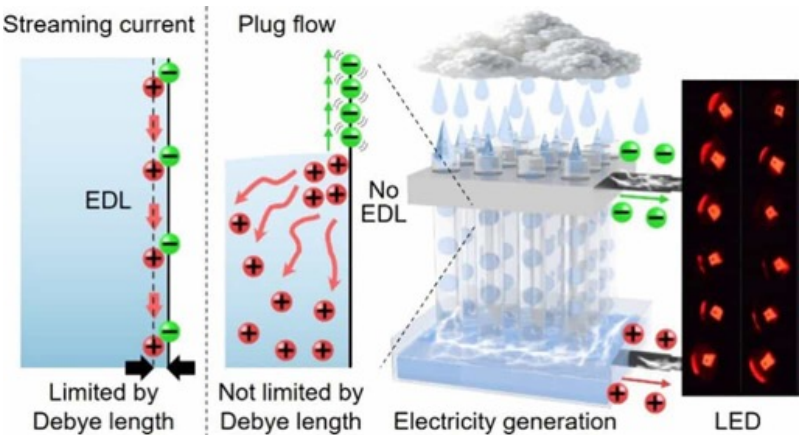


Singapore generates electricity from rain drops

Researchers at the National University of Singapore (NUS) have developed a new method to generate electricity from raindrops directly. This groundbreaking study, published in ACS Central Science, presents a clean and renewable energy solution that does not rely on rivers or large water reservoirs like traditional hydroelectric power.

Instead of using turbines and massive volumes of water, the scientists designed a small device that utilises a process called **plug flow**. In this setup, rain-sized water droplets fall through a metallic needle into a narrow vertical polymer tube, just 32 cm tall and 2 mm wide. As the droplets enter the tube, they collide at the top and trap small pockets of air, forming segmented plugs of water. This flow pattern is critical because it causes a phenomenon called **charge separation**. Here, negative ions (hydroxide) stick to the inner walls of the tube, while positive ions (hydrogen) remain in the water. This separation of charges creates an electrical voltage and when electrodes are placed at both ends of the tube, electricity can be generated.

The plug flow technique greatly enhances electricity production. **Compared to continuous water flow, it generates about 1,00,000 times more electricity.** In laboratory tests, the researchers were able to convert more than 10% of the falling water's potential energy into electrical energy. Using four tubes, the team successfully powered twelve LED lamps for 20 seconds. Doubling the number of tubes doubled the energy output, indicating its scalability.



The researchers suggest that such systems could be installed on rooftops in rain-prone urban areas to provide local and sustainable electricity. **Because actual raindrops fall from greater heights and at higher speeds than lab-created ones, the device could work even more efficiently in real-world conditions.**

This rain-based electricity generator is a low-cost, eco-friendly and compact alternative to traditional methods. With further development, it has the potential to power parts of our cities sustainably, offering a novel way to harness energy from nature's most abundant resource—rain.

Smt Shyamala Viswanathan

ANCIENT EGYPTIAN GENOME SEQUENCED

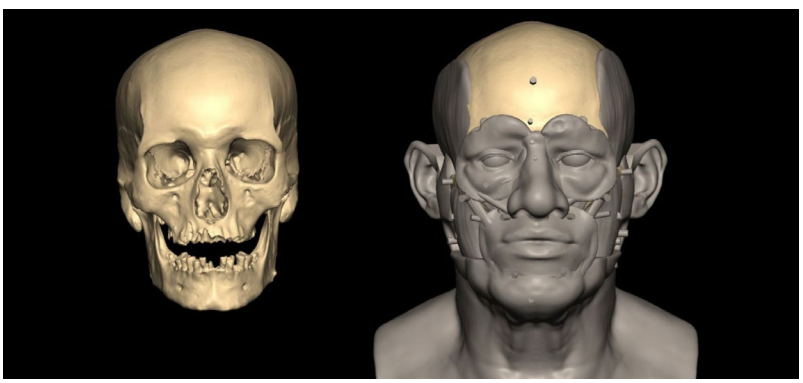
In a long-sought first, researchers have sequenced the entire genome of an ancient Egyptian person, revealing unprecedented insight about the ancestry of a man who lived during the Old Kingdom period.

A genome is the complete set of genetic instructions within an organism, encompassing all its DNA or RNA.

The man, whose remains were unusually well-preserved in their burial container, was found buried in a sealed clay pot in Nuwayrat, a village south of Cairo. He must have lived sometime between 4,500 and 4,800 years ago. Based on the genome, it is predicted that the individual had brown eyes, brown hair and skin pigmentation ranging from dark to black.

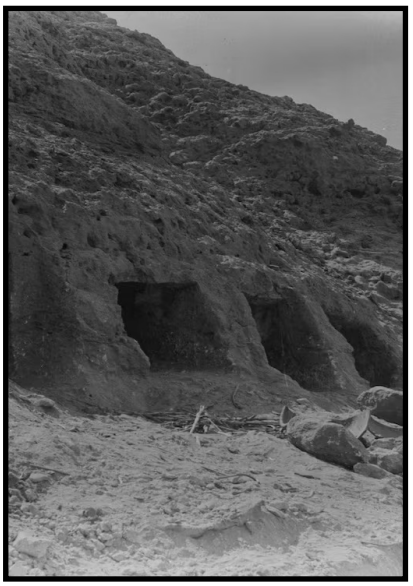
How did this man's remains reveal such information?

Researchers say that the man, who died during a time of transition between Egypt's Early Dynastic and Old Kingdom periods, was not mummified before burial because it was not yet a standard practice — and that likely preserved his DNA.



How they went about it

- The researchers took small samples of the root tips of one of the man's teeth.
- They analysed the **cementum**, a dental tissue that locks the teeth into the jaw, because it is considered an excellent tool for DNA preservation.
- Of the seven DNA extracts taken from the tooth, two were preserved enough to be sequenced.
- Then, the scientists compared the ancient Egyptian genome with those of more than 3,000 modern people and 805 ancient individuals.
- Chemical signals called isotopes in the man's tooth



recorded information about the environment where he grew up and the diet he consumed as a child as his teeth grew. The results were consistent with a childhood spent in the hot, dry climate of the Nile Valley, consuming wheat, barley, animal protein and plants associated with Egypt.

Key findings

- The sequenced genome is the oldest and most complete DNA sample obtained from an ancient Egyptian individual to date.
- The individual's DNA shows ancestry from both North Africa and the Middle East, with about 80% of his ancestry linked to populations in Egypt or adjacent parts of North Africa and 20% linked to lineages in West Asia, particularly Mesopotamia.
- The genetic findings align with archaeological evidence suggesting that ancient Egypt was a hub of cultural exchange and migration, with people and ideas moving between the Nile Valley and Mesopotamia.
- Osteological analysis of the remains suggests the individual may have been a potter, possibly working with pottery wheels, a technology that arrived in Egypt around the same time.

Significance

Filling gaps in understanding

The sequencing of this ancient Egyptian genome provides valuable information about the genetic history of a civilisation known for its monumental achievements.

Challenging assumptions and implications for cultural exchange

This finding challenges the earlier assumptions about the genetic homogeneity of ancient Egyptians and highlights the potential for genetic diversity within the population. While scientists have suspected these connections before, the only evidence for them was archaeological, rather than genetic.

Future research

The study opens doors for further research into the genetic history of ancient Egypt.

DO YOU KNOW ?

- **Swedish geneticist Svante Pääbo, who won the Nobel Prize in physiology or medicine in 2022 for sequencing the first Neanderthal genome, made pioneering attempts 40 years ago to extract and study DNA from ancient Egyptian remains, but he was unable to sequence a genome. Poor DNA preservation consistently posed an obstacle.**
- **The remains of the man are now kept at the Garstang Museum of Archaeology, University of Liverpool.**

Shri Sridhar P

BioEmu

AI to accelerate protein research

Proteins are fascinating, dynamic molecules, complex in structure and intriguing. Proteins that are produced by cells in our body are real work horses. Apart from providing structure to cells, tissues, muscles etc., they are involved in various biochemical reactions in our body. Research into the myriad functions of proteins in our body requires knowledge of their structure, possible configurations, interactions etc. Proteins seem to unfold their secrets as we try to understand how and why they assume such dynamic configurations.

Different configurations and functions: The dynamic nature of protein molecules seem to have a purpose. Protein molecules twist and flex. That helps in their functions or reveal hidden crevices and receptors for drug interactions. They seem to fold at specific points, often referred to as **"Alpha fold"**. Nobel Laureate Demis Hassabis developed a machine learning model "Alpha fold" to successfully unravel the alpha fold of protein molecules, creating more opportunities for research.

BioEmu: BioEmu (Biomolecular Emulator) is a deep learning model developed by Microsoft and researchers at Rice University, US and University of Freie, Germany. This AI model BioEmu predicts the full range of possible shapes and configurations a protein molecule takes, often thousands of plausible such configurations. BioEmu seems to be faster and cheaper than other traditional models for mapping out protein molecules and modelling protein flexibility. Molecular dynamics is a time trusted methodology for creating models of protein flexibility. Molecular dynamics is gold standard but is slow and costly.

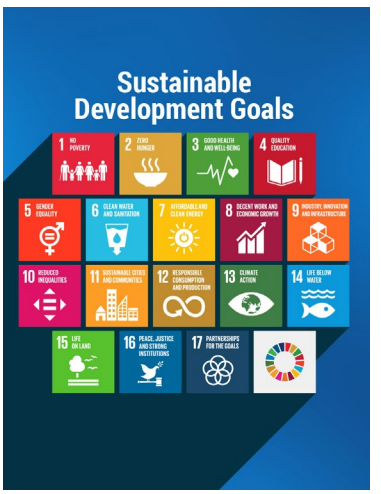
Where BioEmu excels and how it measures up against other models: BioEmu excelled in capturing large shape changes in enzymes. It also captured hard to predict proteins that don't have fixed 3D structures all the while showing how mutations affect protein stability. Molecular dynamics can methodically show us how a drug reaches a hidden receptor and show temperature shifts which Bio Emu can't.

AI model Alpha fold has better predictability in creating accurate models of cell walls, drug molecules pH changes etc. Bio Emu is also limited to single chain protein molecules and can't model how proteins interact. Metaphorically speaking, Alpha fold provides the protein blue print but BioEmu sketches its choreography. By capturing the flexibility of protein molecules quickly across thousands of proteins it aids faster drug discovery. Tasks that took months can be done in a few hours by BioEmu. It is quite obvious that AI tools like BioEmu, Alpha fold are task-specific tools. **They can be complementary tools alongside molecular dynamics in elucidating protein structure shape, flexibility, functions and in discovery of new targeted drugs**.

Shri Sridhar P

India among Top 100 in SDG rankings

India has achieved a milestone by breaking into the top 100 countries in Sustainable Development Goals (SDG) index for the first time, securing 99th position. This marks a significant improvement from 109th rank it held in 2024 and 112th rank in 2023. **The 2025 SDG index was released by UN sustainable development solutions, which assesses the progress of countries on 17 SDGs that it formulated and adopted. The 17 SDGs are comprehensive global targets adopted by UN to address issues like poverty, hunger, health, education, gender parity and climate change**. Sustainability is an uncomfortable casualty and reflects badly on the way we live.



Sustainability in the natural world

We don't have to look far when we want to have a ringside view of what sustainability looks like. Natural cycles are the order in the natural world, like food chain, carbon cycle, hydrological cycle etc. Sustainability is what keeps the natural world going. Intricate symbiotic relationships exist, develop with animals, birds, plants and microbes, weaving immaculate webs of produce, waste, transport and feedback mechanisms. It gets disturbed and distorted due to natural phenomena like volcanic eruptions, earth quakes, floods, drought etc., but nature quickly gets back on its feet, with innovative adaptations.

Why attempt sustainability and measure it?

Realisation has dawned upon us now that our way of life, marked by conspicuous consumption by the wealthy within nations and amongst nations which is dangerous. On the one hand conspicuous consumption is primarily responsible for excessive carbon emissions and climate change that threatens sustainable living. Poor farming practices on already degraded lands by the poor creates irreversible soil erosion. Food production nosedives threatening even subsistence living. **Such social disparities can fuel social tensions and riots, encourage illegal migration and challenge world order and peace.** SDG index addresses and measures its 17 SDGs in some form or the other. Measuring will help direct resources and adopt strategies for course correction.

What does SDG 2025 report say?

Sweden, Denmark and Finland have consistently topped the list followed by European nations. However, even these nations are facing challenges on climate change and biodiversity due to consumption patterns. India's leap reflects the progress in digital infrastructure, access to basic services, renewable energy expansion and LED adoption, with a score of 67. India is lauded for its show in industry and innovation. However, India lags in access to clean water and dependence on coal. East and South Asia have shown the fastest progress since 2015 with several making notable gains on broad band access, internet usage and under-five mortality. Despite all this only a fraction of the global targets is on track.

Smt Meenakshi S

Global women achievers

Blaise Metreweli becomes MI6's first female Chief

In a landmark decision reflecting the evolving dynamics of the intelligence community, United Kingdom has appointed Blaise Metreweli as the first woman to lead its **foreign spy agency**, MI6. Prime Minister Keir Starmer made the announcement recently, while attending the G7 Summit in Canada in a ground breaking move. This historic decision signals a significant shift in the traditionally male-dominated world of espionage.

Metreweli, currently the Director of Technology and Innovation at MI6, brings a wealth of experience and expertise in cyber security and digital intelligence which is essential in tackling today's evolving global threats.

The roles and responsibilities as MI6 chief is to lead the UK's foreign intelligence operations, address rising threats including cyber warfare, espionage, terrorism, disinformation campaigns and strengthen MI6's digital transformation, innovation and operational readiness.

SECRET INTELLIGENCE SERVICE MI6

Her appointment has a special significance since she is the first woman to head MI6 and demonstrates a shift towards a more inclusive, merit-based recruitment in intelligence roles. The previous MI6 Chief, Richard Moore, served from 2020 to 2025. Moore actively supported diversity in MI6 and called for an end to all-male shortlists. Metreweli was chosen through a secretive internal selection process initiated in March 2025. She will officially assume office in autumn 2025. MI6 increasingly focuses on cyber threats, AI-enabled surveillance and foreign influence operations.

Kirsty Coventry : First African and female President of the IOC

Kirsty Coventry has been elected as the president of the International Olympic Committee and became the first woman and the first African to head the biggest job in the world of sports. It was a stunning first-round win for Coventry in the seven-candidate contest after voting by 97 IOC members.

41-year-old Coventry gets an eight-year mandate into 2033. Coventry is also currently Zimbabwe's minister of youth, sports, arts and recreation. She stated that she had been dealing with men in high positions since she was 20 years old and she had learnt that effective communication would be her key to yield the required outcome. It was the most open and hard-to-call IOC presidential election in decades with Coventry expected to lead the first round short of an absolute majority. Though several rounds of votes were widely predicted, she got the exact majority of 49 that was needed. Coventry's win also was a victory for the outgoing IOC president Thomas Bach, who has long been seen as promoting her as his successor. He did not use his right to vote. Coventry said in her acceptance speech that she will make all of them very proud and hopefully extremely confident in the decision they have taken.

DO YOU KNOW ?

Coventry was the back-to-back Olympic champion in the 200 metres backstroke in 2004 and 2008. She retired from swimming after the Rio de Janeiro Olympics in 2016 with seven Olympic medals, more than anyone else from Africa.

Shri Sampath D

Third-largest power generator

India recorded the third-highest growth in power generation capacity globally over the past five years, following only China and the United States, according to the latest International Energy Agency (IEA) report. The country's rapid rise is attributed to increasing energy demand across sectors, a robust push for renewable energy and significant foreign and domestic investments, particularly in solar photovoltaic (PV) projects.

India became the world's third-largest producer of electricity from wind and solar energy in 2024, overtaking Germany according to a published new report.

The sixth edition of global energy think tank Ember's Global Electricity Review said wind and solar together generated 15% of global electricity last year. India's share stood at 10%.

In India, clean sources accounted for 22% of the electricity generation. Hydropower contributed the most at 8%, while wind and solar together accounted for 10%.

India is emerging as a solar superpower fully embracing the global clean energy boom that would accelerate India's economic rise. India, too, saw a rapid increase in solar power. Solar contributed 7% of the country's electricity in 2024, the generation doubling since 2021.

India was the largest recipient of DFI (Development Finance Institution) funding for clean energy in 2024, receiving USD 2.4 billion and the FDI (Foreign Direct Investment) in the power sector rose to USD 5 billion in 2023, nearly double pre-pandemic levels. The GoI policy allows 100% FDI in most power-related areas (excluding nuclear).

India added 24 gigawatts (GW) of solar capacity in 2024, more than twice the addition in 2023, becoming the third-largest market after China and the US.

As part of its climate commitments or Nationally Determined Contributions (NDCs) submitted to the UNFCCC (United Nations Framework Convention on Climate Change) in 2022, India aims to achieve 50% of its installed electric power capacity from non-fossil fuel sources by 2030.

In 2021, the country also announced a goal of achieving 500 GW of non-fossil fuel capacity by 2030.

While this target was not officially included in India's updated NDCs, it remains a key guiding reference in national energy planning documents, including the 14th National Electricity Plan.

The IEA's newly released report has brought attention to India's impressive progress in the power sector. The data reflects India's policy momentum, energy transition commitment and growing global influence in the green energy economy.

In fact, India is ahead of most developing nations, in absolute terms of increasing renewable capacity. The reason is there is a domestic manufacturing base and large-scale renewable projects, already on the ground.

Development finance institution (DFI), also known as a Development bank, is a financial institution that provides risk capital for economic development projects on a non-commercial basis.

Smt T R Shubha

One Nation, One Time

NPL, New Delhi maintains IST to millisecond accuracy using atomic clocks employin GPS satellites linked to Coordinated Universal Time (UTC).

One Nation, One Time' is a transformational initiative by Govt. of India in collaboration with Council of Scientific & Industrial Research - National Physical Laboratory (CSIR - NPL) and ISRO in achieving micro-second precision of Indian Standard Time (IST) and establish mandatory use of IST across the country.

Current scenario

- NPL, New Delhi maintains IST to millisecond accuracy using atomic clocks employin GPS satellites linked to Coordinated Universal Time (UTC).
- Most of our critical systems rely on time signals from third-party foreign sources.

Challenges

- India's reliance on GPS satellites compromised its ability to target enemy positions during the Kargil War, 1999, posing national security threat and cybersecurity risks.
- If GPS gets spoofed or jammed (as happened in Ukraine and the Middle East) critical Indian systems like ATMs, air traffic control or even radar systems could go dark.
- With billions of online users, poor time synchronisation would lead to UPI delays, power grid losses and telecom billing errors estimated at USD 1 billion a day.

One Nation One Time, IST Rules, 2025

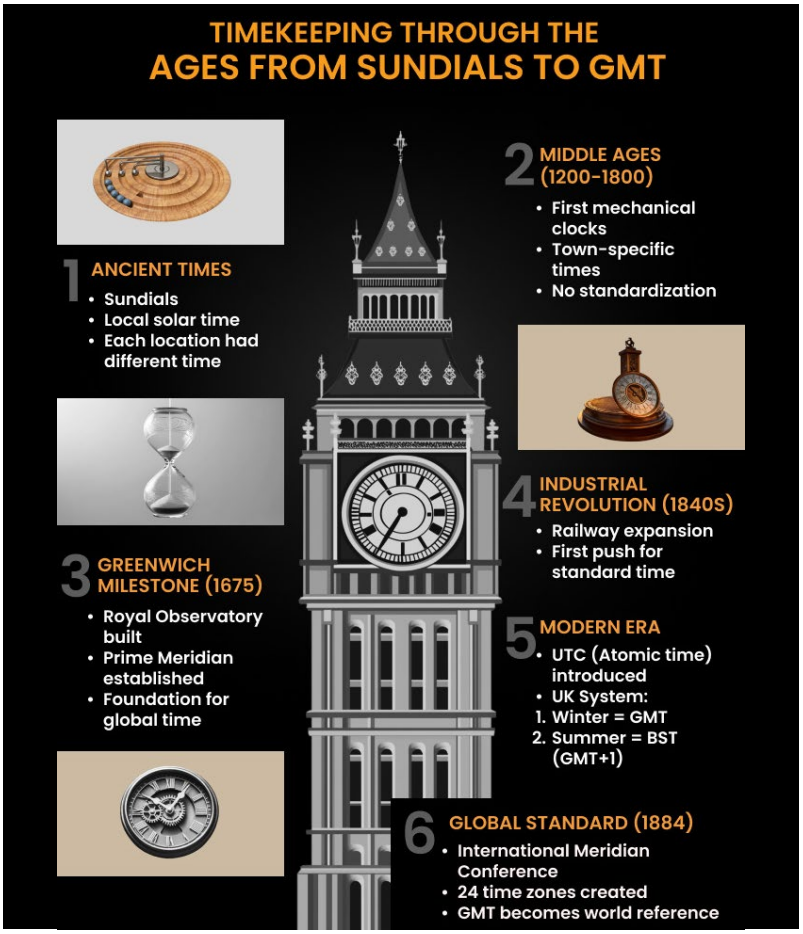
Five legal metrology laboratories have been set up across India to achieve microsecond-level accuracy in time dissemination of IST through 7 active satellites of NavIC.

NPL, New Delhi, the primary source, will provide reference time to five regional centres in Faridabad, Ahmedabad, Bengaluru, Bhubaneswar and Guwahati via optical fibre. Each centre will also have an atomic clock synced up to send out India's time to nearby regions using time sharing systems like N**TP (Network Time Protocol)** and **PTP (Precision Time Protocol)**.

HIGHLIGHTS

- Critical sectors like 5G, Artificial Intelligence (AI), Internet of Things (IoT), navigation and power grid synchronisation will operate with higher precision.
- Financial transactions, digital devices, communication networks and regulatory compliance will become more accurate, efficient and fraud-resistant and strengthen cyber security.

This initiative will make India's timekeeping infrastructure legally enforceable, digitally secure and in-line with global benchmarks.



DO YOU KNOW ?

- **IST was established in 1906, replacing three regional time zones from the British era (Bombay, Calcutta and Madras Time).**
- **It is based on the longitude of 82.5°, which passes through Mirzapur, Uttar Pradesh with offset of +5:30 hours ahead of Greenwich Mean Time (GMT), now called the Universal Coordinated Time (UTC).**
- **NavIC is an acronym for Navigation with Indian Constellation, a regional satellite navigation system that provides accurate positioning and timing services. NavIC comprises 7 active satellites (3 in geostationary and 4 in geosynchronous orbits).**
- **All government institutions, financial entities, telecom service providers, power grids and digital infrastructure must mandatorily synchronise their systems with IST.**

Smt Manju Aildasani

Union Railway Minister Ashwini Vaishnaw launched a new app, RailOne, in New Delhi recently. He underlined that the railway ticketing system should be smart, transparent, accessible and efficient. The RailOne app which has also been authorised by the IRCTC (The Indian Railway Catering and Tourism Corporation), can be downloaded from both the Android Play Store and iOS App Store. Tatkal train tickets purchased via IRCTC's official website and mobile app will only be accessible to individuals who have successfully authenticated with Aadhaar as of 1st July 2025.

HIGHLIGHTS

- Services like ticketing, enquiries of trains, PNR, Journey Planning, Rail Madad Services and Food on Train.
- Includes a 3% discount on unreserved tickets and platform tickets; live train tracking; grievance redressal; e-catering; porter booking; last-mile taxi services.
- A single sign-on with login via mPIN or biometrics which reduces the burden on users to remember several passwords.
- A comprehensive, all-in-one application with a user-friendly interface.
- A streamlined process for initiating and tracking refunds for cancelled or missed trains.
- Supports existing RailConnect and UTS credentials, which is the Indian Railways' mobile ticketing application.
- Saves space on devices as there is no need to install multiple apps.
- Guest login via mobile number and OTP for non-registered users making basic enquiries.
- Reduces friction in travel planning and service access for over 23 million daily passengers.
- Includes R-Wallet (Railway e-wallet) functionality as well.
- New users benefit from a streamlined registration process requiring minimal information.

Indian Railways is also making significant changes on three key adjustments:

- Extensive improvements to the reservation infrastructure.
- Adjustments to the waitlist chart preparation.
- An updated *Tatkal* booking procedure.

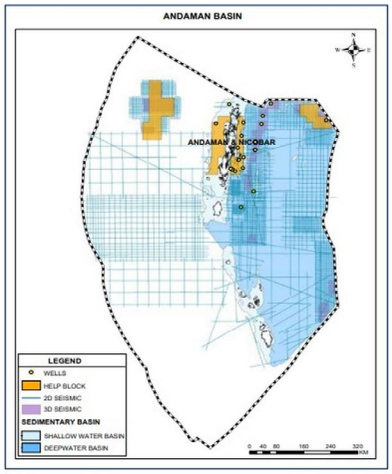
Kum Shrivaishnavi R

Oil deposits found in Andamans

Union Minister for Petroleum Hardeep Singh Puri said, "It is a matter of time before Guyana-like oil fields are discovered in the Andaman Sea." Speaking to the media, the minister informed that the government is now serious about oil exploration, extraction and production.

Our country is heavily dependent on foreign oil imports at the moment – more than 80% of the oil we use is being shipped from overseas. Becoming self-reliant in such times would help us become economically stronger. With regards to this, the ministry of petroleum has proposed to invest in the exploration of the Andaman basin.

While India boasts of about 3.5 million square kilometres of sedimentary rock basin, less than 10% has been explored, since the rest was in a No-Go zone. The launch of the Deep Andaman Offshore Survey now changed this – the discovery of these basins holds promise for potentially skyrocketing India's economy from 4-5 billion dollars to 20 billion dollars.

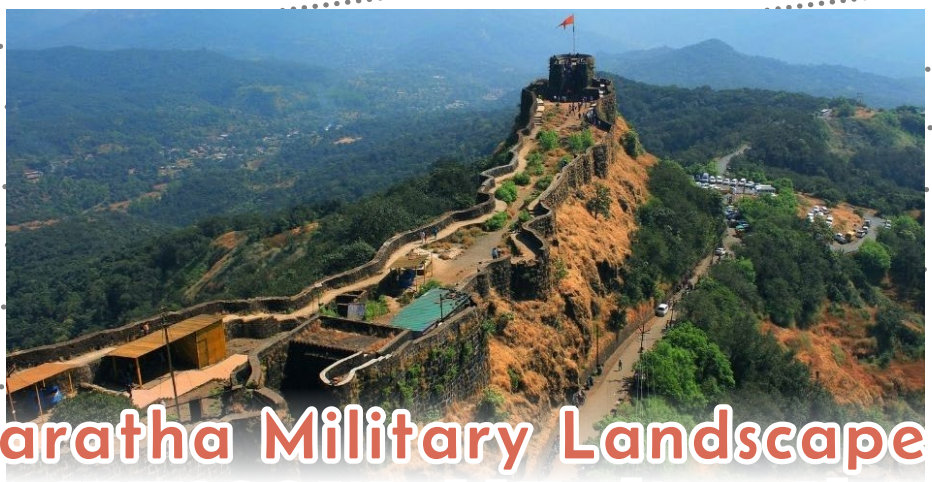


DGH Internal

Inspired by the Guyana oil discovery that shot up their economy, the Minister believes that the data promises similar results for this unexplored basin. After a string of oil and condensate discoveries on the coast of Andaman and the coast off Sumatra and Myanmar, the region holds great hope for Guyana-like oil and natural gas reserves. The data, stored in the National Data Repository, shows indications of mud volcanoes, whose presence may indicate a profuse collection of oil and natural gas in the region.

Having said this, the project comes with limitations as well. Off-shore oil exploration and production are an expensive enterprise. Setting up processing sites, production equipment and other associated costs make the entire process costly. Secondly, exploration, production and commercialisation are very lengthy processes – they may cumulatively take many years to fruition. Such factors can be a hindrance to investors and companies to show interest in the project. However, once up and running, the plants will generate hefty revenue, which can be lucrative to consider.

Smt Silpa Nandakumar



Maratha Military Landscapes on UNESCO World Heritage List

All eyes are on UNESCO as India's 12 major forts, known as the 'Maratha Military Landscapes', are featured on the World Heritage List. With this, the total number of World Heritage properties in India becomes 44.

The twelve major fortifications, mostly in Maharashtra and one in Tamil Nadu were built, adapted or expanded by the Marathas between the late 17th and early 19th centuries. The forts, namely, **Salher Fort, Shivneri Fort, Lohgad, Khanderi Fort, Raigad, Rajgad, Pratapgad, Suvarnadurg, Panhala Fort, Vijaydurg, Sindhudurg in Maharashtra and Gingee Fort** in Tamil Nadu, showcase the strategic military prowess of the Maratha reign. Along with its military dominance, the complex defence system exhibits trade protection and territorial control of its glorious past.

The network of forts is spread across the Sahyadri mountain ranges, the Konkan Coast, the Deccan Plateau and the Eastern Ghats in the Indian Peninsula. Hence, it varies in hierarchies, scales and typological features. While most are hill forts, Pratapgad is a hill-forest fort, Panhala is a hill-plateau fort, Vijaydurg is a coastal fort whereas Khanderi Fort, Suvarnadurg and Sindhudurg are island forts.

The Maratha army was a powerful force that used clever tactics like building strong forts for defence and employed surprise attacks and hit-and-run tactics. These strategies were developed by Chhatrapati Shivaji Maharaj in the 1600s and continued to be effective until the Peshwa rule ended in 1818.

With 44 World Heritage sites, **India now ranks 6th worldwide**, showcasing a balance of cultural depth and natural beauty that reflects its historical relevance on the global heritage map. The addition of Maratha Military Landscapes as the country's 44th World Heritage Site follows the addition of the Moidams—the Mound Burial System of the Ahom Dynasty in Assam, which became India's 43rd World Heritage Site in July 2024.

The list of World Heritage Sites is maintained by the International 'World Heritage Programme' under the UNESCO World Heritage Committee.

Shri Arpith Vijayan

WildLife News

50 years of crocodile conservation in India

India completed 50 years of its landmark Crocodile Conservation Project (CCP) on World Crocodile Day recently. Initiated in 1975 at Bhitarkanika National Park in Odisha, the project has played a vital role in safeguarding all three of the country's native crocodilian species. Spearheaded by efforts in Odisha, CCP has grown into a shining example of reptile conservation, inspiring similar initiatives across India and around the world.

The project adopted a "rear and release" strategy which means collecting crocodile eggs or hatchlings, raising them in captivity and releasing them into protected habitats like Bhitarkanika and Satkosia Tiger Reserve. It has successfully aided the recovery of all three native crocodilian species: the critically endangered Gharial (*Gavialis gangeticus*), the vulnerable Mugger (*Crocodylus palustris*), and the saltwater crocodile (*Crocodylus porosus*), which is of least concern globally but locally threatened.

Crocodiles, as some of the largest living reptiles, play a crucial ecological role in freshwater and estuarine ecosystems. However, their survival continues to be threatened by habitat destruction, poaching, egg predation, dam construction and sand mining.

Current estimates

- Gharial population at around 3,000 in sanctuaries like Chambal, Son and Katarniaghat;
- Saltwater crocodiles number approximately 2,500, mostly in Bhitarkanika, the Sundarbans, and the Andaman & Nicobar Islands;
- Mugger crocodiles are widely distributed across states like Gujarat, Rajasthan and Madhya Pradesh.

Over the past five decades, the CCP has helped revive crocodile populations from near extinction, promoted habitat protection and community awareness and become a replicable model for reptilian conservation both nationally and internationally.

India hosts first Assembly of the International Big Cat Alliance

India reaffirmed its global leadership in wildlife conservation by hosting the inaugural Assembly of the International Big Cat Alliance (IBCA) in New Delhi, an initiative envisioned by Prime Minister Narendra Modi. Chaired by Union Environment Minister Bhupender Yadav, who was also elected President of IBCA, the event brought together ministerial delegations from nine big cat range countries Bhutan, Cambodia, Eswatini, Guinea, India, Liberia, Suriname, Somalia and Kazakhstan. This also marked a significant step towards united international action for the conservation of seven major big cat species: Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma.

Established in March 2024 under the National Tiger Conservation Authority (NTCA), IBCA comprises 95 member countries that are natural habitats for these apex predators. Its primary aim is to halt the global decline of big cat populations by promoting collaboration, habitat protection, knowledge sharing and financial and technical support. The Assembly agreed with a set of rules for critical documents such as the Headquarters Agreement with India, a detailed workplan, rules of procedure and financial regulations. S.P. Yadav was elected Director General of IBCA.

The alliance, announced during the 50th anniversary of Project Tiger, not only builds on India's extensive experience in tiger conservation but also aspires to serve as a global model for multilateral environmental cooperation. Beyond species protection, IBCA is designed to boost ecotourism, environmental education and sustainable rural development, reinforcing the broader goal of biodiversity preservation.

India's first butterfly sanctuary inaugurated

In a major milestone for biodiversity conservation, Kerala has established India's first dedicated butterfly sanctuary by officially renaming the Aralam Wildlife Sanctuary in Kannur district as the Aralam Butterfly Sanctuary.

Announced in June 2025 by the Kerala State Wildlife Board, this

move follows 25 years of dedicated conservation efforts, research and advocacy by forest officials, scientists and environmental groups. Nestled in the biodiverse Western Ghats, the 55 sq. km sanctuary now serves as a vital haven for over 266 butterfly species, representing more than 80% of Kerala's butterfly diversity and this includes several rare, endemic and endangered species.

The sanctuary's objectives include providing protected habitats and migration corridors for butterflies, enhancing public awareness and promoting eco-tourism and scientific research that benefits both conservation and local livelihoods. Characterised by tropical and semi-evergreen forests, Aralam is known for sightings of species like the Common Albatross and Danaine butterflies, with peak migrations occurring from December to February.

Established in 1984, the sanctuary has long been a research hub, with over two decades of annual butterfly surveys conducted in collaboration with the Malabar Natural History Society and a popular Butterfly Migration Study held each year. Its upgraded status not only boosts conservation funding and policy support but also highlights the ecological importance of butterflies as pollinators and indicators of environmental health, making it a landmark model for invertebrate conservation in India.

India's longest animal overpass corridor unveiled

In a groundbreaking initiative that blends ecological conservation with infrastructure development, the National Highways Authority of India (NHAI) has completed the country's first wildlife overpass corridor along a national highway. The project covers a 12-kilometre stretch of the Delhi-Mumbai Expressway through the Ranthambore Tiger Reserve buffer zone. It includes five overpasses, each 500 metres long, and India's longest wildlife underpass, which is 1.2 kilometres long.

This eco-sensitive corridor features 5 km of elevated or sunken road built to fit the natural landscape, with 4-metre-high walls and 2-metre sound barriers to protect wildlife. It is designed to let animals safely cross between Ranthambore and the Chambal Valley, helping reduce roadkill and human-animal conflict. Environmental efforts include planting 35,000 trees, adding rainwater harvesting and using modular construction to reduce waste.

Overpasses have been constructed in harmony with the land's natural contours, with safety personnel stationed every 200 metres during the build phase to prevent wildlife harm. Post construction monitoring using camera traps has already confirmed tiger and bear activity within the corridor. As the first national expressway designed with wildlife movement at its core, this project sets a precedent for sustainable infrastructure, echoing a broader national trend: Punjab is planning an urban wildlife corridor along the Zirakpur bypass and Maharashtra's Samruddhi Mahamarg features over 200 underpasses and 8 wildlife crossings. These developments reflect India's growing commitment to integrating wildlife protection into the framework of national development.

Asiatic Wild Dog spotted again in Kaziranga

The elusive and endangered Asiatic wild dog or *dhole* (*Cuon alpinus*), long believed to have disappeared from Assam's Kaziranga-Karbi Anglong Landscape (KKAL), has been captured on camera again, signalling a hopeful comeback of this species in the region. A June 2025 study by the Wildlife Institute of India, published in the Journal of Threatened Taxa, provides the first photos of the *dhole* in the Amguri animal corridor, an important wildlife connection in the Indo-Burma Biodiversity Hotspot. The study documented six sightings of a single *dhole* near NH-37 and human settlements, underscoring the species' ability to survive in proximity to human activity. The KKAL area, including corridors like Panbari, Haldhibari, Kanchanjuri and Amguri, plays a critical role in maintaining habitat connectivity.

Dholes serve as indicators of healthy forest ecosystems, highlighting the need to preserve these corridors not only for iconic species such as tigers and elephants but also for lesser known carnivores. Historically widespread across South and Southeast Asia, *dholes* now occupy less than 25% of their former range due to habitat

loss, prey depletion and retaliatory killings. This rediscovery acts as a "flagship conservation alert," emphasising the urgent need to protect and restore forest corridors like Amguri to ensure gene flow, safe passage and the long term recovery of this vital species.

Eravikulam National Park and Dachigam National Park are the top national parks

Kerala's Eravikulam National Park in Munnar has been ranked as the top national park in India in the Management Effectiveness Evaluation (MEE) 2020-25 conducted by the Union Ministry of Environment, Forest and Climate Change. With a remarkable score of 92.97%, Eravikulam shares the highest rank with Dachigam National Park in Jammu & Kashmir.

The evaluation covered 438 protected areas across the country, assessing them on 32 parameters grouped into six key aspects of conservation management. The criteria followed global standards set by the International Union for Conservation of Nature (IUCN) and the World Commission on Protected Areas (WCPA). Kerala stood out as the only state to achieve a 'Very Good' rating, scoring 76.22% overall, ahead of other states like Karnataka, Punjab and Himachal Pradesh, which received "good" ratings. In addition to Eravikulam, two other protected areas from Kerala's Munnar Wildlife Division namely Mathikettan Shola National Park and Chinnar Wildlife Sanctuary were also featured among the top performers.

Eravikulam National Park spans 97 square kilometres in the high altitude shola grassland ecosystem of the southern Western Ghats. It is home to the largest surviving population of the endangered Nilgiri Tahr and is famous for its rare kurinji flowers that bloom once every 12 years. The park received praise for its effective eco-tourism model, which emphasises strong community participation, sustainable management practices and innovative technology. Notably, Eravikulam hosts India's first **Virtual Reality Nature Education Centre**, which offers visitors a unique way to experience biodiversity without disturbing sensitive habitats. The park also features an interpretation centre, orchidarium, fernery and designated tourism zones to minimize ecological disruption.

The MEE report highlights the Western Ghats landscape as a crucial biodiversity corridor linking several protected areas in Kerala and Tamil Nadu. Eravikulam's conservation model demonstrates how environmental protection, responsible tourism and community engagement can coexist harmoniously without affecting ecological integrity.

Madhya Pradesh records first caracal sighting in 20 years

In a significant wildlife breakthrough, a rarely observed wild cat called Caracal, has now been photographed in Madhya Pradesh's Gandhi Sagar Wildlife Sanctuary. This marks the first confirmed sighting of the species in the state in nearly two decades. This discovery emerged from intensified monitoring efforts under Project Cheetah, which has been enhancing wildlife surveillance in the region since 2023. Camera traps were set in the sanctuary's western area, especially in the Gol bavdi region that captured images of caracals. Conservation efforts were also taken there to put focus on tracking wildlife and restoring the ecosystem.

Project Cheetah, launched to facilitate the reintroduction of cheetahs into India, also emphasises broader ecological restoration and wildlife monitoring within the Gandhi Sagar landscape. The installation of camera traps as part of this initiative has enabled researchers to record elusive species such as the caracal. This milestone highlights the success of integrated conservation and surveillance strategies designed to protect endangered species and their habitats.

The Caracal is a wild cat usually medium in size with its black-tufted ears has the ability to jump and catch birds in mid-air. It lives in dry scrublands, semi-arid areas and moist forests in parts of Africa, the Middle East, Central Asia and India. In India, the caracal is threatened by habitat loss and human disturbance, and is listed as a protected species under the Wildlife Protection Act, 1972. Earlier surveys, like one in 2019 in Madhya Pradesh, couldn't confirm its presence because it was often mistaken for similar animals. New conservation efforts, including plans to reintroduce the caracal in places like Gwalior, are encouraged by this recent sighting, offering hope for the species' comeback in India.

Smt Archana Sundar

Archaeological News

The Yelagiri paintings are more than just pictures; they are vivid narratives etched in stone. We see humans riding animals, dancing, sparring and celebrating victories.

The echoes of India's past are growing louder, reverberating through newly unearthed sites that promise to reveal untold chapters of our subcontinent's rich history. From the serene hills of Tamil Nadu to the bustling shores of Kerala and the ancient plains of Rajasthan, groundbreaking discoveries are rewriting the narratives of human civilisation in the subcontinent.

Let's begin high in the **Yelagiri Hills of Tamil Nadu.** Imagine stumbling upon a natural cave during a hike, only to find vibrant, mysterious artwork. This isn't a movie scene; it's exactly what happened, leading to an extraordinary archaeological revelation!

Local visitors in Yelagiri's Reddiyur area, noticing unusual markings, alerted scholars from Sacred Heart College. A dedicated team, led by Professor Prabhu, a distinguished historian and archaeologist, rushed to the site. What they found was astonishing: a sprawling natural cave, almost a thousand feet above sea level, adorned with around 80 human and animal figures. These remarkably preserved images, drawn with a mysterious white substance, have survived over millennia. Professor Prabhu's analysis dates these paintings to between 10,000 and 3,000 BCE, a period of immense change as humans transitioned from nomadic hunter-gatherers.

The Yelagiri paintings are more than just pictures; they are vivid narratives etched in stone. We see humans riding animals, dancing, sparring and celebrating victories. These scenes offer an unparalleled glimpse into the social and ritualistic lives of early inhabitants. The cave's size, large enough for fifty people, strongly suggests it was a thriving home for a hunter-gatherer community. Its elevated position and artwork also hint at its use as a place of worship.

Tamil Nadu has fewer large-scale, well-preserved prehistoric sites compared to places like Madhya Pradesh or Karnataka. So, these Yelagiri paintings could open entirely new chapters in the study of southern India's ancient cultures, revealing that early humans here were not just surviving, but meticulously recording their world.

These fragile whispers from the past demand our utmost respect and diligent preservation. They belong to all of us.

From the ancient hills, let's journey southwest to the bustling, historical shores of **Fort Kochi in Kerala.** Here, nature's power, specifically monsoon sea erosion at Fort Kochi's South Beach, has inadvertently peeled back layers of history. What has emerged? Experts believe these are the long-buried remnants of Fort Emmanuel, the very first European fort built in Asia, dating back to 1503.

Previously hidden beneath coastal sand, the laterite rock and *'surkhi'* (brick-lime mix) foundation of the fort has been exposed as waves stripped away the coastline. This provides rare, tangible physical evidence of early Portuguese colonial architecture in India. Marine geologists from the Cochin University of Science and Technology (CUSAT) have confirmed these ruins likely belong to Fort Emmanuel, a structure that marked the genesis of Europe's first colonial township in Asia.

While parts of this structure are exposed annually, this season's accelerated coastal erosion made it significantly more visible. Researchers are now meticulously examining whether it is the original Portuguese construction or a rebuild by the Dutch, who later took control. This distinction is crucial for understanding the layered colonial past of the region, which saw Fort Kochi change hands multiple times – from Portuguese to Dutch to British rule between 1503 and 1947.

This discovery isn't isolated. It follows an earlier find on Fort Kochi's northern coast, where stone artifacts unearthed during the Kochi Water Metro project were linked to a demolished Portuguese church. Interestingly, rock samples from the fort ruins match formations found in the Munnar–Theni–Rajapalayam corridor, a region historically significant as part of a Portuguese trade route. These findings not only offer a tangible link to Kochi's rich colonial history but also illuminate early trade networks and architectural prowess. It's like the land itself is finally giving up its secrets!

Now, for our final, truly monumental stop, we head inland to the ancient plains of Rajasthan. The Archaeological Survey of India has made a mind-boggling discovery in Bahaj village of Deeg district, about 37 kilometres from Bharatpur. After nearly four months of meticulous excavation in 2024, the ASI now claims to have **unearthed evidence of a civilisation dating back an astounding 5,500 years!**

But here's the absolute game-changer: **archaeologists have identified a paleo-channel—an ancient, dried-up riverbed**—at a depth of 23 metres beneath Bahaj village. And here's where it gets truly exciting: Archaeological researcher Pawan Saraswat is linking this ancient river system to the legendary Saraswati River, prominently mentioned in the Rigveda. Initial signs were found around 15 metres deep during the May 2025 phase of the excavation. If confirmed, this could have profound implications for our understanding of ancient Indian history and geography.

This is the largest excavation project undertaken by ASI in Rajasthan to date, yielding a true treasure trove of artifacts. They have found a significant number of silver and copper coins, along with crucial cultural remnants spanning that vast period between 3500 BCE and 1000 BCE. According to Vinay Gupta, ASI Jaipur's chief archaeologist, this ancient water system likely sustained a vibrant civilisation along the Saraswati basin, positioning the Bahaj site as a vital cultural link in that region, located just 50 km from Mathura.

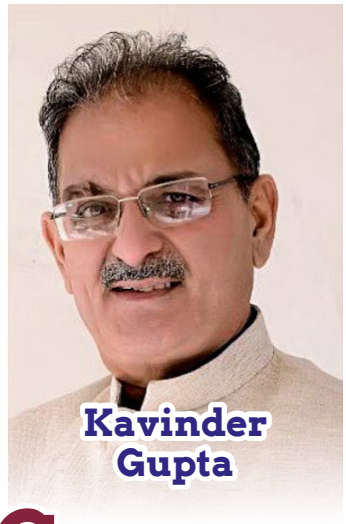
The excavation has revealed incredible architectural knowledge, with findings of buildings made with earthen pillars and layered trench walls, believed to be for security. Ancient furnaces and iron and copper tools point to strong metallurgical command. Artifacts like bone tools, shell bangles and beads made from semi-precious stones have also been recovered, painting a detailed picture of daily life and craftsmanship.

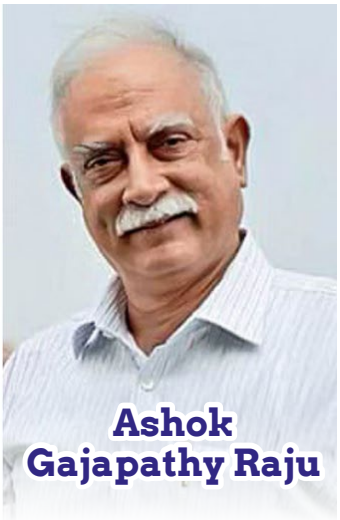
And there's more! Among the most notable discoveries are 15 sacrificial pits, sacred tanks used for Shakti worship and terracotta statues of Lord Shiva and Parvati, all dated to more than 1000 BCE. But perhaps the most electrifying find? Researchers found the oldest known seals bearing Brahmi script in the Indian subcontinent. This adds a vital piece to India's linguistic history. Small pots filled with sand, clay and copper coins from the Mahajanapada period were also discovered in these sacrificial pits, offering deeper insights into ancient rituals and economic practices.

The discovery at Bahaj offers a rare window into the untold chapters of ancient Indian history. It not only provides clues to the long-lost Saraswati River but also showcases the scientific and cultural achievements of early Indian civilisation.

So, there you have it. From the artistic expressions of Neolithic hunter-gatherers in Yelagiri to the colonial echoes of Fort Emmanuel in Kochi and the astounding revelation of a 5,500-year-old civilisation nourished possibly by Saraswati River in Rajasthan. These discoveries are collectively enriching our understanding of India's incredibly diverse and ancient past. Each find is a crucial piece of a larger, fascinating puzzle, helping us reconstruct the vibrant narratives of human ingenuity, spirituality and societal evolution across the subcontinent.

It just goes to show you; history isn't something locked away in dusty books. It's alive, dynamic and waiting to be discovered, sometimes just beneath our feet.





New Governors for Haryana, Goa and Ladakh

A Governor is the Executive Head of the state and is appointed by the President of India by a warrant under the President's hand and seal. While the normal term of a Governor is 5 years, a Governor holds office at the pleasure of the President. The council of ministers headed by the Chief Minister, aid and advise the Governor in the exercise of his functions. Governor is a nominee of the central government and the position in a State is akin to that of the President in the Union. Article 155 of the constitution of India deals with the appointment of Governors.

New Governors and their profiles

On 14th July 2025 the President appointed **Ashim Kumar Ghosh, Ashok Gajapathi Raju** and **Kavinder Gupta** as the new Governors for the States of Haryana, Goa and Ladakh respectively.

Octogenarian **Ashim Kumar Ghosh**, is a senior leader of the ruling BJP and headed the West Bengal unit of the party from 1999 to 2002. Post that he was the party's observer in Tripura and a member of the National Executive Committee of BJP from 2004 to 2006. Prior to entering active politics he was a Professor of Political Science for nearly four decades in the University of Kolkata. He succeeds Bandaru Dattatreya.

Ashok Gajapathi Raju is a veteran politician of the Telugu Desam Party and has held ministerial positions in Andhra Pradesh. He also served as the civil aviation minister from 2014 to 2018 in the first Narendra Modi cabinet. He was a seven term MLA from Vijayanagaram and belongs to the Pusapati Royal family. The 74-year-old Ashok Gajapathi Raju succeeds Sreedharan Pillai as the Governor of Goa.

Kavinder Gupta becomes the Lieutenant Governor of Ladakh replacing B.D.Mishra who has resigned. Kavinder Gupta was former Deputy CM of Jammu and Kashmir. He was a popular leader and the only one to have won the Jammu mayoral elections for three consecutive terms from 2005 to 2010.

Politicians as Governors

A Governor is the link between the union and the state and has the vital task of balancing federalism with the union's executive authority. While the framers of our constitution envisaged that the appointees to this gubernatorial position should be apolitical, appointing active politicians to the post has almost become the norm from the mid-seventies, often stirring up debates as to whether the post is necessary at all. Even prior to that, while the incumbents may not have been active party politicians, the appointments have always been made to suit the political calculations of the centre. All said and done politicians do bring practical political wisdom to the table that is often necessary for the role and hence the last word cannot be said yet.

Shri Bharath

Indian Government's new initiatives

The Government of India has been launching various initiatives and schemes that have a direct impact on the lives of the people. These cover various aspects like basic hygiene, food, shelter, employment, skill development, infra and knowledge development, protection of *Bharatiya* culture and tradition and much more. In the previous edition we had outlined some of those and in this edition, we shall look at few others.

Traditional knowledge Digital Library (TKDL)

In a technical brief titled "Mapping the Application of Artificial Intelligence in Traditional Medicine" the World Health Organisation (WHO) has acknowledged India as the first country to establish a TKDL – a pioneering global initiative safeguarding indigenous medical wisdom. The brief notes that India's TKDL has been instrumental in integrating Artificial Intelligence with traditional medicine systems such as Ayurveda, Siddha, Unani, Homeopathy and Sowa Rigpa. Sowa Rigpa, also known as Tibetan medicine, is a traditional healing system that originated in Tibet and is practised in the Himalayan regions of India, Nepal, Bhutan, Mongolia, and parts of Russia and China. This is a critical part of WHO's roadmap for applying AI in traditional medicine. This is a testament to India's leadership in creating a robust scientific ecosystem for traditional medicine. It also reaffirms the country's commitment to fostering global collaboration and responsible innovation, as envisioned under WHO's broader framework for AI and traditional medicine. The brief specifically mentions **"Ayurgenomics"**, that combines genomics and Ayurveda, and the "digitisation of traditional knowledge as examples of India's innovative approaches within the Ayush systems."

The TKDL was established in India in 2001 as a collaborative project between the CSIR and the then Ministry of Health and Family Welfare, and is being nurtured meticulously. Its primary purpose is to protect Indian traditional medical knowledge from biopiracy and unethical patents by serving as a prior art database for patent examiners. The TKDL has been recognised by the World Intellectual Property Organization (WIPO) and has agreements with various international patent offices to access its data. It has now been opened for other uses as well apart from patent offices.

TKDL and India's AI work in traditional medicine have become a global example of how to protect and promote ancient knowledge. AI is helping India compare its own systems like Ayurveda with others like Traditional Chinese Medicine (TCM). **WHO also praised India's digital platforms for online consultations, support for Ayush practitioners and efforts to connect traditional and modern healthcare systems.**

NAVYA

This is a programme aimed at providing vocational skills to adolescent girls with the aim of enhancing their employability, improving their confidence and

make them self-reliant. This scheme was kicked off from Sonbhadra in UP in June 2025.

This is for girls aged between 16 and 18 with at least a Class 10 qualification, focusing on those from underserved and aspirational districts. It has been rolled out in 27 districts across 19 states.

The skills provided include non-traditional skills like graphic design, telecom, financial services, smartphone/drone assembly, solar PV/CCTV installation and hand embroidery. This scheme is in alignment with the **Viksit Bharat@2047** vision and women led development.

Tribal empowerment campaign

As part of the **Dharti Aaba Jan bhagidari Abhiyan (DAJA)** which is the largest tribal outreach and empowerment campaign in the history of Independent India a month-long national movement was launched in June 2025. The goal is to reach 5.5 crore tribal citizens across over 1 lakh tribal villages and Particularly Vulnerable Tribal Group (PVTG) habitations in more than 550 districts of 31 States and Union Territories. This drive aims to bring government services directly to the doorsteps of the people. The five pillars of DAJA are :

- **Janbhagidari** – Led by tribal voices.
- **Saturation** – Every eligible household to receive entitlements.
- **Cultural inclusion** – Using tribal languages and art to engage.
- **Convergence** – Ministries and various groups working as one.
- **Last-mile delivery** – Reaching the remotest hamlets with services.

This campaign facilitates Aadhaar card enrolments, issuance of Ayushman Bharat cards, farmers registering for schemes like PM-Kisan and PM Ujjwala Yojana and opening of PM Jan Dhan accounts. The main target of the campaign is to achieve complete saturation of various welfare schemes of the union government. Apart from these, services like Forest Rights Act claims, pension enrolments, nutritional aid, tribal start-up support and legal aid have also been offered. This is indeed a landmark initiative in inclusive governance.

Pratibha Setu

This is a thoughtful initiative launched by the Union Public Service Commission (UPSC) which creates a platform for connecting potential employers and highly qualified candidates who have cleared all stages of the UPSC exams but have failed to get selected to the civil services.

This initiative provides a second chance for deserving candidates to secure employment and expands the talent pool for organisations in search of capable candidates. This is an efficient process that is also transparent and safe. While Government organisations, PSUs and private companies can register and access the profiles of candidates, the candidates have full control over the listing of their profiles.

This initiative launched in June 2025, is an enhanced replacement of the Public Disclosure Scheme launched in 2018. This has a high degree of digital functionality and reach. From the standpoint of the potential employers, this provides a platform that has a wide pool of capable candidates and from that of the candidates this initiative ensures that their capabilities are employed fruitfully.

Shri Mrithyunjay GN

Indian champions on global stage

In a stunning few months for Indian sport, eight incredible athletes have delivered gold-medal performances across the world, affirming the nation's competitive brilliance on the global stage.

Neeraj Chopra strikes gold again at Ostrava 2025

Olympic and two-time world medalist Neeraj Chopra continued his unstoppable 2025 season by winning the javelin title at the **64th Ostrava Golden Spike meet in Czechia**. His best throw of 85.29 m, achieved on his third attempt, made him the only athlete at the Continental Tour Gold-level event to surpass 85 m, edging past South Africa's Douw Smit (84.12 m) and Grenadian Anderson Peters (83.63 m).

This early major win of the season further cements Chopra's dominance; he now holds a clean record for 2025. As the javelin world tours its way toward the World Championships, Chopra's consistency signals he remains the man to beat. Indian national anthem echoing through Ostrava's stadium was a stirring reminder of what Chopra continues to mean to Indian athletics on the world stage.

Cue kings reign at Asian Team Snooker Championship

Veteran **Pankaj Advani**, along with **Aditya Mehta** and **Brijesh Damani**, delivered a commanding performance in the Asian Team Snooker Championship 2025 in

Colombo, Sri Lanka. They defeated Malaysia 3–1 in the final to clinch the title.

Advani, already with over two dozen world titles in his cabinet, steered the team with finesse. Mehta's long pots and Damani's cool composure were just the tools needed to secure the title. The win underscored India's deep bench strength in cue sports, which continues to flourish under the radar, often unnoticed in favour of flashier sports, yet one which takes just as much skill.

Alwin Antony: Healing hands, golden heart

Dr Alwin Antony, an associate professor of community medicine at GMC Idukki, became the only Keralite to represent India in the World Medical Games 2025, a unique competition that brings together medical professionals from around the globe, held in Lloret de Mar, Spain.

In a competition attracting healthcare workers from over 50 countries, Antony claimed gold in both the 100 m and 200 m sprints, defeating finalists from France and Algeria.

An orthopaedic surgeon by training, Antony's double sprint gold is a testament to extraordinary time management and discipline. His success bridges the world of medicine and sports, proving excellence knows no bounds.

Asian Squash supremacy: India makes a clean sweep

In a historic first, India swept all three gold medals Men's, Women's and Mixed Doubles at the 2nd Asian Squash Doubles Championships 2025 in Kuching, Malaysia.

- The men's team, **Abhay Singh** and **Velavan Senthilkumar**, clinched gold.

- **Joshna Chinappa** and **Tanvi Khanna** took the women's title.

- Top-seeded mixed duo **Abhay Singh** and **Anahat Singh** beat Malaysia's Rachel Arnold and Ameeshenraj Chandaran 2–0 in just 28 minutes for the final gold.

This unprecedented victory speaks volumes about India's focused development in doubles disciplines and its depth across genders.

Linthoi Chanambam makes history in Judo

Just 18 years old, Linthoi Chanambam of Mayang Imphal, Manipur, became the first Indian judoka to win gold at the prestigious **Berlin Junior European Cup 2025**, competing in the 63 kg category. She defeated France's Jaelynn Chipan in the final in emphatic fashion, a maiden landmark for Indian judo on European soil.

She beat one of the top-seeded European competitors out of 618 judokas from 37 countries, an achievement that she hopes will help her on her path toward potential 2028 Olympic contention.

Chanambam's win is more than just personal, it is symbolic. Hailing from a region that has long produced martial arts talent, her triumph is a validation of grassroots effort, quiet perseverance and the rise of Northeast India as a powerhouse in contact sports.

Omkar Singh: Military precision, world-class accuracy

Master Chief Petty Officer I Omkar Singh of the Indian Navy made history at the **55th CISM World Military Shooting Championship** held in Elverum, Norway, becoming the first Indian ever named **Best Pistol Shooter** in the men's category

Competing against marksmen from over 30 nations, Singh's precision and composure under pressure saw him edge out competitors in both individual and team events.

His performance was lauded not only for its technical excellence but also for its consistency across categories. Scoring 1,171 points, his performance underlines the synergy between disciplined armed forces training and world-class sporting execution.

Chess brilliance: Gukesh and Praggnanandhaa light up the boards

India's chess renaissance continued in July 2025, as D.Gukesh Dommaraju and R.Praggnanandhaa captured major international titles.

Gukesh won the Rapid Chess section at the Grand Chess Tour Super United Rapid & Blitz in Zagreb, scoring 14/18 points with five consecutive wins, including a stunning upset over world No. 1 Magnus Carlsen - despite being given only a 0.3% pre-tournament chance of victory.

Praggnanandhaa, at just 19, clinched the **UzChess Cup Masters** title in Uzbekistan and simultaneously became India's No. 1 player, with a live FIDE rating of 2,778.3, rising to world No. 4 - surpassing reigning champion Gukesh in the rankings. His win saw him overtake Viswanathan Anand to become India's top-ranked chess player—a symbolic passing of the torch, and a moment of pride for Indian chess enthusiasts.

Gukesh led the rapid portion by three points over Carlsen before the blitz section, highlighting the fine margins that define elite chess. Together, these two represent a generational shift in Indian chess—youthful, fearless and supported by a structure now producing world-class stars consistently.

Achievements to remember

These achievements were not incidental. They were engineered through strategy, resolve and national support. From javelin to chess, snooker to squash, each triumph has underscored discipline, strategy and unwavering dedication, signifying the rising spirit of India.

Whether sprinting in medical tracks, sweeping squash courts, or rewriting chess rankings, they demonstrated that greatness is not accidental; it is earned.

The summer of 2025 will be remembered not just for the medals, but for the stories they told: of possibility, pride, and a nation coming into its own.

Environmental News

ARUNACHAL PRADESH IS INDIA'S TOP CARBON SINK

Every human activity, from burning fossil fuels to establishing new industries, impacts our ecosystems. To counter this, the tropical forests and alpine ecosystems of Arunachal Pradesh function as the "lungs of the Himalayas," absorbing large quantities of atmospheric carbon dioxide, a part of India's national climate strategy.

Arunachal Pradesh has become India's largest carbon sink, playing a vital role in the country's efforts to combat climate change. The north-eastern state accounts for approximately 14.38% of India's total carbon sequestration—the natural process by which forests absorb and store atmospheric carbon dioxide.

While the state's vast green cover makes it a top carbon sink, the impacts of climate change are already visible and increasingly real, necessitating urgent action to reduce greenhouse gas emissions.

LUCKNOW: A 'ZERO NET WASTE CITY'

Lucknow has achieved a significant milestone in waste management with the opening of its third fresh waste processing facility at Shivri West.

In 2022, the Shivri site faced a major challenge with 18.5 lakh MT of accumulated legacy waste.

To tackle this, the Lucknow Municipal Corporation (LMC) launched a project, with ₹96.53 crore funded under the **Swachh Bharat Mission (SBM-I)**.

This development makes the city the first in Uttar Pradesh to fully process all its daily waste, earning it the distinction of being a "zero fresh waste dump" city. The new plant is capable of processing up to 700 metric tonnes of fresh waste each day. When combined with the city's two existing processing plants, Lucknow now handles over 2,100 metric tonnes of waste daily—eliminating the need for dumping.

Nearly two-thirds of the city's accumulated legacy waste—amounting to around 19 lakh metric tonnes—has been processed, transforming a decades-old dumpsite into usable land. Approximately 13 lakh metric tonnes of waste have been cleared, freeing up 25 acres of land, with an additional 15 acres expected to be reclaimed within the next six months.

The LMC's waste processing results in three primary products:

- **refuse-derived fuel (RDF)**, which can be used in cement and fertilizer industries;
- **processed construction and demolition (C&D) waste,** suitable for reuse in infrastructure projects;
- **compost** intended for agricultural use.

INDIA'S FIRST SCHOOL BUILT ENTIRELY FROM SUGARCANE WASTE

It might sound unbelievable, but it is a reality. In Noida, Uttar Pradesh, a new school building has been built entirely using Sugarcrete. This eco-friendly architecture resulted from a collaboration between UEL, Indian manufacturer Chemical Systems Technologies (CST), and Panchsheel Balak Inter College (PBIC)—the site where this structure was built using Sugarcrete blocks bonded with lime mortar.

What is Sugarcrete?

Developed in 2023 by researchers Alan Chandler and Armor Gutierrez Rivas at the University of East London (UEL),

Sugarcrete is made from **bagasse** - the dry fibrous pulp left over after extracting juice from sugarcane - and combined with mineral binders.

Features

- A steel-framed roof with clerestory windows located at the top of walls allows natural daylight and ventilation.
- A veranda shields students during the monsoon.
- The walls offer natural insulation, keeping the classroom cool in summer and warm in winter.

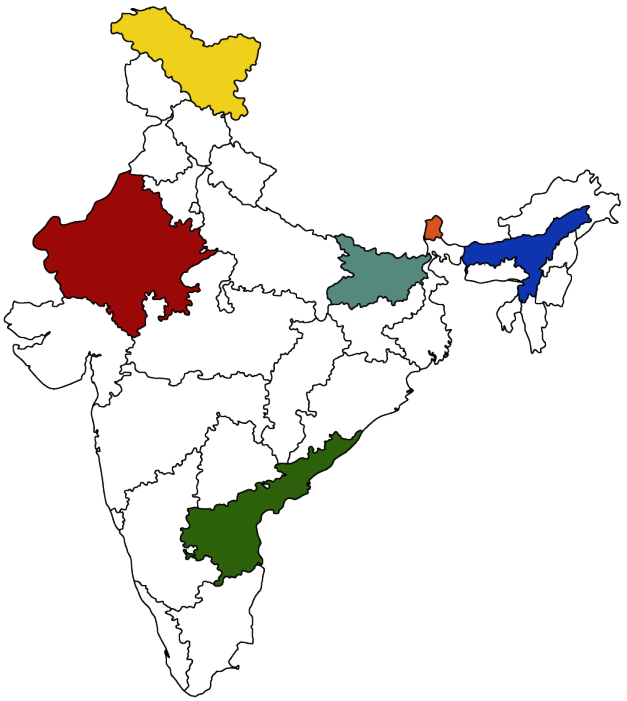
It is a classroom in itself—teaching us how local materials, community participation and innovative thinking can help in the sustainability of development.

DO YOU KNOW ?

- **Legacy waste:** Old, accumulated waste, typically municipal solid waste, that has been stored for years in landfills or dumpsites.
- **RDF** comprises non-recyclable dry waste like plastics, paper and textiles.
- **Clerestory window:** a window with no crosspiece dividing the light.

Smt A Laxmi

News from the States



VIDYA SHAKTI: ANDHRA PRADESH'S DIGITAL PUSH TO EMPOWER SLOW LEARNERS

On 25th June 2025, Andhra Pradesh took a progressive step in education with the launch of 'Vidya Shakti', a remedial learning initiative focused on slow learners in government schools. It is being rolled out in a phased manner across Andhra Pradesh.

What is Vidya Shakti?

- It is an online remedial education programme that targets academically lagging students in Mathematics, Science and English.
- It uses technology-based tools and after-school sessions to bridge learning gaps.

Key objectives

- Enhancing learning outcomes in core academic subjects.
- Reducing dropout rates among struggling students.
- Boosting the Gross Enrolment Ratio (GER) across the state.
- Supporting Class X students through subject-wise scheduling and mentoring.
- Identifying and encouraging bright students to achieve excellence.
- Building confidence, foundational understanding and ultimately, academic independence.
- Creating a "learning-first" culture in government schools.

How?

- The programme involves an advanced teacher training component in collaboration with IIT-Madras Pravartak, an innovation hub.
- Each student under the programme will follow a fixed timetable; teachers will provide individualised support based on learning gaps.
- The initiative encourages mentorship, where teachers treat every student "as their own".

ASSAM : FIRST TO INTRODUCE INDIAN SIGN LANGUAGE AS ELECTIVE IN CLASS XI

In a landmark move towards inclusive education, Assam has become the first state in the country to introduce **Indian Sign Language (ISL)** as an elective subject for students of Class XI from the academic year 2025-26.

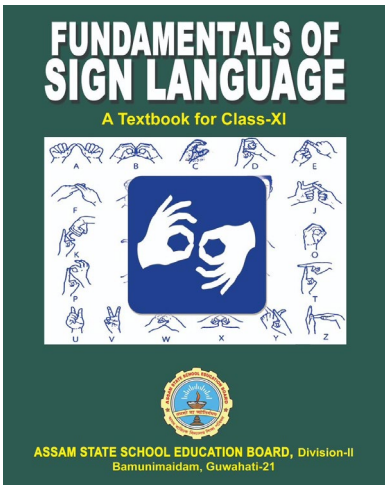
Objectives

- To benefit students with hearing disabilities.

- Create new academic and career opportunities for all learners.

Significance

- Makes mainstream education more inclusive and accessible.
- Aligns with the broader goals of the Rights of Persons with Disabilities Act, 2016 and the National Education Policy, 2020, both advocating for inclusive classrooms and equal learning opportunities for students with disabilities.



BIHAR PIONEERS INDIA'S FIRST MOBILE BASED E-VOTING SYSTEM

Bihar State Election Commissioner Deepak Prasad announced that the voters in the Bihar municipal elections would be able to cast vote through mobile for six councils in Patna, Rohtas and East Champaran district.

Who gets benefitted?

Senior citizens, disabled people and pregnant women.

How?

- Voters have to install the E-SECBHR app.
- Link their mobile number to the app as registered in the electoral roll.
- After verification, they can cast a vote using the e-SECBHR app on the Election Day or on the Bihar Election Commission's official website.

Methods to prevent tampering

- Only two registered voters are allowed to log in using one mobile number.
- Verification of each voter is being done by entering the voter id number.

Security measures

- Block chain technology ensures that votes are recorded and saved in a secure, immutable system.
- Facial recognition and matching assist in the verification of voter identities during login and voting.

Around 10,000 voters have registered for mobile voting and around 50,000 voters are expected to cast their votes using websites.

PANDIT DEENDAYAL UPADHYAY POVERTY – FREE VILLAGE SCHEME IN RAJASTHAN

On 4th July 2025, the Rajasthan government started a new plan called the Pandit Deendayal Upadhyay Poverty-Free Village Scheme. In the first step, this scheme will help 5,000 villages by giving money to poor families. The goal is to reduce poverty and help people earn better through small businesses and jobs.

How?

- Identifying poor families and action plans - The government has found 30,631 BPL families across 5,002 villages by using old BPL records from 2002 and doing new surveys. Also, more than 61,000 new applications have come from families still living in poverty.
- Helping poor families become self-reliant - ₹1 lakh to each selected family to start work or a small business and ₹15,000 to women in self-help groups (SHGs) to grow their income.
- Rewarding families who overcame poverty - Families who already worked hard and moved above the poverty line will get a reward of ₹21,000 and will be sent directly to their verified bank accounts.

ANDHRA PRADESH LAUNCHES SMART AI SYSTEM TO FIGHT MOSQUITOES

The Andhra Pradesh government has started a new project to stop the spread of mosquito-borne diseases like dengue and malaria, especially during the rainy season. The project, called **Smart Mosquito Surveillance System (SMoSS)**, uses Artificial Intelligence (AI) and modern technology.

Process

- SMoSS system will use AI-powered mosquito sensors, drones and IoT devices to check where and how many mosquitoes are present.
- These smart tools will also record important things like temperature, humidity and the types of mosquitoes.

- This information will help the government spray mosquito repellent only where it is really needed, instead of spraying everywhere.
- Drones will help spray larvicide quickly and with less use of chemicals.
- A central dashboard will keep track of all the field activities.
- Help from mobile apps like **Vector Control** and **Puramitra** (one-stop solution app for all municipal services), where both workers and local people can report mosquito issues.
- Hospitals will also play a big role by sending daily updates on disease cases.
- The pilot project led by Municipal Administration and Urban Development (MAUD) Department will start in 66 areas across six cities, Visakhapatnam (16 places) Vijayawada (28 places) Kakinada (4 places) Rajamahendravaram (5 places) Nellore (7 places) and Kurnool (6 places).

INDIA'S FIRST DIGITAL NOMAD VILLAGE OPENS IN SIKKIM

Yakten village in the Pakyong district of Sikkim was launched as India's first digital nomad village on 15th July 2025. The project, called '**Nomad Sikkim**', is a joint effort by the Pakyong district administration and **NGO Sarvahitey.**

Objectives

- To support remote workers by offering them modern facilities in a peaceful Himalayan setting.
- To help local families earn a steady income through homestays, especially during off-season months.

How?

- Yakten has been upgraded with dual internet lines, village-wide Wi-Fi and power backup systems to prevent blackouts.
- The **Jal Jeevan Mission** is also working on improving the water supply in the village.

Homestays in Yakten

- Offer guests the chance to live with local families, enjoy home-cooked traditional food and experience Sikkimese culture.
- Enable visitors to enjoy folk music, peaceful walks, community gardens, dance and visits to monasteries and nature trails.
- Promote a blend of modern work and rural life.

LADAKH HOSTS ITS FIRST ASTRO TOURISM FESTIVAL TO BOOST SCIENTIFIC TOURISM

Ladakh marked a significant step in promoting science-based tourism with the successful conclusion of its first-ever Astro Tourism Festival in Leh.

Background

- Ladakh is home to Hanle, designated as India's first Dark Sky Reserve in 2022.
- The region's skies are among the clearest and darkest in the country.
- The Indian Astronomical Observatory in Hanle is one of the world's highest sites for optical, infrared and gamma-ray telescopes.

Objectives

- Position Ladakh as a hub for astro tourism in India.
- Educate the public and tourists on astronomy and space science.
- Integrate science-driven tourism into local development strategies.
- Leverage Ladakh's unique geography (high altitude, dry weather, low light pollution).

Highlights

- Night sky observation, held at Ladakh University campus, Leh.
- Telescope-guided sessions on constellations, planet spotting, deep-sky viewing of galaxies and nebulae.
- Lectures and interactive sessions by Astrophysicists from ISRO, researchers from Indian Institute of Astrophysics and Academicians from Kashmir University.

Significance

- Promotes sustainable tourism and local economy.
- Enhances scientific temperament and public engagement with astronomy.
- Aligns with global trends in astro tourism, attracting both domestic and international enthusiasts.
- Strengthens Ladakh's image as a multi-dimensional tourist destination.

Smt Vaishnavi V

Indians shine globally

Shubhanshu Shukla, an Indian Air Force pilot, just made history!

He became the second Indian to go to space (after Rakesh Sharma in 1984) and the first Indian to visit the International Space Station (ISS). **He went on a private mission called Axiom-4, riding a SpaceX Dragon spaceship named Grace.** Group Captain Shubhanshu Shukla executed a successful splashdown off the California coast on 15th July 2025, returning from an 18-day stay on the ISS alongside Commander Peggy Whitson and Mission Specialists from Poland and Hungary. The mission brought back over 250 kg of cargo, including NASA hardware and data from over 60 experiments conducted during the mission. This mission shows that India is stepping up in space exploration, just like NASA and other big space agencies.

Anantha Chandrakasan: First Indian Provost of MIT

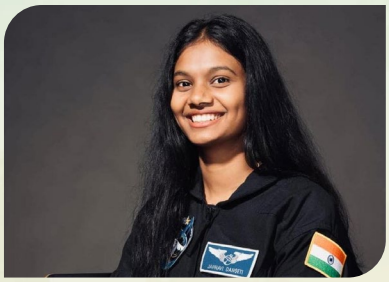
Chennai-born Prof. Anantha Chandrakasan has been named Massachusetts Institute of Technology's new Provost. The MIT Provost is the institute's chief academic and budget officer, with a wide-ranging portfolio that encompasses everything related to faculty, oversight of the educational enterprise and prime responsibility for MIT's strategic planning. Prof. Chandrakasan earned his B.S., M.S., and Ph.D in Electrical Engineering and Computer Sciences from the University of California at Berkeley.

In MIT, Prof. Chandrakasan

- Served as the Director of the Microsystems Technology Laboratories (MTL) from 2006.
- Headed the Department of Electrical Engineering and Computer Science (EECS), MIT's largest academic department, for six years since 2011.
- Has been Dean of the School of Engineering since 2017.
- Has been MIT's inaugural Chief innovation and strategy officer since 2024.

Jahnavi Dangeti: First Indian to complete NASA training

Jahnavi Dangeti from Palakollu, Andhra Pradesh, has made history as the first Indian to complete NASA's International Air and Space Program (IASP). She is selected for the **Titans Space Mission**, scheduled for 2029.



She will be the first Indian to participate in this private space mission, which includes a five-hour orbital cruise around Earth after a three-year astronaut training programme in the US. She has a degree in Electronics and Communication Engineering and has an experience in asteroid discovery missions and served as a mission director during her time in NASA's programme. From a small town in Andhra Pradesh to elite NASA training, her story is a powerful motivator for young STEM aspirants nationwide.

Indian origin Dr. Bobby Mukkamala sworn in as the 180th President of the American Medical Association

Becoming the first Indian to lead the organisation, Dr. Mukkamala, an **otolaryngologist** (ear, nose and

throat specialist) has been active in the AMA since his residency and is the chair of the organisation's Substance Use and Pain Care Task Force. He is a past recipient of the AMA Foundation's "Excellence in Medicine" Leadership Award and was elected to the AMA Council on Science and Public Health in 2009. He also served as its chair from 2016 to 2017 before being elected to the AMA Board of Trustees in 2017 and 2021. Dr. Mukkamala graduated from the University of Michigan Medical School and completed his residency at Loyola University Medical Center in Chicago.

Sukanya Sonowal becomes Commonwealth Youth Peace Ambassador

Sukanya Sonowal, a student from IIT Guwahati, has been selected as a Commonwealth Youth Peace Ambassador. She will now serve as the **Lead – Communications & Public Relations for the Commonwealth Youth Peace Ambassadors Network (CYPAN)**, which is a youth-led group working across 56 Commonwealth countries. It aims to stop violence, spread respect and build peace. Sukanya Sonowal is a 4th year student at IIT Guwahati, studying B.Tech. in Biosciences and Bioengineering. She is also the co-founder of **STEMvibe,** a project that helps spread knowledge of science and technology to students in India.

She also leads The Integral Cup, a national maths competition that had over 2,500 participants in its first edition. Sukanya has worked with big global organisations like Optiver, Qube Research & Technologies and Jane Street.

Professor Subhabrata Sen: First Indian to win the Royal Society of Chemistry's Perkin Prize

Professor Subhabrata Sen, a Kolkata-born scientist, becoming the first Indian to receive this prestigious honor is recognised for his pioneering work in developing **Alternate Electrode Electrolysis (AEE)** technology, an eco-friendly method for chemical reactions. The Perkin Prize, established in honour of Sir William Henry Perkin, is a highly esteemed accolade in the field of organic chemistry. Professor Sen's AEE technology allows for more precise and sustainable chemical reactions. He and his team are currently developing a prototype and have filed a patent for their innovation, with the goal of making it compatible with industrial applications. After completing his education in Kolkata, Sen proceeded to get a PhD from the University of Missouri-Columbia and a postdoctoral degree from Colorado State University in the US. Sen is presently a professor of chemistry at Shiv Nadar University, with earlier professional experience at Pfizer Pharmaceuticals and GVK Biosciences.

Veteran archaeologist Vedachalam wins Tamil Wikki Suran Award

V. Vedachalam, a well-known archaeologist and Tamil epigraphist (one who studies inscriptions), has been awarded the Tamil Wikki Suran Award as he enters his 51st year in the field. The award was presented to him in Madurai, Tamil Nadu, in recognition of his long and passionate work in history and archaeology. The Wikki Suran award recognises and honours individuals contributing boldly to Tamil history, archaeology and heritage.

Key contributions

- With an MA in Tamil Literature and a postgraduate diploma in archaeology and epigraphy, Vedachalam began his career excavating the ancient Chera fort wall in Karur and later identified a 2,000-year-old inscription in Vikramangalam.
- He was one of the first scholars to highlight the significance of the Keeladi archaeological site, instrumental in uncovering evidence of urban civilisation from the Sangam period.
- Having authored over 25 books, he continues to lead heritage walks in roughly 300 villages and regularly conducts college lectures to spread awareness about Tamil heritage.

Smt Sandhya Nair

Flora News

CRITICALLY ENDANGERED AGARWOOD FOUND IN ASSAM

This exciting news comes from a team of scientists who have confirmed that *Aquilaria Khasiana* - a critically endangered agarwood-producing species once thought to be endemic to Meghalaya - is also found in Assam's Jeypore Reserve Forest. This discovery is important because it means the tree may not be as close to extinction as we thought.

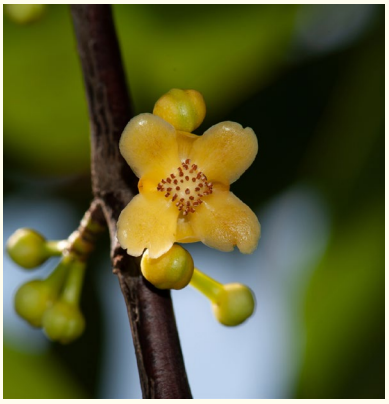
The team used both morphological traits and DNA barcoding to identify the species and successfully sequenced its complete chloroplast genome for the first time.

Agarwood - known commercially as *gaharu*, *oud* or eaglewood - is a highly prized resin formed in trees. The resin is used globally in perfumes, incense, traditional medicine and aromatherapy, often fetching high market prices and driving illegal harvesting.

Agarwood is one of the world's most valuable wildlife commodities. To meet its rising global demand, people have been cutting down too many of these trees, putting them in danger. Now that we know Agarwood is also found in Assam, scientists and forest officials are hopeful. It gives them a better chance to protect and grow the tree in more places. But they also warn that we must act fast and protect these forests so the Agarwood tree doesn't disappear forever.

This discovery also reminds us how important it is to care for nature. There are many hidden treasures in our forests that we haven't even found yet! By learning more about these plants and trees, we can help save the planet - one tree at a time.

Garcinia Kusumae - NEW TREE SPECIES



Location and discovery

- Found in Baksa district, Assam, near Manas National Park, among riparian forests along the Kaldia River (67 m elevation).
- First recorded at Bamunbari and Nityananda, approximately 26 km south of the park.

Researchers and publication

- Described by Jatindra Sarma (retired forest officer and Chairperson, State Expert Appraisal Committee) and Hussain A. Barbhuiya (Bhabha Atomic Research Centre).
- Published in Feddes Repertorium in July 2025.

Etymology

- Named *Kusumae* in loving memory of Kusum Devi, Sarma's mother, acknowledging her sacrifices and inspiration.
- Marks the fourth species Sarma named after a family member (others include his daughter, wife and father).

Morphology and features

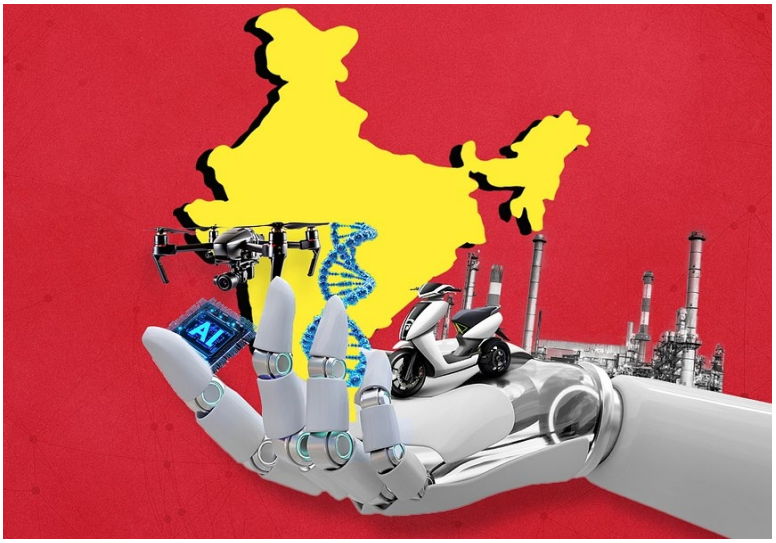
- A dioecious evergreen tree, up to 18 m tall; flowers from February –April, fruits mature in May–June.
- Distinct traits: up to 15 staminate flowers per fascicle, fewer stamens and black resinous exudations on berries.

Ethnobotanical uses

Locally known as *Thoikora* in Assamese the sun dried pulp is made into a sherbet with salt and sugar—a traditional remedy against heatstroke and Used in fish curries and folk remedies for diabetes and dysentery; seed is eaten raw with salt, chillies, and mustard oil.

Conservation and significance

Classified as "Data Deficient" by IUCN due to limited known population size and distribution. This reinforces biodiversity significance of Northeast India and need for conservation led botanical surveys.



India innovates

Indian scientists revolutionise supercapacitor technology

In an exciting breakthrough, scientists from Bengaluru and Aligarh Muslim University in India have developed a groundbreaking material that could revolutionise energy storage. Their creation, **lanthanum-doped silver niobate ($AgNbO_3$), has shown remarkable improvements in supercapacitor performance—an essential technology for clean energy applications.**

Supercapacitors are devices designed to store and release energy quickly, making them crucial for electric vehicles, mobile devices and renewable energy systems. Unlike traditional batteries, which provide long-lasting but slower energy release, supercapacitors offer rapid charging and discharging capabilities. However, they have historically struggled with lower energy density, meaning they couldn't store as much energy as batteries.

The Indian researchers' innovation addresses this challenge by enhancing $AgNbO_3$ with lanthanum, a rare-earth element. This doping process significantly boosts the material's surface area, electrical conductivity and structural stability. As a result, the supercapacitor made from La-doped $AgNbO_3$ achieved impressive outcomes in testing: it retained 118% of its energy after extended use and maintained 100% coulombic efficiency, meaning almost no energy was lost during operation.

This breakthrough material isn't just a laboratory success; it has practical applications. A prototype supercapacitor successfully powered an LCD display, demonstrating its real-world usability and potential for widespread adoption.

This development marks a significant step toward greener, more efficient energy storage solutions. It supports India's efforts to embrace sustainable technologies and reduce environmental impact. Furthermore, this innovation aligns with global goals for clean energy and innovation, potentially reducing reliance on conventional lithium-ion batteries.

Looking ahead, researchers are focused on scaling up production for commercial use. This advancement not only promises to improve existing supercapacitor technology but also opens doors for further innovations in other

perovskite materials. As the world seeks cleaner, more efficient energy solutions, materials like La-doped $AgNbO_3$ offer hope for a brighter, more sustainable future.

India's breakthrough in cancer treatment: Nano cups for photothermal therapy

Indian scientists have achieved a significant breakthrough in cancer treatment with the development of gold nano-cups capable of powerful photothermal therapy (PTT). This innovative approach, led by researchers from **INST Mohali, IIT Bombay and Tata Memorial's ACTREC** promises a less invasive and highly effective method for targeting and eliminating cancerous tumours.

Published in the prestigious journal ***Communications Chemistry*** in June 2025, the research introduces a streamlined technique for synthesising PEGylated semi-shells (SS) with nano-cup morphology. Using a novel one-step synthesis method, scientists etch ZIF-8 crystals with ascorbic acid (Vitamin C), allowing gold nanoparticles to grow on the surface, forming unique nano-cup structures.

These semi-shells are designed to absorb near-infrared (NIR) light and convert it into heat, which selectively destroys cancer cells while minimising damage to surrounding healthy tissue. This approach marks a significant advancement in photothermal therapy, offering a safer, more precise alternative to conventional cancer treatments.

The biocompatible nature of the materials used ensures minimal toxicity, enhancing safety for patients undergoing treatment. In animal models, the therapy has shown high efficacy in targeting metastatic breast tumours, potentially improving survival rates and reducing the risk of cancer recurrence.

This breakthrough not only simplifies the production process of advanced cancer therapies but also expands the scope of oncological treatments. By replacing older, more toxic synthesis methods with this innovative approach, researchers have set a new standard for effective and humane cancer care.

ZIF-8, or Zeolitic Imidazolate Framework-8, is a type of Metal-Organic Framework (MOF). It is a crystalline material with a porous structure, formed by zinc ions linked to organic imidazolate ligands. A ligand is an ion or molecule that binds to a central metal atom or ion to form a coordination complex.

ZIF-8 is known for its high surface area, thermal and chemical stability, and tunable properties, making it a versatile material for various applications.

Hyderabad becomes Google's cybersecurity hub

Google launched its **first Safety Engineering Centre (GSEC)** in the Asia-Pacific region in Hyderabad recently, marking a significant step for India's digital and cybersecurity efforts. This centre, the fourth of its kind globally for Google, aims to bolster cybersecurity, promote responsible AI development and enhance user safety across the region.

It underscores Google's commitment to protecting digital citizens amidst growing online threats and expanding AI technologies.

Located in Hyderabad, GSEC will focus on several core objectives. These include protecting users from online fraud, securing enterprise and government infrastructure and advancing responsible AI systems. Technologies such as AI and Large Language Models (LLMs) will play a crucial role in real-time scam alerts, fraud detection across Google services like Gmail and Google Pay, and strengthening Google Play Protect.

Google has been operating in Hyderabad since 2007, employing over 7,000 people in the state. The company has collaborated closely with the Telangana government on various initiatives, including education, traffic management, startup ecosystems and skilling programmes through institutions like the **Young India Skills University.**

Overall, the launch of GSEC in Hyderabad represents a significant milestone in Google's efforts to enhance digital safety and cybersecurity resilience in India and the Asia-Pacific region.

Perovskite refers to a mineral or a class of materials with a specific crystal structure like that of the mineral calcium titanate (CaTiO3). This structure is characterised by its adaptability, allowing for diverse chemical compositions and tunable properties. This versatility makes perovskites suitable for various applications, including solar cells, fuel cells and memory devices.

Col Shashidhar MV (Retd)

INS TAMAL commissioned

Rewind

2016 - India and Russia signed an MOU for acquisition of four stealth frigates - two to be directly imported and two to be manufactured by Goa Shipyard Limited (GSL).

2017 - Indian Defence Acquisition Council (DAC) approved a proposal valued at ₹490 crore to procure two gas turbines from Zorya-Mashproekt in Ukraine for the Admiral Grigorovich-class frigates under construction in Russia.

2018 - MoD signed a USD 950 million contract for the procurement of two Admiral Grigorovich-class frigates with expected delivery scheduled by 2022 later rescheduled to September 2024 due to the pandemic and the ongoing conflict with Ukraine.

Present day

The first ship built in Russia, INS Tushil was commissioned in December 2024 and has since completed extensive sea trials.

Latest stealth guided missile frigate, INS Tamal was commissioned recently at the Yantar Shipyard in Kaliningrad, Russia.

Commissioning of INS Tamal

INS Tamal (F 71), the eighth multi-role stealth frigate in the series of Project 1135.6 vessels was commissioned in the presence of Vice Admiral Sanjay J Singh, Flag Officer Commanding-in-Chief of the Western Naval Command and senior officials from the Indian and Russian governments, navies and industries. The ship will be commanded by Capt Sridhar Tata, a gunnery and missile warfare specialist.

After its launch in 2022, the vessel sailed for its maiden sea trials in 2024 and completed a set of factory and delivery acceptance trials in June 2025.

The ship with its 26% indigenous components, including the BrahMos long-range cruise missile and Humsa-NG Sonar system also successfully carried out trial firing of all its Russian

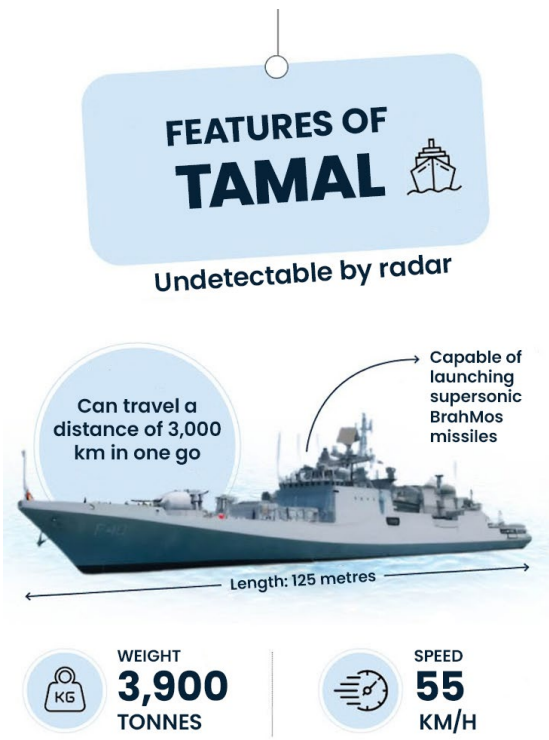
weapon systems, including the vertically launched surface-to-air missile Shtil-1, artillery weapons and torpedoes.

INS Tamal is the second ship of the upgraded Tushil class, which succeeds the earlier Talwar and Teg classes.

It is the last warship to be inducted from a foreign source in line with the GoI impetus on **Aatmanirbhar Bharat** and **Make in India** initiatives.

Symbolically, the name 'Tamal' refers to the mythical sword wielded by Indra, the king of the gods and the ship's mascot reflects a blend of Indian and Russian heritage, drawing inspiration from both Jambavan, the immortal bear king of Indian mythology and the Eurasian brown bear, Russia's national animal.

The ship's motto reads *'Sarvada Sarvatra Vijaya'* (Victorious always every time).



Physical attributes

- A 125m long and 3900-ton warship.
- Top speed exceeds 30 knots with a high tonnage-to-firepower ratio.
- Manned by a crew of about 250 sailors and 26 officers.

Armament & Weapon systems

- Dual-role BrahMos supersonic cruise missiles and vertically launched surface-to-air missiles with extended ranges.
- 30 MM close-in weapon system, the 100 MM main gun, ASW (Anti - Submarine Warfare) rockets and heavyweight torpedoes.
- Comprehensive suite of surveillance and fire control radars.
- Enhanced network-centric warfare systems and advanced electronic warfare suite for ensuring high survivability and operational effectiveness in multi-dimensional maritime conflict.
- Capable of embarking the upgraded anti-submarine and airborne early warning helicopters Kamov 28 and Kamov 31.

- Equipped with complex automated systems for nuclear, biological and chemical defence including damage control and fire-fighting systems for enhanced combat capability and survivability.

Conclusion

The commissioning of versatile platforms like INS Tamal enhances Indian Navy's reach, responsiveness and resilience. The ship will most likely "prove its mettle as a force multiplier in our operational architecture, towards safeguarding national maritime interests and promoting maritime security."

Called 'The Great Bears', INS Tamal stands as a testament to the Indo-Russian cooperation and friendship which has stood the test of time.

Tonnage-to-firepower ratio is a concept that compares the weight (tonnage) of a military vehicle or platform to its offensive capability (firepower). It essentially indicates how much "punch" a vehicle delivers for its size and weight.

A higher ratio generally means more firepower for a given weight, suggesting greater efficiency or effectiveness.

Col Shashidhar MV (Retd)

INS ARNALA inducted

Introduction

In a significant impetus to India's coastal defence capabilities, INS Arnala, the country's first indigenously designed and built Anti-Submarine Warfare Shallow Watercraft (ASW-SWC) was commissioned on 18th June 2025 at the Naval Dockyard in Visakhapatnam. Chief of Defence Staff General Anil Chauhan presided over the commissioning ceremony.

Back in April 2019, the MoD had awarded contracts to Garden Reach Shipbuilders and Engineers (GRSE) and Cochin Shipyard Limited (CSL) for the construction of eight ASW SWC ships each as part of the **Make in India** initiative.

Built by GRSE and delivered in May at L&T Shipyard in Kattupalli (in TN) under a public-private partnership, INS Arnala is the first in a series of eight ASW-SWCs being developed to strengthen India's coastal defence.

INS Arnala was delivered to the Navy during Operation Sindoor at a critical time during heightened tensions emphasising our operational readiness and indigenous production capability.

What are ASW–SWCs?

Anti Submarine Warfare Shallow Watercrafts are specialised vessels designed for littoral and coastal waters. They are equipped with sonar systems, anti-submarine weapons, mine-laying capabilities and search and rescue gear.

The fleet, comprising 16 vessels will now replace the ageing Abhay class corvettes.

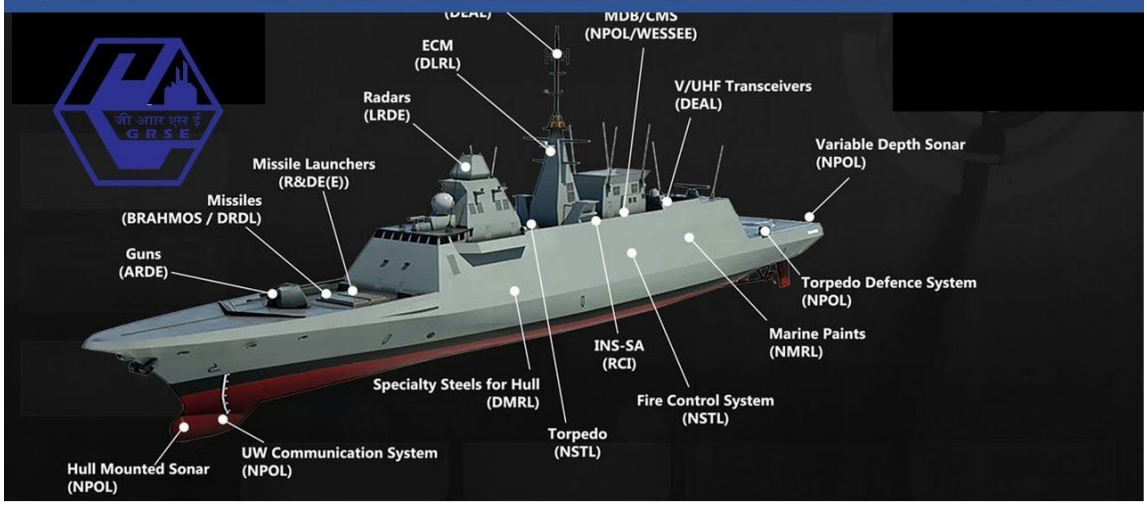
About INS Arnala

As a true reflection of our rich maritime heritage, INS Arnala was named after the historic coastal Arnala Fort off Vasai in Maharashtra constructed in 1737 by the Marathas which was strategically positioned to oversee the Vaitarna River's mouth serving as a sentinel over the northern Konkan coast.

The ship's crest features a stylised auger shell, symbolising resilience and vigilance in hostile environments while its motto "*Arnave Shauryam*" means "valour in the ocean" reflecting the courage of its crew.

It is designed for a range of anti-submarine operations including sub-surface surveillance, interdiction, search and rescue missions and **low-intensity maritime operations (LIMO).**

GRSE LAYS KEEL FOR
Anti-Submarine Warfare Shallow Water Craft



Highlights

- **Design and propulsion:** 77–78 m length, 1490 tonnes displacement, diesel engines paired with water jet propulsion, the largest Indian naval platform using this setup.
- **Stealth & sensor suite:** Low radar/acoustic/IR signature; hull mounted sonar and towed low frequency variable-depth sonar for submarine detection.
- **Armament:** RBU 6000 rocket launcher, lightweight torpedo tubes, anti submarine mines, a 30 mm naval surface gun and twin 12.7 mm RWS.
- **Multi-mission capability:** Suited for littoral ASW, subsurface surveillance, LIMO operations, mine-laying, and search-and-rescue.
- **Indigenisation:** Over 80% indigenous content, sourcing from BEL, L&T, Mahindra Defence, MEIL, Bokaro Steel Plant (supplied 3100 tonnes of special-grade steel) and over 55 MSMEs.

Strategic implications

As this is designed to detect and neutralise enemy submarines in littoral zones and strengthening coastal defence, INS Arnala with its modern fleet posture will provide:

- **Port security network**- first of 16 vessels will create an anti-submarine cordon around major ports.
- **Strategic deterrence**- will act as a coastal buffer, discouraging regional adversaries' submarine activity.
- **Operational synergy**- to work in tandem with ASW helicopters and maritime surveillance aircraft for layered defence.
- **Maritime domain awareness**- will reinforce our role as a security provider in the Indian Ocean Region (IOR).
- **Tech export potential** - indigenous ASW platforms could be marketed to friendly nations.
- **Maritime diplomacy:** Signals capability and reliability to regional partners amid strategic competition.

Conclusion

The commissioning of INS Arnala not only reinforces India's defence capability but also highlights the triumph of indigenous design, engineering, and manufacturing. Strategic balance in IOR will be enhanced with undersea warfare capabilities to counter the expanding submarine fleets of neighbouring countries.

● **RWS (Remote Weapon Station) is a remotely operated weapon system, often with a fire control system, that can be mounted on a variety of platforms, including naval vessels.**

Col Shashidhar MV (Retd)

vajR

India's first autonomous hard-kill drone system

As some one rigthly said, "In today's battlespace, the first strike may not come from a fighter jet screaming across the skies - it could be a drone the size of a shoebox. And India is ready."

The changing nature of warfare is no longer a future prediction; it's a present reality. From asymmetric threats to state-sponsored terrorism, the use of commercial off-the-shelf drones in surveillance, smuggling and targeted attacks has exploded.

India, with its expansive land borders, porous coastline and hostile neighbours, has been particularly vulnerable. But that vulnerability is now being met with resilience.

The new threat landscape

The low cost, ease of availability and increasing autonomy of drones have made them the weapon of choice for non-state actors and insurgent groups. From the smuggling of narcotics across the Punjab border to the airdropping of arms in Jammu & Kashmir, drones have proven to be effective tools for asymmetric warfare.

The 2021 Jammu Air Force Station drone attack was a wake-up call. In under five minutes, two small drones dropped explosives on the station premises - no fighter pilot, no warning radar signature, no traditional engagement possible.

It wasn't just a breach of physical space; it was a breach of perception. The enemy didn't need a missile - they just needed a drone with GPS and intent.

In a quiet but powerful move, India's Defence Research and Development Organisation (DRDO) has unveiled the **D4 (Drone Detect, Deter, Destroy) anti-drone system,** which is now being deployed along key border areas.

vajR, a fully autonomous hard-kill drone interceptor system has been unveiled by Gurugram-based deep-tech startup Sharang Shakti.

This is also one of the first attempts by an Indian private firm to deliver a reusable, AI-enabled kinetic drone defence platform, particularly tailored for modern aerial threats.

This home-grown, integrated counter-drone solution is designed to detect and neutralise rogue unmanned aerial vehicles (UAVs) with precision.

As part of an integrated drone threat detection and interception system, vajR receives approximate target coordinates from the ground station and autonomously navigates toward the target. Upon acquiring the adversary drone within its electro-optical/infrared (EOIR) sensor field of view, onboard machine learning (ML) algorithms enable precise tracking and rapid midair interception. Using an advanced collision manoeuvre, vajR neutralises enemy drones with kinetic force.

vajR operations are fully autonomous keeping human-in-the-loop for overriding control when need arises. vajR - Hangar which enables autonomous take-off, landing and charging for sustained operational readiness can easily be integrated into modern ground control stations.

Unlike traditional counter-drone systems that rely on soft-kill methods like jamming or spoofing, vajR is built for kinetic elimination. It launches automatically from a dedicated autonomous hangar, receives targeting data from radar or optical sensors and then flies toward the hostile drone. **Using onboard sensors and neural networks, vajR identifies and locks on to its target in mid-air, before physically colliding with it to neutralise the threat.**

This hard-kill approach is especially valuable in high-threat zones where soft-kill techniques may fail due to signal interference or latency.

What makes vajR unique is not just its capability - but the indigenous technology used in its manufacturing. The system has been designed entirely in-house by Sharang Shakti, from the control software and avionics to the sensor fusion and onboard AI. At the core of vajR lies Sharang Shakti's own guidance and control system. It enables precise manoeuvring at high speeds, even during complex engagements with agile enemy drones.

Once within 50–100 metres of the target, vajR switches from remote guidance to its internal targeting system. Using a forward-looking EOIR sensor and a deep learning model trained on thousands of drone profiles, it performs autonomous target recognition, tracking and engagement.

Upon target lock, the drone executes a full-speed collision. Critical components are housed in a Kevlar-reinforced dome, allowing vajR to survive and return safely, making it reusable, unlike many interceptors that are destroyed in action. Further, vajR is designed to operate in coordinated swarms, enabling multiple interceptors to work together against large drone formations

The ground module houses and maintains vajR units. These hangars can autonomously charge, launch and recover the drones without human intervention—allowing for round-the-clock readiness.

vajR comes into operation with the detection of a suspicious aerial object by a radar or an optical system. This data is sent to the vajR ground station, which then deploys the interceptor. During flight, it is guided by an AI-enhanced control system until it switches to its own onboard sensors for terminal guidance. The system includes a "human-in-the-loop" safeguard, allowing an operator to abort the mission at any point before impact.

Additionally, multiple interceptors can be deployed simultaneously for enhanced effectiveness. The system is modular, scalable and has applications across defence, critical infrastructure and even civilian drone monitoring.

The unveiling of vajR is more than just a product launch—it reflects India's evolving defence-industrial ecosystem. As a private player, Sharang Shakti represents a new wave of defence tech startups that blend deep engineering with real-world military utility. vajR with its smart design, indigenous development and battlefield relevance, could soon become a core part of India's counter-UAS (Counter Unmanned Aircraft System) doctrine. **Overall, vajR offers a decisive, homegrown answer - fast, intelligent and deadly.**

Data protection in the European Union

Introduction

In the digital age, personal data has become one of the most valuable resources. From online shopping habits to medical records and from social media interactions to financial information, vast amounts of personal data are collected, processed, stored and shared daily. The misuse of this data - whether through unauthorised access, sale or breaches - can lead to severe consequences including identity theft, financial fraud, surveillance and erosion of individual privacy.

DATA Protection Laws

Considering the risks highlighted, data protection laws are essential to safeguarding fundamental rights and freedom of individuals. They provide a legal framework that governs how personal data should be collected, used and stored. These laws promote transparency and accountability among organisations, ensuring that data is handled responsibly. Additionally, they empower individuals by granting them rights such as the ability to access their data, correct inaccuracies or even request deletion.

In a globalised and interconnected world, where data frequently crosses borders, robust data protection laws also contribute to international trust and commerce. Countries and businesses that adhere to strong data protection standards are more likely to attract consumers and business partners, enhancing competitiveness and innovation while maintaining ethical standards.

DATA Protection Law in EU

The European Union ("EU") has a comprehensive framework governing data protection, setting high standards and placing the rights of individuals at the heart of the digital economy. The General Data Protection Regulation ("GDPR"), which came into effect in 2018, is the EU's landmark data protection law designed to modernise and strengthen the privacy rights of individuals. It applies to all organisations, regardless of their location, which process personal data of individuals within the EU. This extraterritorial reach seeks to ensure global compliance and has made GDPR a model for data protection laws worldwide.

GDPR has influenced privacy legislation in other regions, including Brazil, Japan and India.

Overview of GDPR

Key principles of the GDPR include fairness and transparency, limitation of purpose, accuracy, confidentiality and accountability. **Rights of individuals under the GDPR include right to access data, right to rectification, right to erasure and right to data portability.**

Obligations of the organisations governed by GDPR, include the requirement to obtain consent, appointment of data protection officers reporting data breaches etc.

Overall, the GDPR represents a milestone in global privacy regulation. By putting individuals in control of their personal data and holding organisations accountable, it aims to create a safer and more transparent digital environment for everyone.

Jal neti

A simple yogic cleansing technique for respiratory health

In the ancient yogic tradition, cleansing practices known as *shatkarmas* play a vital role in preparing the body and mind for deeper yogic practices. One of the most effective and accessible among these is *jal neti*, a nasal irrigation technique that uses lukewarm saline water to clean the nasal passages. Simple yet powerful, *jal neti* helps maintain nasal hygiene, strengthens respiratory health and is especially effective for those suffering from sinus issues, allergies and pollution-related respiratory discomfort. In today's context of urban pollution and lifestyle-induced ailments, everyone can benefit from the regular practice of *jal neti* to maintain clear breathing and better mental focus.

What is *Jal neti?*

Jal neti is a yogic cleansing practice where lukewarm saline water is passed through one nostril and allowed to flow out from the other, using a specially designed container called a ***neti pot***. This simple technique washes out accumulated mucus, allergens, pollutants and pathogens from the nasal passages. The term "jal" means water, and "neti" means cleaning, making this a literal translation: "cleaning with water."

Though rooted in traditional yogic science, *jal neti* is now supported by modern medicine for its effectiveness in promoting nasal and sinus health.

Harvard Health (https://www.health.harvard.edu/staying-healthy/irrigation-better-than-steam-in-relieving-nasal-symptoms) also has reported the benefits of *jal neti*. Researchers conducted a study involving 871 adults with a history of chronic or recurrent sinusitis, all of whom experienced moderate to severe symptoms affecting their quality of life. Participants were randomly divided into four groups: one continued their usual care; another performed daily nasal irrigation using a *neti pot* with saline solution; the third group inhaled steam from hot water daily; and the fourth group combined both steam inhalation and nasal irrigation. Upon analysis, the researchers observed that those using the neti pot experienced significant improvements in their symptoms, regardless of whether they also practiced steam inhalation. The findings were published online on 18th July 2016, in the Canadian Medical Association Journal.

How *Jal Neti* helps respiratory health

The nose is the primary gateway for air to enter the lungs. Nasal blocks not only compromise

breathing but also oxygenation and mental clarity.

Jal neti ensures that the nasal passages are kept clean and free of irritants. The key respiratory benefits of *jal neti* include:

- **Removal of allergens and pollutants:** Dust, pollen, smog and other pollutants that accumulate in the nasal cavities are flushed out effectively.
- **Sinus cleansing:** Helps reduce inflammation in the sinus cavities and promotes drainage, relieving symptoms of sinusitis.
- **Improved breathing:** Clear nasal passages allow better airflow, increasing oxygen intake and reducing strain on the respiratory system.
- **Prevention of infections:** By removing excess mucus and pathogens, *jal neti* reduces the chances of upper respiratory tract infections.
- **Relief from nasal dryness:** In dry climates or air-conditioned environments, it keeps nasal membranes moist and functional.

Conditions *jal neti* can help

Jal neti is beneficial for a wide range of respiratory and ENT (ear-nose-throat) conditions:

- Sinusitis and nasal congestion
- Allergic rhinitis (hay fever)
- Asthma (as a supportive therapy)
- Frequent colds and coughs
- Snoring and sleep apnea (in some cases)
- Headaches caused by nasal blockages
- Dry nose due to pollution or indoor air quality
- Mental fog due to poor oxygenation

Even individuals with no chronic issues can use *jal neti* for general wellness and improved breathing.

Simple procedure of *jal neti*

Performing *jal neti* is easier than it sounds and takes only a few minutes each day. Here's a step-by-step guide:

What you need

- A *Neti* pot (available in plastic, ceramic or steel)
- Lukewarm water (boiled and cooled to body temperature)
- Pure salt (non-iodised rock salt or sea salt)

Preparation

1. Mix about half a teaspoon of salt in one glass (250 ml) of lukewarm water to prepare an isotonic saline solution.
2. Fill the *neti* pot with this solution.

Execution

1. Stand over a sink or in a bathroom with your head tilted slightly to one side.
2. Insert the spout of the *neti* pot gently into the upper nostril.
3. Open your mouth and breathe through it continuously (do not sniff or swallow).
4. Tilt the pot slowly so the water flows into one nostril and exits from the other.
5. Use half the pot for one side, then switch to the other side.
6. After completing both sides, gently blow out any remaining water from the nostrils by bending forward and exhaling through both nostrils forcefully, one side at a time.

Important tips

- Always use sterile, lukewarm water.
- Use the right amount of salt to avoid burning sensation.
- **Do not perform if you have a completely blocked nose or ear infection.**
- Dry the nasal passages after practice to avoid cold.

Modern relevance – pollution and urban living

Urban environments expose people, especially school-going children, to unprecedented levels of pollutants. Dust, vehicle emissions and pollen can easily clog nasal passages and trigger allergic reactions. In such conditions, *jal neti* acts like a daily internal shower for the nose. Unlike medications that suppress symptoms, *jal neti* works on the root cause removing irritants before they cause inflammation.

During viral outbreaks or in the post-COVID world, *jal neti* also helps in maintaining nasal hygiene, reducing viral load in the nasal cavity and offering a layer of preventive care when done responsibly.

Jal neti is a timeless, low-cost and highly effective yogic technique for respiratory health. With just a few minutes of daily practice, it can significantly reduce sinus problems, improve breathing and enhance overall mental clarity and vitality.

Smt Uthra Dorairajan

Dr. Chanchal Uberoi

(1939–2019)

Prof. Chanchal Uberoi came from a Punjabi business family of Quetta in Baluchistan, of pre-Independence India. Her family was engaged in retail business that was devastated by an earthquake in 1929. With sheer resilience and toiling, the family re-established their business in the next decade. Once again it was destroyed to ashes during the post partition events. The entire family with their tiny tots was forced to flee when their home was set on fire at night. Little girl Chanchal was only 8 years old then. Being chased out of their own land and settling elsewhere was not easy for any of those families. Life was not at all easy on them, as they had to wander in different parts of India as refugees. Her *appa* started his business again in Hyderabad and tried settling there. While Chanchal found learning mathematics very interesting, her four siblings found their interest in diverse areas. When she wanted to pursue research after her master's from Osmania University, her parents supported her choice, though it was not common then.

In the 1960s, Applied Mathematics department at Indian Institute of Science, IISc, Bengaluru was a "service department" to equip researchers from various disciplines with mathematical tools which could be applied to their fields of study. Young Chanchal got accepted for PhD there, after hours of rigorous interview. **Years later, she climbed up the ladder as the first woman mathematician to adorn the position of Dean.**

Soon after joining as a research scholar, Chanchal was asked to take up teaching mathematics to students from the departments of metallurgy, chemical engineering and management studies. "I began preparing notes for teaching. Looking back, it was fun teaching. Most students had little or no training in mathematics beyond high school. To get them interested in mathematics, I began emulating a kind schoolteacher by sharing anecdotes about the lives of mathematicians!" recalled Prof. Chanchal.

Chanchal was working on her thesis on the propagation of waves, their characteristic instabilities in plasma media and their applications to astrophysical problems. She had to burn the midnight oil, evaluating thousands of integrals with a calculating machine. This was not an easy task in that decade before the dawn of personal computers. To describe the behaviour of gases of neutral particles, she successfully employed what is known as the **Bhatnagar-Gross-Krook Model (BGK Model)**, named after Prof. Shanti Swarup Bhatnagar and

others. After obtaining PhD, Dr. Chanchal started working as a lecturer at IISc.

Two years later, she was granted leave to pursue research at the University of Cardiff and then at the Harvard Observatory. On her return to India, she was appointed as Assistant Professor and over the years, she became Professor in the Department of Applied Mathematics, later renamed as Department of Mathematics.

She married Dr. S.N. Balasubrahmanyam who was a researcher in organic chemistry at IISc. He was a great supporter of his wife's career. Together they performed the duties of raising a family while having fulfilling careers. As a couple and as a family, they indulged in their mutual love for Indian classical music, Indology and research.

With the dawn of the space age, astrophysics gained great importance in the early 1960s. Chanchal applied her expertise in mathematics and plasma physics to understand problems in the near-earth space environment. In 1972, Hannes Alfvén received the Nobel Prize in physics for the discovery of a new type of wave (later named as Alfen waves) in natural plasma.

This kind of plasma constitutes a major part of ionised matter prevalent in space. **Incidentally, in the same year, she established a very important physical process that is prevalent in plasmas, described as resonant absorption of Alfvén waves in inhomogeneous magnetic fields.** This work helped us understand the various physical processes in natural plasmas. She could trace the origin of this work back to her PhD thesis, where she wrote a small chapter on Alfvén waves. **The work has also become substantially important in the study of heating of laboratory plasmas in fusion research.**

Her work in collaboration with Akira Hasegawa of Bell Laboratories resulted in a monograph titled ***The Alfvén Wave,*** published by the US government's Department of Energy. She was awarded by the Society for Technical Communication, Tennessee. **Her work has had applications in both space and laboratory plasmas.** She has contributed research articles in internationally reputed journals on the chromosphere of the sun, behaviour of sunspots and magnetic fields in space.

Chanchal Uberoi authored many popular articles on topics like women in science, famines due to solar activity during Mughal rule and on connections between Indian music and monsoon. She had undergone training as a vocalist in North Indian classical music.

Combining her scientific interest, she created musical pieces using audio frequency radiation produced by ionised entities surrounding and interacting with magnetically active planets (Saturn, Jupiter, Earth), then recently transmitted by Voyagers I and II and converted to sounds audible to the human ear. She prefaced each sound profile by a short rendering of a subjectively chosen musical piece, instrumental and vocal. She believed that this effort would interest young people in taking up research in topics related to ionised media. She was always amused by the contrast of elaborate ensembles used in western harmonic music and the simplicity of Indian melodic music. She wrote essays on how *ragas* and *taala/laya* of our music beautifully create intended effects on the listener.

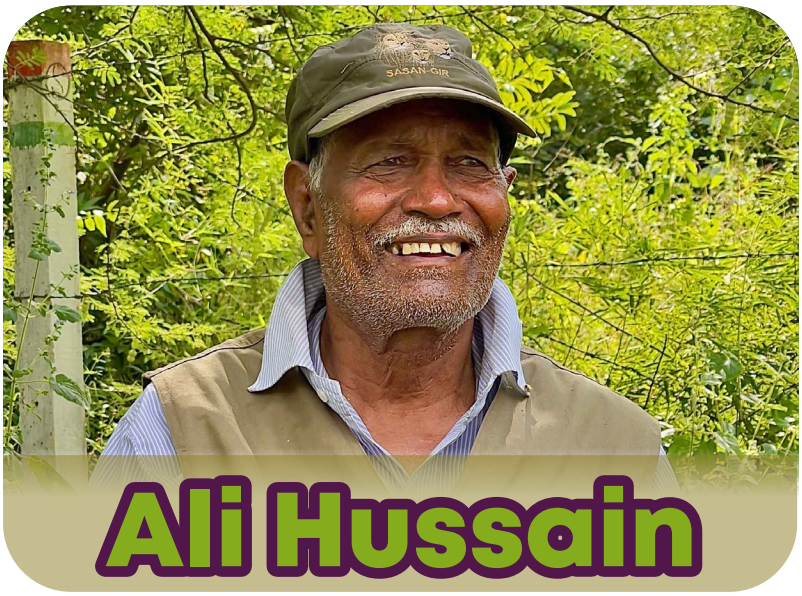
She travelled extensively, for her academic work to Australia, Sweden, Japan, Brazil, Nigeria, England, USA and many other places for collaborative research and for transaction of knowledge. She was also engaged in year-long periods as visiting professor at Institute of Physics, Puebla, Mexico, research consultant at AT&T Bell Laboratories, and later, at Lucent Technologies, NJ, USA, Research Associate at International Centre of Theoretical Physics, Italy and at Indian Institute of Astrophysics, Bengaluru.

Till today, Joint Astronomy Programme (JAP), an initiative of IISc trains PhD students in astrophysics, jointly run with several collaborating institutes Raman Research Institute (RRI), Indian Institute of Astrophysics (IIA) and Indian Space Research Organisation (ISRO).

This programme was established in 1982, in which Prof. Uberoi was a founder member and played a key role. **She was a great teacher, mentor, researcher and an able administrator who was at IISc for more than four decades.**

Remembering her long satisfying association with her institute, she said, "I strongly believe that the vision of the founder, JN Tata, has largely been fulfilled. The Institute maintains a scientific environment by producing highly trained teachers, scientists, engineers and scientific administrators, which is reflected in the atmosphere of the Institute. Though I think this might change with time, I assure myself that it could only happen superficially – the quest for knowledge and learning that the Institute inculcates in its students will last for ages."

Kum Sunita D Behera



Ali Hussain

Ali Hussain (often called Chiryawala) was born into the traditional Mirshikar bird trapper community in Manjhaul village, Begusarai district, Bihar. He mastered over a hundred traditional trapping techniques including bamboo-framed nets, fire, gongs and gum-and-stick, to catch water birds at Kanwar Jheel for his family livelihood. Yet through his deep observational skills and intimate knowledge of birds, he did far more than poach, it led him toward conservation.

In the 1960s, the legendary Indian ornithologist Salim Ali ("Birdman of India") encountered Hussain during a field visit to Manjhaul. Sensing his remarkable bird catching and identification talent, Ali insisted on involving him in scientific bird ringing and study operations under the Bombay Natural History Society. Thus began Hussain's transformation from local poacher into a trusted ornithological assistant.

Over the next four decades Hussain collaborated with leading scientists across nearly all of India's national parks. **He reportedly learned to identify around 500 species of birds in both English and Hindi, despite being illiterate**. His traditional trapping expertise was adapted for ethical capture during ringing camps; he helped ring thousands of birds for scientific tracking and conservation.

Hussain's skills also took him abroad; in 1998, he was flown to Jackson County, Mississippi in the United States to demonstrate his techniques. He captured about 10% of the local sandhill crane population, after which his methods became widely adopted in crane research.

Although his work earned global praise and heartfelt appreciation from Salim Ali, Hussain never received permanent employment from BNHS; even in later years, he subsisted on a modest seasonal salary. And despite environmental degradation at his native Kanwar Lake - once a rich overwintering site, he remains dedicated to passing on his traditional art to his four sons.

Ali Hussain's life story is a striking tribute: from poaching tradition to international conservation collaboration, his journey bridged indigenous knowledge and scientific method, preserving India's wings and inspiring cross-cultural respect.

Captain Vikram Batra was known as the **hero of the 1999 Kargil War**. He was honoured posthumously with the Param Vir Chakra, India's highest award for gallantry. Capt. Batra remains an enduring symbol of bravery, sacrifice and indomitable spirit.

Nicknamed "*Sher Shah*" by his comrades for his fearless nature, Capt. Batra was a young officer of the 13 JAK Rifles when war erupted in the high-altitude terrain of Kargil. His most celebrated mission was the recapture of Point 5140, a strategic peak under enemy control. Defying the odds and harsh weather, Capt. Batra chose to attack from the rear; a bold decision intended to surprise the enemy. Despite being pinned down by machine gun fire on a sheer cliff, he fearlessly climbed up with five of his men. Once at the top, he threw grenades, personally killed three enemy soldiers in hand-to-hand combat and inspired his troops to charge forward.

On 20th June 1999 at 3:30 a.m., Point 5140 was successfully captured under his leadership. The victory proved to be a turning point and paved the way for further triumphs, including Point 5100, Point 4700, and the now iconic Three Pimples, Point 4750 and Point 4875.

It was during the operation to recapture Point 4875 that Capt. Batra made the supreme sacrifice. In a gallant attempt to rescue an injured fellow officer during an intense counterattack by the enemy, he was fatally wounded. His rousing cry before embracing martyrdom was "*Jai Mata Di*!"

Capt. Batra's courage wasn't just about facing bullets. It was about leading from the front, inspiring his men and prioritising duty over personal life. His actions didn't just win battles; they won the hearts of millions.

When his father G.L. Batra received the Param Vir Chakra on behalf of his son from the President of India, **it wasn't just an award - it was the nation saluting a true son of the soil.**

Smt Ramamani N

Revolutionising apple farming: The inspiring journey of Hariman Sharma

HARIMAN SHARMA

Hariman Sharma, a humble farmer from Bilaspur, Himachal Pradesh, has redefined the possibilities of apple farming through his unwavering dedication and innovative spirit. Born on 4th April 1956, Sharma, with only a 10th grade education and a deep-rooted passion for agriculture, has achieved what many believed impossible: growing apples in the tropical plains of India. His groundbreaking innovation, the HRMN-99 apple variety, has earned him the prestigious Padma Shri for his contribution to Indian agriculture.

Traditionally, apple cultivation in India is confined to the Himalayan region, thriving at altitudes of 5,000 to 8,500 feet, where the climate provides 1,000 to 1,500 chilling hours needed for apple trees to bear fruit. But Sharma's HRMN-99 variety has broken these geographical barriers. This low-chilling, self-pollinating variety grows in tropical and sub-tropical regions, even at temperatures reaching 40-45°C and elevations as low as 1,800 feet.

This revolutionary apple variety was officially registered by the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), New Delhi, in association with ICAR-Central Institute of Temperate Horticulture, Srinagar. The registration safeguards both the plant and its name, giving recognition and legal protection to Sharma's innovation.

States like Maharashtra, Uttar Pradesh, Karnataka and Manipur, once thought unsuitable for apple cultivation, are now witnessing successful harvests. The apples mature earlier in these warmer regions, fetching higher prices in the market. Over 1,00,000 saplings have been planted across seven districts in Himachal Pradesh alone and the variety has taken root in all 29 Indian states, with fruiting reported in 23 states. Beyond India, countries like Bangladesh, Nepal, Germany and Zambia have also adopted this variety.

Sharma's farm is a testament to his love for farming. Besides apples, he cultivates mangoes, pomegranates, litchis, avocados, sapodilla, kiwis and even coffee. His efforts align with the vision of **Aatmanirbhar Bharat**, reducing reliance on apple imports and boosting indigenous production.

From a small village farmer to international recognition, Hariman Sharma's story is an example of how dedication, innovation and a deep connection to the land can yield wondrous results.

Smt Vaishnavi V

CURIOSITY CORNER

Plateaus of India

I Quick Five! Choose one or as many options as possible.

1. Plateaus are also known as (valley, mountain land, table land).
2. The largest plateau in India (Malwa Plateau, Chota Nagpur Plateau, Deccan Plateau).
3. The Peninsular Plateau is bound by these two mountain ranges (Eastern and Western Ghats, Himalayas and Aravalli, Gharo and Khasi).
4. The plateaus that constitute the Central Highlands (Bundelkhand, Bagelkhand, Chotanagpur, Malwa).
5. Plateau located in Rajasthan (Malwa, Marwar, Chotanagpur, Gharo).

II Are these statements true about plateaus? If false, Justify your answer.

1. The Deccan Plateau was formed by the cooling and solidification of ancient lava flows.
2. Plateaus can only be formed by volcanic activity.
3. The Peninsular Plateau of India is one of the oldest landforms, dating back to the Gondwana period.

III Match the plateaus with their process of formation

Name of the plateau	Process of formation
1. Malwa Plateau	A. Erosion of sedimentary rocks
2. Shillong Plateau	B. Volcanic eruptions and erosions
3. Marwar Plateau	C. Tectonic uplift and faulting

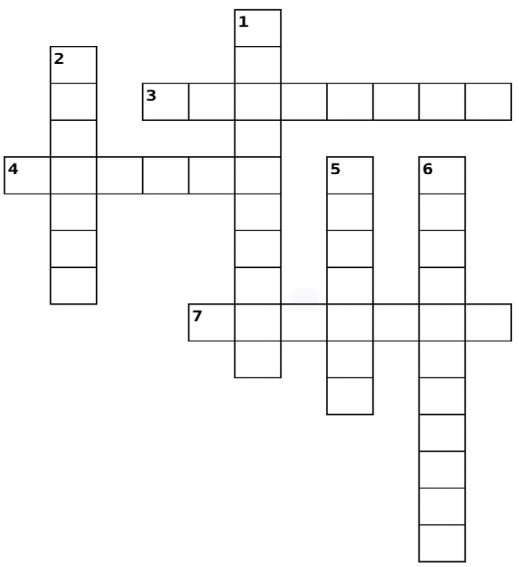
IV Crossword - More plateaus ahead!

Across

3. This plateau is also known as the “Scotland of the East”.
4. This plateau is famous for coffee plantations.
7. Also known as the “Sorrow of Bengal”, this river flows through the Chota Nagpur Plateau.

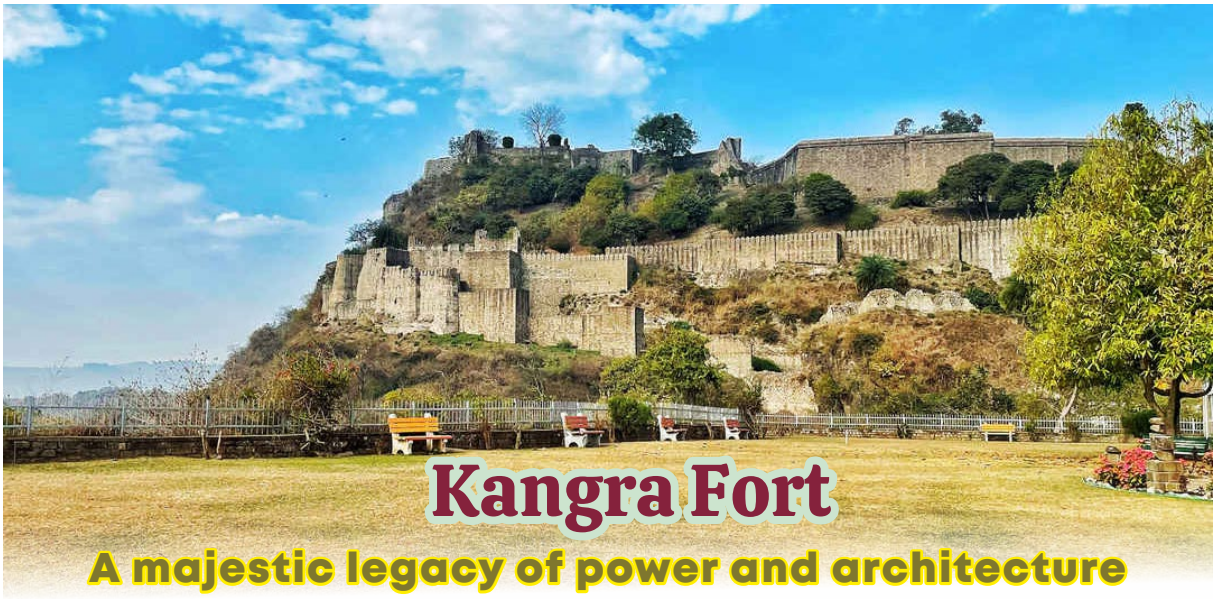
Down

1. Shape of the Peninsular Plateau.
2. The Deccan Plateau is mainly composed of this type of rock.
5. Bundelkhand plateau is known for this precious gem.
6. This plateau is known as the “Mineral storehouse of India”.



Answers on page 66

Smt Ghana Saraswathy M



Kangra Fort

A majestic legacy of power and architecture

Nestled amidst the lush hills of Himachal Pradesh, Kangra Fort stands as a timeless sentinel of India's rich historical and architectural heritage. Considered the largest fort in the Himalayas and one of the oldest in India, this grand structure lies about 20 kilometres from Dharamshala in the Kangra Valley. Built by the royal family of the Katoch dynasty, its origins trace back to the Trigarta Kingdom mentioned in the Mahabharata, making it a marvel over 2,000 years old.

The architectural brilliance of Kangra Fort is revealed in its imposing stone walls, majestic gates and intricately designed temples within.

The fort is strategically built on a steep hilltop between the Manjhi and Banganga rivers, offering a natural defence system. Its gateways including the Ranjit Singh Gate and Jahangiri Darwaza reflect Mughal and Rajput influence, with beautifully carved panels and symbolic inscriptions. Inside, one can find the shrines of Lakshmi Narayan and Ambika Devi, which further showcase the region's blend of devotion and design.

Historically, the fort has been under the rule of several powerful dynasties and rulers, including the Katoch, Mughals, Sikhs and eventually the British. Each left behind a layer of history and transformation. Mahmud of Ghazni attacked it in 1009 CE, lured by its legendary treasures. Later, Akbar attempted to capture it, but it was his son Jahangir who succeeded, adding Mughal touches to the fort's structure.

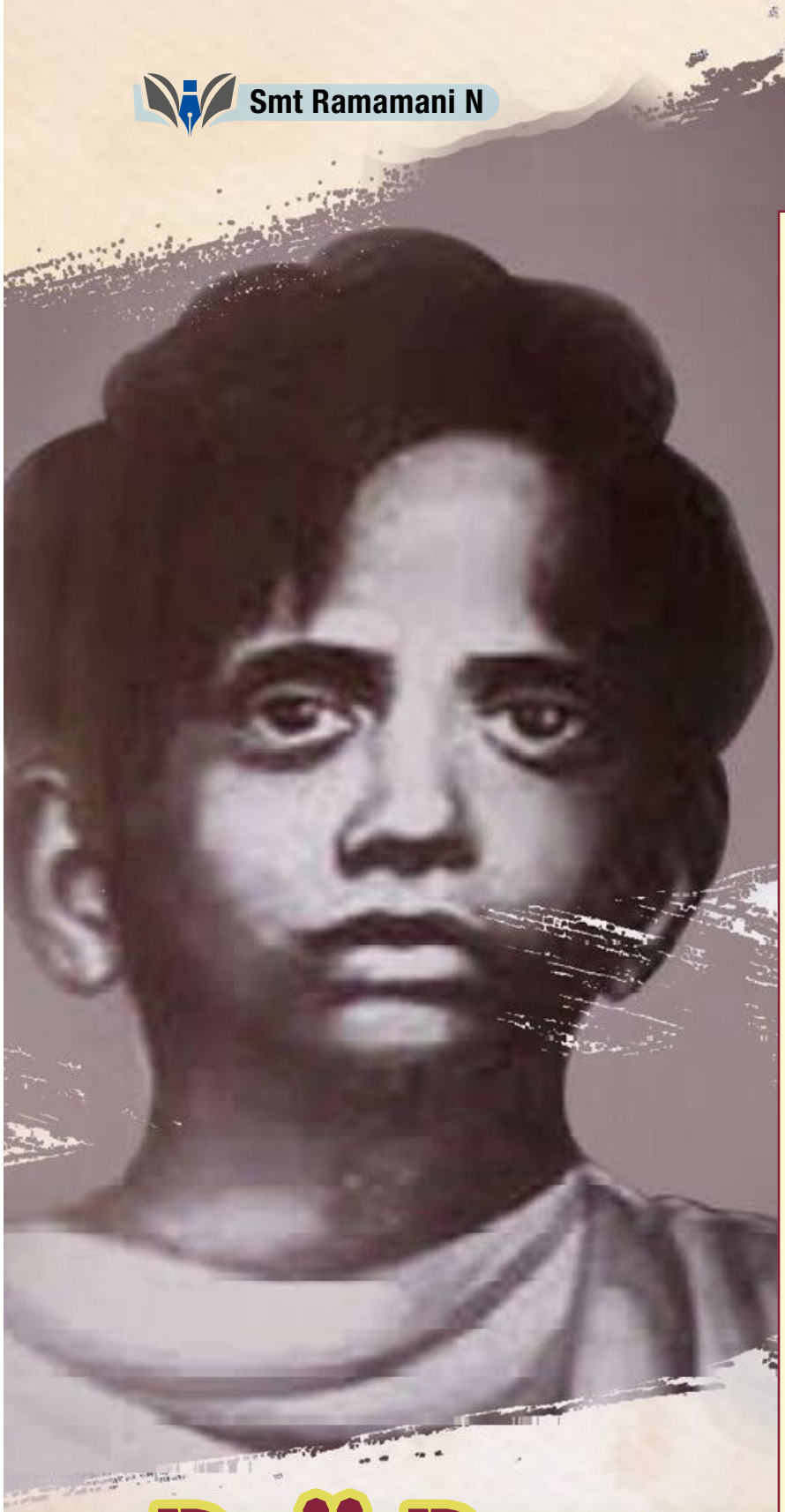
For travellers, the nearest airport is Gaggal Airport (also known as Kangra Airport), just 13 km away. The nearest railway station is Kangra Mandir Railway Station, a part of the Pathankot–Jogindernagar narrow-gauge line, providing a scenic route into the valley.

The best time to visit Kangra Fort is from October to March, when the weather is cool and perfect for exploring the ancient ruins against a backdrop of misty mountains and blue skies.

DO YOU KNOW ?

The Kangra Fort once housed immense treasures and it is said that even invaders found its wealth beyond imagination! Today, it stands not just as a relic of the past, but as a proud symbol of Kangra's enduring spirit.

Smt Ramamani N



Baji Rout

Baji Rout (1926-1938) was born on 5th October, in Nilakanthapur village, Dhenkanal. After his father passed away shortly after his birth, his mother supported the family by grinding and husking paddy at a quern. Baji learnt about the harsh realities of colonial and feudal exploitation through his mother. She shared with him the struggles they faced, such as being unable to afford salt due to heavy taxes imposed by the British. Motivated by this awareness, Baji joined the Banar Sena (children's group against the British), where he took on the responsibility of spying on the British Police. He worked to inform others about the movement of British troops in his area and vowed to stop the British police from using the ferry to access his village across the Brahmani River.

Baji Rout was a committed member of the Banar Sena and actively participated in the Praja Mandal movement in Dhenkanal district, Odisha, opposing the colonial-backed Gadajata rulers. Fearlessly, he fought to free his village from colonial exploitation and to dismantle the power of their political agents. His tragic killing fuelled the flames of India's freedom struggle, inspiring movements across princely states. On 10th October 1938, late at night, 12-year-old Baji was shot dead by the British police when he refused to ferry them across the Brahmani River. At just twelve years old, Baji became one of India's first child martyrs.

The sacrifices of young freedom fighters like him are often overlooked, leaving Baji Rout as a reminder of a forgotten chapter in Bharat's fight for independence.

Answers

Answers of page 63

I Quick Five





1. Table land
2. Deccan plateau
3. Eastern and Western Ghats
4. Bundelkhand, Bagelkhand, Chotanagpur, Malwa
5. Marwar (Also known as Mewar)

II True or False

1. True – It was created from massive volcanic eruptions millions of years ago.
2. False – Plateaus can also form due to tectonic uplift (e.g., Shillong Plateau) or erosion (e.g., dissected plateaus), not just volcanic activity.
3. True – It is a remnant of the ancient Gondwana supercontinent.

III Plateaus and their process of formation

Name of the plateau	Process of formation
1. Malwa Plateau	B. Volcanic eruptions and erosions
2. Shillong Plateau	C. Tectonic uplift and faulting
3. Marwar Plateau	A. Erosion of sedimentary rocks

IV Crossword


					[1]T									
	[2]I				r									
	g			[3]S	h	i	l	l	o	n	g			
	n					a								
[4]D	e	c	c	a	n		[5]D		[6]C					
	o				g		i		h					
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WORLD SPORTS JOURNALISTS Day

2nd JULY

Established by International Sports and Press Association (AIPS) in 1994.

What is AIPS?

It is an acronym for Association Internationale de la Presse Sportive, popularly known as the International Sports and Press Association. Founded on July 2, 1924, during the Summer Olympics in Paris.

World Asteroid Day commemorates the anniversary of the Tunguska event in 1908. This event was caused by an asteroid or comet fragment exploding over Siberia, Russia, flattening around 2,000 square kilometres of forest.