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FROM THE EDITOR'S DESK

क्षणशः कणशश्चैव विद्यामर्थं च साधयेत् ।

(Translation: Knowledge and wealth are to be acquired gradually, moment by moment and bit by bit.)

That is precisely what 75-year-old Anke Gowda of Haralahalli village in Karnataka did. He painstakingly built an awe-inspiring collection of over 2 million books over five decades. Driven by nothing but a passion for knowledge and the altruistic wish to share it with the people around him, he created it with the sweat of his brow. He sought neither comfort nor luxury with the money he earned. With single minded devotion, he shrank his personal wants and created **a free public library** so that people around him expanded their intellectual horizons in various fields. The mindboggling repository of books bear testimony to his dedication to knowledge.

न चौरहार्यं न च राजहार्यं, न भ्रातृभाज्यं न च भारकारि।
व्यये कृते वर्धत एव नित्यं, विद्याधनं सर्वधनप्रधानम्॥

(Rough translation : "The wealth of knowledge is indeed supreme among all wealth as it cannot be stolen by thieves, also not snatched by kings, not divisible among the brothers, nor is it a burden and if spent, it always increases.")

Most deservingly he has been conferred the **Padma Shri Award** under the '**Unsung Heroes'** category for his extraordinary contribution to literacy, learning and book access in India.

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.

http://bit.ly/Prajya

Happy Reading !

Watch out for the Monthly Prajya Quiz online

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

Content :

International Current Affairs

National Current Affairs

Shri Ramaswamy R

New World Leaders

Country	Area in sq.kms. (Ranking)	Population (millions)	Language	Capital	Currency (For 1 USD)	Economy (Ranking) (Nominal/ PPP)
Uganda	2,43,411 (54)	48	English and Swahili	Kampala	Ugandan Shilling (3581)	Developing country (88/82)
Yemen	5,27,970 (50)	39.1	Arabic	Sanaa	Yemeni Rial (238)	Developing country (142/120)

With more than three-quarters of Ugandans under 40 having known no other president, his prolonged rule is viewed as both stabilising and deeply controversial.

Museveni secures seventh term as Ugandan President

Uganda, once known as Buganda, gained independence from British rule in 1962 and adopted its present Swahili name. Their Indian community played a pivotal role in building the country's economy, with trade, commerce and industry largely in their hands. However, this prosperity collapsed overnight after the 1971 coup led by Idi Amin. His regime expelled thousands of Indians, turning them into refugees and dismantling a vital pillar of the economy. Amin's brutal and erratic rule lasted until 1979, leaving deep scars on the nation.

In 1986, former rebel leader **Yoweri Museveni** seized power and has since dominated Ugandan politics for nearly four decades. Supporters credit him with restoring stability after years of turmoil and fostering economic growth. Critics, however, accuse him of silencing dissent and eroding democratic institutions. Constitutional changes under his leadership removed presidential term and age limits, allowing him to extend his stay in office. With more than three-quarters of Ugandans under 40 having known no other president, his prolonged rule is viewed as both stabilising and deeply controversial.

Amid mounting international criticism, Uganda's Electoral

Commission recently declared Museveni now 81, as winner for a seventh term following a tense election marred by an opposition crackdown and an internet blackout. He defeated his main challenger, Bobi Wine, who as per official figures secured 24.72% of the vote. Wine, a former musician, alleged widespread ballot rigging and reportedly went into hiding. Security forces disrupted his rallies, leading to arrests and at least one death, while Museveni's subdued victory celebrations reflected a polarised political climate.

Yemen PM resigns, Foreign Minister appointed as new Prime Minister

Yemen came into existence in 1990 after unification of North Yemen (formed in 1918 after WWI) and South Yemen (under British Rule till 1967).

Shaya al-Zindani (71), formerly Foreign Minister, was appointed Prime Minister of Yemen on 5th February 2026, replacing **Salem bin Breik,** who resigned on 15th January on the advice of the **Presidential Leadership Council (PLC). PLC,** backed by **Saudi Arabia**, represents Yemen's internationally recognised government based in Aden. In contrast, the **Southern Transitional Council (STC)**, supported by the **United Arab Emirates,** seeks an independent southern state.

Yemen's regional conflict began in 2015 when Saudi Arabia and the UAE formed a coalition against the Iran-backed Houthi rebels controlling much of northern Yemen. The Houthis have since targeted merchant and naval vessels in the Red Sea, drawing retaliatory airstrikes from the United States and its allies. The conflict is further complicated by the Gaza War, the Iran–Israel proxy rivalry and Yemen's prolonged internal instability.

The country faces one of the world's gravest humanitarian crises, marked by hunger, displacement and collapsing services. About 4.5 million people—around 14% of the population—are displaced, many repeatedly. Over 18.2 million urgently need humanitarian aid and protection. Tens of thousands live in famine-like conditions, while nearly 5 million more remain acutely food-insecure. Although large-scale fighting has eased, political divisions and regional rivalries continue to undermine stability.

Smt Shubha T R

India - World's no. 2 smartphone users

India has officially become the **second-largest active installed base** of **smartphones** globally, just behind China.

India's smartphone journey began accelerating after 2016 with cheaper data plans and rising competition among brands. The country has since moved from being a feature phone market to a smartphone-first economy. Today, India is one of the largest consumers and manufacturers of mobile devices globally.

With increasing digital adoption and ecosystem integration, smartphones have become central to India's economic and social transformation.

Active installed base refers to the total number of smartphones currently in use (not just that is sold in that year) and covers device longevity, user retention, brand and ecosystem loyalty and longer replacement cycles. This metric gives a better understanding of a country's **smartphone penetration (both in urban and rural areas) and digital maturity.**

According to a reports India has 740 million active smartphones in use implying half of its 1.45 billion population owns and actively uses a smartphone.

GoI's multi-pronged approach in rapid digital growth (digital payments, UPI), local manufacturing of 4G and 5G smartphones under PLI scheme, low-cost internet and 5G internet spread across cities, towns and villages have been the catalysts for exponential growth of user base in the country.

In India, users keep their smartphones roughly for around 42 months, which is slightly lower than the global average of 47 months. This would mean Indian consumers are upgrading their phones roughly every 3.5 years. This shorter cycle indicates growing purchasing power, increasing demand for better features, rising popularity of mid-range and premium devices.

India's smartphone market is maturing by moving towards longer retention cycle which leads to a stable active installed base.

99.2% of mobile phones sold in India are now made locally. Manufacturing values soared to ₹4,22,000 crore with exports crossing ₹1,29,000 crores in 2024.

India is shifting gears by deepening the value chain of manufacturing with a strong focus on the development of semiconductor chips and finer components. Union Minister Ashwini Vaishnaw has indicated that Made-in-India smartphone brands could launch within the next 12–18 months.

Kum Anu Narayan

Scientists honoured

Biologist Toby Kiers wins Tyler Prize

Deep underground, beneath forests, farms and grasslands, there are huge networks made by fungi. These underground webs connect to plant roots and help plants grow by exchanging nutrients. Scientists now know that these fungal networks are also very important for protecting our planet from climate change.

These networks are called **mycorrhizal networks.** They act like trading systems between plants and fungi. Plants send extra carbon from the air into the soil; and fungi help by giving plants nutrients like phosphorus and nitrogen in return. **Each year, these underground systems help remove about 13 billion tonnes of carbon dioxide from the atmosphere.** That's nearly one-third of the pollution created by burning fossil fuels!

For many years, scientists thought these fungi were just helpful partners to plants. But thanks to American evolutionary biologist Toby Kiers, we now understand that they are much more important. Her research has shown that these fungal webs act like a global support system for life on Earth. Because of her work, she was awarded the **Tyler Prize for Environmental Achievement**, one of the world's top environmental awards.

Kiers and her team created a global "Underground Atlas" that maps where these fungi live. This helps scientists understand how they protect biodiversity and store carbon in the soil.

Fungi and plants "trade" with each other. The fungi move nutrients from places where they are plentiful to places where they are scarce. In return, they receive more carbon from plants. Surprisingly, fungi can even store nutrients to increase demand—almost like smart traders in a marketplace!

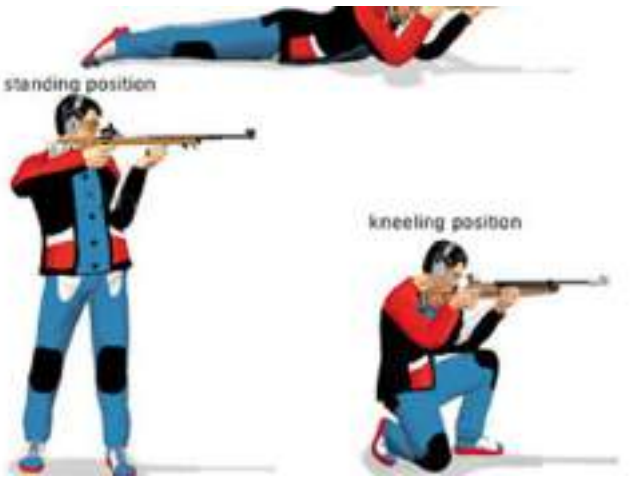
Scientists are still learning how fungi do all this without having a brain. Some believe electrical signals inside their networks may help them share information.

Kiers also helped start a group called the **Society for the Protection of Underground**

Networks (SPUN) to protect these hidden ecosystems. Many fungal-rich areas are not protected today.

Her message is simple but powerful: life on land may never have existed without fungi.

Long ago, fungi helped early plants grow on land—and today, they continue to help keep our planet healthy.



Indian doctor wins Wiley Research Heroes Award 2025

Dr. Chandrakant Lahariya, a well-known Indian public health expert, has won the Wiley Research Heroes Prize 2025, an important international award. He is the first Indian ever to receive this honour, chosen from more than 2,000 nominations worldwide.

This award celebrates people whose research makes a real difference in society. **Dr. Lahariya's work focuses on improving healthcare systems and vaccination programmes in India.**

He is a doctor, researcher and health policy expert who has worked on important public health issues like vaccination, mother and child healthcare, and primary healthcare services. Earlier in his career, he also worked with the World Health Organisation (WHO).

One of his biggest achievements has been helping improve India's vaccination programmes. His research played an important role in introducing six new vaccines into India's national immunisation system. These changes helped increase the number of fully vaccinated children in India from about 55% in 2005 to nearly 94% in 2023.

Dr. Lahariya also worked on improving community-based healthcare systems. His studies helped inspire health initiatives like

Delhi's *Mohalla* Clinics and **Hyderabad's *Basthi Dawakhanas*.** These ideas later influenced the national **Ayushman Bharat** – Health and Wellness Centres programme, which now provides healthcare services to millions of Indians.

Dr. Lahariya's work has been recognised before. In 2012, he received the Dr. BC Srivastava Foundation Award and in 2014, he was honoured by the WHO.

His latest global award highlights how research can help improve healthcare and save lives.

Smt Sarada Devi Ravutu

Giant 300-year old black coral found

A giant 300-year-old black coral in Fiordland measuring over 13 feet tall and 15 feet wide has been discovered. The discovery offers a rare glimpse into deep-sea biodiversity and highlights the hidden wonders of the ocean's depths.

Typical black corals rarely grow beyond a few metres in height, but this colony is exceptionally large compared to known species worldwide. Although its skeleton is black, the living tissue covering it appears white. Scientists believe the coral likely began growing in the early 17th century, making it a living witness to centuries of ocean change and environmental transformation.

Researchers from Victoria University in Wellington conducted deep-sea dives in Fiordland to explore marine biodiversity. Using high-resolution cameras and advanced mapping technology, they carefully documented the massive coral colony.

Large black corals play a crucial role in deep-sea ecosystems. They provide shelter and breeding grounds for small fish, invertebrates and other deep-sea species. Their complex structures support diverse marine life in fragile underwater environments. However, human disturbances and climate change pose serious risks to their survival.

Black corals are legally protected under New Zealand law; deliberately damaging them carries severe penalties. Researchers plan to map additional deep-water colonies and closely monitor their growth, reproduction and ecological interactions. This discovery reminds us of the ocean's hidden treasures. By safeguarding these delicate colonies, we preserve an important part of Earth's living history and ensure biodiversity for future generations.

DO YOU KNOW ?

- **Black corals' dark skeleton was once harvested for ornamental jewellery, contributing to decline of coral population in some regions.**
- **They grow very slowly, which is why large and ancient colonies are extremely rare.**
- **Unlike stony corals, black corals have a protein-based skeleton that is strong yet flexible.**

Shri Nagarajan R

Imagine being able to understand people from 55 different languages. Sounds like a superpower, right? That's exactly what **Google TranslateGemma** can do! It is a powerful language translation system that helps people communicate across the world; it helps break language barriers and bring people closer together.

TranslateGemma supports multiple languages, which means it can help students, travellers, businesses and even scientists share ideas without confusion. Imagine a student in India collaborating on a science project with a friend in Brazil — language no longer needs to be a barrier! While 55 languages are formally evaluated, the models include data for nearly 500 additional language pairs to encourage community research and fine-tuning. These models are designed to operate efficiently on local devices—such as laptops, desktops or mobile phones.

Technology like TranslateGemma shows us something important: communication creates opportunity. **When we understand each other, we can work together, solve problems and build friendships across countries and cultures.**

But here's the exciting part — tools like TranslateGemma don't replace learning languages. They inspire us to explore them! **Every new word you learn opens a door to a new culture, new stories and new possibilities.**

So whether you dream of becoming a scientist, entrepreneur, artist or explorer, remember this: **language is power.** And with tools like TranslateGemma — and your own curiosity — the world becomes much smaller and much more exciting.

Keep learning. Keep exploring. The world is waiting to talk to you!

DO YOU KNOW ?

- **There are over 7,000 languages spoken around the world today.**
- **About half of the world's population speaks at least two languages.**
- **Learning a new language can improve your memory and problem-solving skills!**
- **People who speak more than one language often have stronger creativity and better focus.**

Smt Manju Aildasani

FINKE
THE WORLD'S OLDEST RIVER

Scientists have discovered that **Australia's Finke River** as the **world's oldest surviving river system**, dating back **300–400 million years.** Flowing through the **MacDonnell Ranges**, it offers rare insights into Earth's deep geological history. The Finke River, known as **Larapinta** to the indigenous Arrernte people stretches for about **640 kilometres,** traversing the Northern Territory and parts of South Australia.

Unlike rivers such as the Ganga or Nile, Finke River does not flow year-round. For most of the year, it exists as isolated waterholes scattered across a desert landscape. Only after intense rainfall does it briefly transform into a connected river. While many ancient rivers vanished as climates changed and landforms shifted, Finke endured due to its deeply entrenched channel and the slow geological evolution of central Australia.

Today, it stands as a living relic of Earth's distant past, still following a course carved hundreds of millions of years ago. Such a landscape not only has aesthetic appeal but is one of the factors that make a case for the age of this ancient watercourse. Despite its arid surroundings, Finke supports pockets of life that would not otherwise survive in the desert. Permanent waterholes left behind after floods become crucial refuges for birds, reptiles, insects and mammals.

Key facts

- **Older than dinosaurs:** Finke formed during the Paleozoic Era, long before dinosaurs or the Himalayan mountains existed.

- **"Ancient" drainage:** It is an antecedent stream, meaning it existed before the surrounding mountains (the MacDonnell Ranges) were pushed up.
- **The oasis of Palm Valley:** In **Finke Gorge National Park,** the river flows through a stunning, arid landscape, supporting a unique, isolated population of thousands of Red Cabbage Palms.
- **Name origin:** Finke was named after early pastoralist supporter **William Finke**.

Shri Ramaswamy R

High Seas Treaty comes into force

The High Seas Treaty, also known as **Bio-Diversity Beyond National Jurisdiction** (BBNJ), is an ocean governance document intending to combat triple crisis of bio-diversity, pollution and climate change that has become legally binding on 81 nations who have ratified the same. It covers two thirds of the planet's marine area and 90% by volume of human habitat. The draft underwent nearly two decades of negotiations before adoption in June 2023 and entry into force on 17th Jan 2026.

Four major pillars of BBNJ

1. Marine genetic resources and benefit-sharing, ensuring discoveries from marine organisms benefit all humanity.
2. Area-based management tools, enabling the creation of marine protected areas (MPAs) in international waters.
3. Environmental impact assessments which require countries to evaluate how proposed activities could affect fragile marine ecosystems.
4. Capacity-building and technology transfer, helping developing countries participate fully in ocean research and conservation.

Why is it important for people and planet?

1. Preserve marine areas beyond nations' boundaries.
2. Prevent overfishing, pollution and climate change.
3. Protect developing countries and small island nations.
4. Promote equity and fairness in sharing marine wealth.

As early as beginning of 2026, some of the nations including USA, China, Japan, UK, India and many others have not ratified the Treaty. Russia has neither signed nor ratified.

Reasons include

1. Navigation concerns.
2. Restriction on deep sea fishing and sharing of profits from genetic resources.
3. Boundary disputes.
4. Nonalignment of domestic environmental laws with BBNJ.
5. Towards High Seas Treaty implementation, the UN General Assembly has called for a third session in April 2026.

Shri Sampath D

UAE: India's second-largest LNG supplier

India and the United Arab Emirates (UAE) have made a long-term deal to by which UAE will supply 0.5 million metric tonnes of Liquefied Natural Gas (LNG) per year to New Delhi. The UAE is a premier energy partner for India.Building on this comprehensive energy partnership, the Middle Eastern country has also become India's second-largest LNG supplier after Qatar. The deal was made during the visit of President of the UAE, Sheikh Mohamed bin Zayed Al Nahyan to New Delhi. The agreement converts a previously signed Heads of Agreement between the two companies into a long-term Sales and Purchase Agreement (SPA).

India and the UAE concluded a long-term LNG supply agreement under which ADNOC will supply to HPCL in India 0.5 million metric tonnes of LNG per year for 10 years. LNG is a cleaner fossil fuel, used widely for power generation, industry and cooking gas. India's energy demand is increasing rapidly due to economic growth and urbanisation.

This agreement ensures a stable and reliable energy supply at a time of global energy uncertainty. UAE has traditionally been a major oil supplier; this LNG deal expands cooperation into cleaner energy sources. By diversifying suppliers beyond Qatar, India reduces supply risks and improves long-term energy security, which is crucial for sustainable economic development.

This deal, valued at around $2.5 billion – $3 billion, marks a major step in energy cooperation between the two nations. The LNG imports will be delivered to India's Chhara LNG terminal in Gujarat, strengthening India's energy infrastructure. The partnership reflects broader efforts by India to enhance energy security and diversify its sources of cleaner fuel amid growing domestic demand.

India is now the UAE's largest customer and a key pillar of ADNOC Gas's LNG strategy. By 2029, ADNOC Gas is expected to operate 15.6 Mt/year of LNG capacity, of which 3.2 Mt/year is contracted to Indian energy companies, including HPCL. The volumes under this agreement will be supplied from ADNOC Gas's Das Island liquefaction facility, which has a production capacity of up to 6 Mt/year.

The LNG supply agreement further reinforces the UAE's role as a critical energy partner for India and deepens cooperation across strategic sectors between the two countries.

DO YOU KNOW ?

ADNOC (Abu Dhabi National Oil Company) is the state-owned oil company of Abu Dhabi, United Arab Emirates. It is the world's 12th largest oil company by production.

HPCL (Hindustan Petroleum Corporation Limited) is a government-owned company and a Maharatna Central Public Sector Undertaking (CPSU).

Shri Sridhar P

Strongest solar radiation storm

Earth was hit by the strongest solar radiation in over 20 years. NOAA space weather prediction centre confirms that this is the strongest and most intense solar radiation since 2003.

Solar radiation storms: The sun constantly emits clouds of electrically charged particles (charged hydrogen nuclei and free electrons), that surge outwards in all directions. Solar radiation storms are different in that they occur when a powerful magnetic eruption in the sun occurs, often involving coronal mass ejection (CME). **When this happens charged particles accelerate at such extreme speeds that they reach earth in 10s of minutes, travelling 150 million kilometres in the process.** When they arrive, the most energetic protons often penetrate the earth's magnetic defences and travel along the planet's magnetic lines, towards the polar regions were they plunge into the earth's upper atmosphere.

How intense was this solar storm? NOAA classifies solar radiation storms on a scale of S1 (Minor) to S5 (extreme) based on GOES satellite measurements of incoming high energy protons. **The solar radiation storm on 19th January 2026 was S4.** Our earth's thick atmosphere and magnetic field absorbed most of these charged particles and hence these particles pose no danger. There was no noticeable ground level event in which particles are energised enough to be detected. The storm had relatively soft particle spectrum that was historic in strength but lacked the extreme energies to reach the ground.

Risks of radiation storms: Heavy radiation storms pose severe risk to astronauts and airline crew and passengers flying on polar routes where the earth's magnetic field is weaker.

Satellites are also vulnerable - energetic particles can interfere with on-board electronics or disrupt sensors and overwhelm instruments.

DO YOU KNOW ?

NOAA (National Oceanic and Atmospheric Administration) is a U.S. federal scientific agency.

GOES (Geostationary Operational Environmental Satellite) system, operated by NOAA and built by NASA, provides continuous, high-resolution imagery and data to monitor weather, ocean and atmospheric conditions, aiding in severe storm tracking, fire detection and space weather monitoring. Situated in geosynchronous orbit roughly 35,800 km above the equator, the satellites hover over fixed spots for constant monitoring.

Smt Kavya R

2026 Asian Rifle/Pistol Championships

India dominates

The 2026 Asian Rifle/Pistol Championships emerged as one of the standout events in the continental shooting calendar this year, showcasing the depth and competitive strength of shooters from across Asia. Held in February 2026 at the Dr. Karni Singh Shooting Range in New Delhi, India, this championship brought together top rifle and pistol talent from across the continent.

This edition marked the second Asian Rifle/Pistol Championships, following the inaugural event in Jakarta in 2024, and offered athletes a crucial platform to compete against Asia's best ahead of global competitions such as the Olympic Games and World Championships.

India enjoyed a commanding performance throughout the championship, finishing atop the overall medal standings with a remarkable total of **94, including 51 gold, 23 silver and 20 bronze medals**.

This tally underlined India's dominance in both individual and team events across rifle and pistol disciplines.

Among the standout individual performances was a podium sweep in the men's 25m centre fire pistol event. **Amanpreet Singh** clinched the gold, while Olympian **Gurpreet Singh** took silver, and **Ankur Goel** secured bronze. It truly was a remarkable moment seeing Indian athletes securing every spot on that podium.

In the **25m Pistol Junior event, Suraj Sharma** continued his impressive run in the sport by winning gold. **Mukesh Nelavalli** secured silver, while **Deaflympics medallist Abhinav Deshwal** claimed bronze. The **Indian trio also captured team gold in the junior category.**

The championship also provided a platform for emerging stars such as **Suraj Sharma**, who captured gold in the junior divisions, and veterans like **Tejaswani Sawant,** whose podium finish in the women's **50m rifle prone** event marked a welcome return to international competition.

In the mixed team events, India's shooters excelled as well. Combinations such as **Elavenil Valarivan and Meghana Sajjanar** topped the podium in the mixed **10m air rifle,** demonstrating seamless coordination under pressure.

With athletes from nations including Uzbekistan, Kazakhstan, Vietnam, Saudi Arabia and others, the championship was fiercely contested from the very first day. In the men's 10m air pistol team event, Uzbekistan edged past India by narrow margins, reflecting the growing competitiveness amongst Asian shooting teams.

The event schedule also included rifle disciplines such as

the 50m rifle (three positions) and prone events, where shooters had to demonstrate shot execution under challenging conditions.

Several Indian shooters took time to reflect on their experiences, acknowledging both personal achievement and the collective effort behind India's success. **Anish Bhanwala** had mixed feelings on Wednesday where he said, "I have respect for the medal but I am disappointed with the score." Showing the constant push the athletes feel to top their previous performances.

Beyond the medals and records at the 2026 Asian Rifle/Pistol Championships, the event served as a crucial stepping stone toward the 2026 Asian Games and the 2028 Olympic cycle. With many champions and medalists gaining valuable international ranking points, the championship played an important role in the larger competitive ecosystem.

For India, the results reaffirmed the nation's rise as a powerhouse in sport shooting, bridging experience with emerging talent across age groups and technical events. **India's dominant performance at home marks yet another step forward in global rankings, inspiring young shooters to aim for international milestones.**

Smt Laxmi A

Republic Day 2026 highlights

The 77th Republic Day celebrations were organised around the central theme "**150 years of Vande Mataram** ". The theme ran across the Republic Day Parade, cultural performances, tableaux, public competitions and outreach programmes, placing the national song at the heart of this year's observance while linking freedom, cultural expression and contemporary national aspirations.

For the first time, the Indian Army's newly raised **Bhairav Battalion** marched in the Kartavya Path and saluted the Supreme Commander during the Republic Day parade.

Bhairav Battalions

- They are a new class of compact, high-tech combat units of the Indian Army.
- Each battalion comprises approximately 250 soldiers, drawing personnel from infantry, artillery, air defence, signals and other combat support arms.

Significance

- They are specially equipped for swift, surprise and high-impact operations in diverse combat environments.
- Unlike Para Special Forces, which handle strategic missions deep inside enemy territory, Bhairav Battalions are positioned closer to the border.
- Their job is to handle tactical, **fast-breaking situations, the kind that require immediate response rather than detailed planning.**
- In the Army's own words, Bhairav units are built to **"fight tonight",** meaning they must be ready to move at short notice, often without waiting for larger formations.
- The Bhairav units will act as a bridge between Special Forces and regular infantry, aimed at freeing up Special Forces for more critical assignments.

- The battalions are being placed under corps and division-level formations, especially in sectors considered sensitive such as Rajasthan, Jammu, Ladakh and the Northeast.
- Their structure allows them to be deployed for multi-domain tasks, a mix of ground action, drone operations and electronic support.

With nearly 15 battalions already raised; and plans for up to 25, the **Bhairav formation is becoming a permanent part of India's defence structure.**

Animal Battalion

Double-humped **Bactrian camels** from Ladakh made their historic debut at the Republic Day Parade 2026 drawing national attention. Named **Galwan and Nubra,** these camels represented not just tradition, but resilience, biodiversity, ecological importance and India's evolving high-altitude defence preparedness.

Historical background

- Bactrian camels were the backbone of the ancient Silk Route, a 6,400-kilometre trade network connecting Central Asia, China, Mongolia and India.
- They transported silk, tea, spices and metals across hostile landscapes.

Ladakh's rare double-humped camels

- Bactrian camels, locally called ***Mundri*** camels, are native to the cold desert ecosystem of Ladakh.
- India has only about 365 Bactrian camels, with the majority found in the Nubra Valley.
- These camels are uniquely adapted to survive in one of the harshest climates on Earth: where temperatures fall below –30°C; oxygen levels are low and vegetation is sparse.
- In such conditions, mechanical transport often fails, making these animals invaluable.
- Bactrian camels are biologically designed for high-altitude and arid terrain.
- They can carry loads of 150–170 kilograms and travel 10–12 kilometres daily at altitudes of 14,000–15,000 feet.
- Their two humps store fat-based energy, allowing survival without food for two to three weeks.
- As the fat is consumed, the humps shrink.
- Remarkably, they can withstand temperatures as low as –40°C and even consume snow for hydration during winter months.

Military trials and strategic importance

- Recognising their potential, extensive trials were conducted by the Defence Institute of High Altitude Research (DIHAR) under the Defence Research and Development Organisation (DRDO).
- **Tests at altitudes of around 17,000 feet confirmed that Bactrian camels outperform mules and ponies in extreme cold terrain.**
- Along the Line of Actual Control (LAC), animals remain silent, non-jammable, fuel-independent and reliable, reinforcing India's strategy of blending traditional resilience with modern military planning.

Rural consumption improved due to a good agricultural performance.

The urban demand was also spurred by the tax rationalisation.

The Finance Minister of India Nirmala Sitaraman presented the Union Budget 2026 in February recently. Since the first Union Budget presented in 1947, over 90 budgets have been presented and this is the 9th of the current finance minister.

As is the practice, the Economic Survey 2025-26 was released in January. The economic survey provides a comprehensive analysis of India's macroeconomic trajectory and gives the assessment of the Government about India's economy.**It is a report card that provides a clear picture about the performance of our economy, opportunities, challenges, future policy directions and long -term economic planning.**

Highlights of the Economic Survey

For the fourth consecutive year India continues to be the fastest-growing major economy with the GDP growth estimate for the current year at 7.4% and the projected growth for the next year is 6.8-7.2%.The Private final consumption expenditure (PFCE) which is a reflection of domestic demand grew at a good 7% reaching 61.5% of the GDP. This is the highest level since 2012. Rural consumption improved due to a good agricultural performance. The urban demand was also spurred by the tax rationalisation.

On the fiscal side, the revenue receipts increased to 9.2% of GDP in FY25. There was also a 33% increase in the number of tax return filers from FY 22 to FY 25. Gross GST collections registered a 6.7% YoY (Year-over-Year) growth for the April-December 2025 period.

The debt to GDP ratio reduced by 7.1% since 2020.

The gross non-performing assets (NPAs) declined reflecting improved asset quality. **Under the PM Jan Dhan Yojana an astronomical number of 55.02 crore bank accounts were opened by March 2025 which gives us the flavour of financial inclusion.**

On the external sector front, India's share in global merchandise exports as well as the services exports nearly doubled. Forex reserves rose to USD 701.4 Bn in January 2026 providing an import cover of 11 months. **India recorded the lowest average Consumer Price Index inflation of 1.7% for Apr-Dec 2025.**

As far as the agriculture and allied sectors are concerned, food grain production, horticulture, livestock and fisheries registered strong growth. Under the PM-KISAN scheme, more than INR4.09 lakh crores has been transferred to farmers, strengthening income support. India emerged as the 7th largest services exporter globally driven by IT, business services and digitally delivered services. The industry and manufacturing sector too consolidated further in FY 26.The India Semiconductor Mission advanced domestic manufacturing with ₹1.6 lakh crore investment across 10 projects. India became the 3rd largest domestic aviation market. The government's capital expenditure increased over four times since FY18. It is now at ₹11.21 lakh crores.

The multi-dimensional poverty index declined from 55.3% in 2005-06 to 11.28% in 2022-23. The Economic Survey advocates "Disciplined *Swadeshi*" with the long – term goal of making India strategically indispensable in the global economic system.

The Budget

The first Budget prepared from the Kartavya Bhavan outlines three *kartavyas* – accelerate and sustain economic growth, fulfil aspirations of our people and the vision of **Sabka Saath,Sabka Vikas.** Broadly the following are the pillars of growth and development identified in this year's Budget:

a) Sustaining economic growth

Various measures to develop and grow the strategic and frontier sectors of manufacturing have been announced. India Semiconductor Mission(ISM)2.0, Bio pharma SHAKTI, High-Tech Tool rooms, scheme for research, mining, processing and manufacturing of rare earth permanent magnets, dedicated chemical parks, integrated programme for textiles, schemes for the manufacture of containers, electronic components and sports goods,schemes for reviving legacy industrial clusters and domestic manufacture of construction and infrastructure equipment are some of the initiatives in this regard. In addition, measures to strengthen the MSMEs (Micro, Small and Medium Enterprises) and various tax reforms to improve the services and financial sectors have been taken. Steps to enhance the productivity in the agricultural and allied sectors to increase the income of farmers have been identified.

b) Strengthening the foundations of growth

Several initiatives have been launched for large-scale enhancement of public infrastructure and for the continued focus on developing the infra in

Tier 2 and Tier 3 cities, ensuring long-term energy security and urbanisation.

c) People-centric development

Building a strong care ecosystem- geriatric care, care for disability groups, mental health and emergency and trauma care centres in district hospitals.

d)Trust- based governance

Transformation of customs warehousing and easing the procedures for regular and trusted importers.

e) Ease of doing business and ease of living

The tax collected at source and the tax deducted at source for several services and transactions have been reduced. Tax paying has been made easy for small tax payers and non-residents.

f) Fiscal consolidation

Acceptance of the recommendation of the 16th Finance Commission on retaining the vertical share of tax devolution to States at 41%.The central government to target achieving a debt-to-GDP ratio of 50 ± 1% by 2030 (the current level is 55.6%) and the fiscal deficit is targeted at 4.3%.

Numbers at a glance

The estimates for the year 2026-27 are:

- The total receipts and the total expenditure - ₹53.40 lakh crores and ₹ 58.40 lakh crores respectively.
- The net tax receipts - ₹ 28.70 lakh crores.
- The fiscal deficit is 4.3 % of GDP.
- Total transfer to States and Union Territories - ₹ 26.20 lakh crores.
- Capital expenditure of ₹17.10 lakh crores.

Conclusion

The Union Budget 2026-27 is a ***Yuva Shakti***-driven Budget that aims at consolidating the high growth resilient economy that India is. As the GOI document states, the Government has chosen

action over ambivalence, reform over rhetoric and people over populism.

This spirit of the Budget is well brought out by the Chief Economic Advisor to the GOI in the Economic Survey, when he quoted Yama's message (to Nachiketas) in the ***Kathopanishad***.

The country stands to gain immensely when all of us choose sreya, the enduring good, over preya, the fleeting comfort.

REVENUE (INCOME)		EXPENDITURE	
24%	Borrowings	22%	To the States' share of taxes and duties
21%	Income tax	20%	Interest payments
18%	Corporate tax	17%	Central sector schemes
15%	GST and other taxes	11%	Defence
10%	Non-tax revenues	8%	Centrally sponsored schemes
6%	Union excise duties	7%	Finance Commission and other transfers
4%	Customs duties	7%	Other expenditures
2%	Non-debt capital receipts	6%	Major subsidies
		2%	Civil pension

Smt Sandhya Nair

Sleeper Vande Bharat launched

With the introduction of the sleeper version of the Vande Bharat Express, long-distance train travel in India has become faster, safer and more comfortable for common passengers. Modern technology, improved safety features and passenger-friendly facilities have been brought together to offer premium comfort at affordable fares.

With faster speeds and modern design, the Vande Bharat Sleeper reduces travel time while offering a smooth and comfortable journey. For passengers travelling long distances, this means better rest, improved safety and a more reliable travel option. The train comprises 16 modern coaches **with a total capacity of 823 passengers**, offering a seamless blend of speed, space and comfort.

The Howrah–Guwahati route is among the most significant rail corridors in the country, supporting the daily movement of lakhs of passengers of West Bengal and Assam.

HIGHLIGHTS

- Ergonomically designed sleeping berths provide better body support for comfortable and restful overnight journeys.
- Automatic doors with vestibules between coaches ensure safe and convenient movement within the train.
- An advanced suspension system minimises jerks and vibrations, ensuring a smooth and fatigue-free ride.
- Ample and well-planned luggage space is available, including overhead racks and under-berth storage for small bags.
- Dedicated areas near coach entrances are provided for larger suitcases, keeping interiors uncluttered.
- USB charging ports are available for passenger convenience.
- Enhanced security systems ensure passenger safety. It is equipped with the indigenous *Kavach* automatic train protection system, which plays a crucial role in preventing collisions and ensuring safe train operations.
- *Divyangan*-friendly spaces make the train accessible to differently-abled passengers.
- Modular pantries provide efficient on-board catering services.
- Advanced fire safety systems enhance overall safety standards.
- Modern toilets maintain passenger comfort and hygiene.
- Advanced disinfectant technology ensures superior sanitation throughout the journey.
- High standards of cleanliness create a safe, clean and health-friendly environment, especially important for long-distance overnight travel.

Shri Sampath D

India's electronics exports cross USD 47 billion

Major items included photovoltaic cells, routers and networking equipment, charger adapters, electronic components, sub-assemblies and printed circuit board assemblies (PCBAs).

India's electronics exports reached a record USD 47 billion in 2025, marking a 37% year-on-year increase from USD 34.93 billion in 2024, driven heavily by smartphone manufacturing and the Production-Linked Incentive (PLI) scheme. Electronics is now the country's third-largest export, with exports increasing 11 times since 2015.

Smartphone exports, particularly from Apple's iPhone manufacturing, accounted for approximately USD 30 billion (nearly two-thirds) of the total, with Apple's exports crossing ₹2 lakh crore. It is seen that the exports crossed the USD 4 billion mark in seven out of twelve months, showing sustained momentum. The electronics sector has seen significant employment growth, creating roughly 25 lakh new jobs. The government expects further growth as semiconductor manufacturing capacity increases, with four plants expected to begin production in 2026.

This steady growth reflects rising global demand and expanding manufacturing capacity in India's electronics sector. **The smartphone segment reached an all-time high, reflecting India's integration into global electronics value chains.** Large-scale assembly, improved component sourcing and export-oriented production helped smartphones become India's single biggest electronics export category during the year. Beyond smartphones, India's electronics exports were supported by a diversified product base. **Major items included photovoltaic cells, routers and networking equipment, charger adapters, electronic components, sub-assemblies and printed circuit board assemblies (PCBAs).**

These products indicate a gradual move beyond pure

assembly, towards higher-value electronics manufacturing.

The expansion of renewable energy equipment and networking hardware: A significant share of this growth was led by iPhone manufacturing in India, carried out by Apple's contract manufacturers. Large-scale assembly operations, improved component sourcing and a stronger export focus helped push smartphone exports to an all-time high, reinforcing India's place in global electronics value chains.

While smartphones dominated export numbers, other electronics segments also contributed to the overall growth. Sustaining momentum will depend on policy continuity, predictable trade rules and continued support for manufacturing under PLI schemes.

We need to take into consideration global tariff uncertainties, trade restrictions and evolving supply chain geopolitics. Continued support through stable PLI policies, ease of doing business and predictable trade rules will be crucial. Addressing these factors will help determine whether India can sustain growth and scale up electronics exports further. How effectively these challenges are managed will determine whether India can scale electronics exports beyond USD 55 billion in the near term.

A supply chain is the entire network of individuals, organisations, resources, activities and technology involved in creating and selling a product, spanning from raw material procurement to final delivery to the consumer.

Shri Arpith Vijayan

Flora and fauna news

Rare mushroom in Uttarakhand's oak forests

A new species of mushroom in the Himalayan forests of Uttarakhand is part of India's fungal diversity. The discovery is the first official record of the *Hemileccinum* genus in the country. It was found growing beneath oak trees at an altitude of over 2,600 metres in the Bageshwar district. This marks an important step in understanding India's unexplored fungal biodiversity.

The discovery took place during systematic field surveys called **macrofungal forays** especially during the monsoon season. Researchers from the Botanical Survey of India, the University of Torino and St. Xavier's College were involved. Though the mushroom appeared similar to species found in North America and China, detailed DNA analysis confirmed that it is a new species. The study revealed that while it is genetically related to a species found in Florida, it has distinct features that set it apart.

Hemileccinum indicum mushroom belongs to a group of fungi known as **boletes**, which have pores instead of gills beneath their caps. Its most noticeable features include a violet-brown cap that turns leathery brown as it matures and a yellow pore surface that doesn't change colour when bruised. Under a microscope, the mushroom's spores are seen to have tiny pits, which distinguish it from other related species. Its smooth stem and unique spore structure make it stand out from other mushrooms in the same family.

The mushroom forms a relationship with oak tree roots, helping them absorb nutrients and water while receiving sugars in return. This partnership is crucial for forest health, nutrient cycling and soil stability. India's fungal biodiversity remains largely unexplored, especially in high-altitude regions; discoveries like these show how much we still don't know about the fungi that sustain ecosystems. Protecting these forest habitats is essential not only for visible wildlife but also for the microscopic life that plays a key role in maintaining ecological balance.

New orchid species discovered in Kanthalloor, Kerala

India's biodiversity has attracted fresh attention following the discovery of a new orchid species. Announced in January 2026, this discovery underscores the fact that India's forests still harbour many unexplored plant species. Orchids are known to be sensitive indicators of ecosystem health, and finding a new one highlights the ecological importance of the Western Ghats.

The new orchid species was discovered Idukki district, close

to the Western Ghats. This area is famous for its unique climate, forest patches and agricultural landscapes. **This shows that even areas influenced by human activity can support rare and specialised plant life.** Many of these regions remain under-studied compared to protected forests, making this discovery an important one for science.

Orchids are highly specialised plants that depend on specific pollinators, soil fungi and microclimatic conditions, making them excellent bio-indicators of ecosystem health. Kanthalloor's habitat still maintains a delicate ecological balance. Orchids also contribute to genetic diversity and help scientists understand plant evolution, especially in ancient regions like the Western Ghats.

The Western Ghats, stretching along India's western coast, are a global biodiversity hotspot, home to nearly 30% of India's plant species, many of which are found nowhere else in the world.

The discovery of a new plant species not only represents a scientific achievement but also serves as a conservation signal. Once identified, species can be assessed for vulnerability and included in protection plans. Such discoveries emphasise the importance of field-based research and long-term ecological studies in preserving India's rich biodiversity.

New dragonfly species discovered

Kerala has once again amazed scientists with a significant biodiversity discovery, adding a unique member to India's growing list of endemic insects.. Researchers have formally identified a new dragonfly species, ***Lyriothemis keralensis,*** in the Western Ghats.

Lyriothemis belongs to the order *Odonata*, and its name reflects its origin in Kerala. The species is considered endemic, meaning it is found only in this specific region. Dragonflies are important ecological indicators as they reflect the health of freshwater ecosystems.

The species was recorded from Varapetty near Kothamangalam in Ernakulam district. Interestingly, it thrives in vegetated pools and irrigation canals, particularly within shaded rubber and pineapple plantations. Unlike many species that live deep inside protected forests, Lyriothemis survives in human-modified landscapes. The adults are visible only during the Southwest monsoon (May–August), and for the rest of the year, the species exists as aquatic larvae in freshwater habitats. This seasonal visibility made it difficult to discover earlier.

The species shows clear sexual dimorphism, meaning males and females look distinctly different. Males have a bright blood-red body with black markings and a slender abdomen, while females have a yellow body with black markings and a bulkier appearance. It can be distinguished from related species by microscopic features, such as its slender abdominal structure and unique genitalia patterns.

Kumbhalgarh Wildlife Sanctuary declared eco-sensitive zone

The Central government has declared a 243 sq km area surrounding the Kumbhalgarh

Wildlife Sanctuary in Rajasthan as an eco-sensitive zone (ESZ). **This area, part of the fragile Aravalli range, is home to rich biodiversity and will now prohibit harmful human activities.** The move aims to protect the sanctuary's ecosystem by banning commercial mining, stone quarrying, pollution-causing industries, brick kilns and the erection of new windmills. **The zone also covers 94 villages.**

Located around 80 km from Udaipur, the sanctuary spans over 610 sq km and is home to species like leopards, hyenas, jungle cats and various birds including the painted francolin. ESZ will help preserve the area's biodiversity and support indigenous communities through eco-friendly practices such as organic farming and agroforestry.

The new rules also regulate eco-tourism, construction and vehicle movement, especially at night. New hotels and resorts will not be allowed within one kilometre of the sanctuary's boundary. Additionally, forests, agricultural and recreational areas in the zone will be protected from commercial or industrial development, ensuring the preservation of this vital ecosystem.

Kerala has a State microbe

Kerala has taken a groundbreaking step by officially recognising a microorganism as part of its state identity. In a first for India, the state government has declared ***Bacillus subtilis*** as its State Microbe, emphasising the vital role of microbes in various aspects of daily life, from human health to agriculture and environmental sustainability.

Bacillus subtilis is a beneficial bacterium found in soil, fermented foods and the human gut. It is known for its positive effects on gut health, immunity, soil fertility and plant disease control. **Thanks to its resilience and ability to form spores, it is widely used in pharmaceuticals, food processing and sustainable agriculture.**

The recognition of this microorganism reflects Kerala's commitment to acknowledging the often-overlooked but essential contributions of microbes to human well-being and ecological balance. **This move positions Kerala as a pioneer in integrating scientific knowledge into governance, moving beyond traditional symbols like animals and birds.** It also aligns with the state's focus on education and research.

Kerala also launched the **Centre of Excellence in Microbiome** (CoEM) to advance research on how microorganisms impact human health, agriculture and environmental conservation. CoEM, in collaboration with the Kerala State Council for Science, Technology and Environment, is the first institution in India to integrate microbiome research across multiple sectors, aiming to bridge lab research with real-world applications. This initiative underscores Kerala's vision of innovation-driven development.

Shri Mrithyunjay GN

Technological news

A major milestone in Indian business technology was achieved with the launch of Pilloo AI, a voice-based billing and accounting platform designed for MSMEs.

India's technology ecosystem continues to evolve with fresh breakthroughs in artificial intelligence, robotics, industrial automation and startup policy. In the past few months, significant developments that reflect broader trends in accessibility, automation and entrepreneurial support have emerged.

From voice-driven tools for small businesses to intelligent robots enhancing public systems and policy shifts designed to nurture innovation for decades to come, India is coding a new chapter in its technology story.

Pilloo AI brings voice accounting to small businesses

A major milestone in Indian business technology was achieved with the launch of **Pilloo AI**, a voice-based billing and accounting platform designed for micro, small and medium enterprises (MSME). The application allows business owners to create invoices, record sales and payments, retrieve reports and manage accounts through just voice commands, removing the need for complex accounting software and special training.

The platform was formally unveiled by Andhra Pradesh Chief Minister N. Chandrababu Naidu at the state secretariat in Amaravati, where he personally demonstrated the system by generating the first invoice using natural language speech. "**This technology shows how everyday business operations can be simplified through conversational AI,**" he said, emphasising ease of use and digital inclusion for businesses.

Co-founder Ram Mohan Locharla explained that Pilloo AI was developed to meet the real needs of Indian entrepreneurs. He said the tool addresses the long-standing challenge small businesses face with bookkeeping by providing a simple and intuitive voice-based alternative to traditional accounting systems.

Pilloo AI currently supports multiple Indian languages, helping bridge linguistic barriers that often limit digital adoption in smaller towns and rural areas.

Indian Railways deploys humanoid robot ASC ARJUN

Indian Railways has deployed its humanoid security robot, **ASC ARJUN,** at Visakhapatnam Railway Station in Andhra Pradesh. The robot was developed indigenously and is designed to assist the Railway Protection Force in station security, passenger assistance and crowd monitoring.

Equipped with artificial intelligence, face-recognition systems and IoT-enabled sensors, ASC ARJUN can detect suspicious activity, make automated public announcements in English, Hindi and Telugu, and patrol platforms on semi-autonomous routes. It also includes fire and smoke detection capabilities to support emergency responses.

Inspector General of RPF Alok Bohra remarked that the robot's deployment marks "a pioneering move in adopting cutting-edge technology to strengthen railway security, improve passenger experience and support frontline staff."

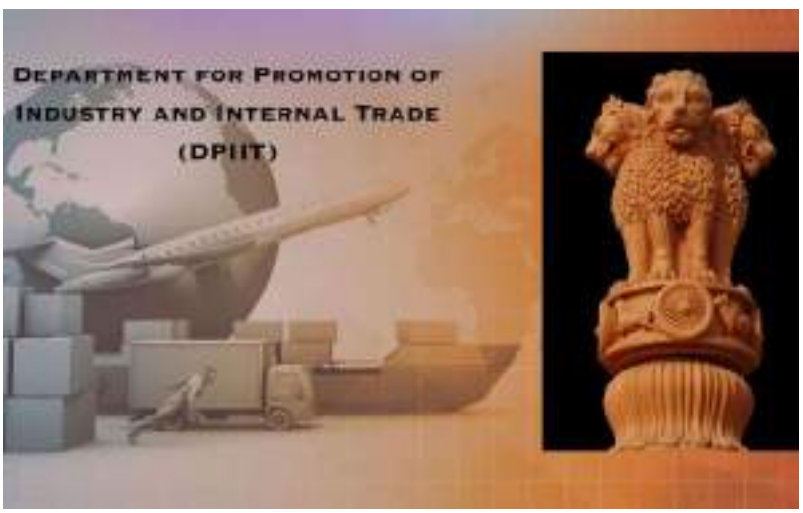
Made-in-India robot on display at LogiMAT 2026

India's robotics ecosystem also made international waves at **LogiMAT India 2026**, a leading global exhibition for logistics and intralogistics technologies held in Mumbai. At the event, industrial robotics firm **Addverb Technologies** unveiled **Elixis-W**, a wheeled humanoid robot developed in India for industrial and warehouse automation.

Elixis-W integrates AI, sensors and dual-arm manipulation with wheeled mobility to carry out material handling, picking and placement tasks in logistics environments. The design reflects a growing focus on Industrial 4.0 solutions that can work collaboratively alongside people on factory floors.

Built with Physical AI and industrial-grade reliability, this wheeled humanoid is expected to enhance safety, productivity and collaboration on the shopfloor.

Intralogistics refers to the management, optimisation and automation of the internal flow of goods, materials and information within a company's facility, such as a warehouse or factory.



Startup India 2.0: Recognition extended to 20 years

In a significant policy shift aimed at strengthening the startup ecosystem, the Government of India revised the **Startup India recognition framework**, introducing a new deep-tech category that extends recognition eligibility up to **20 years** for qualifying entities.

Startup India is a flagship Government of India initiative launched in January 2016, designed to build a strong ecosystem for nurturing innovation, driving sustainable economic growth and generating large-scale employment. Managed by DPIIT, it empowers startups through fiscal incentives (tax exemptions), easier compliance and funding support, aiming to transform India into a nation of job creators.

Under the revised framework, deep-technology startups focusing on high-risk, research-intensive innovation will also benefit from higher turnover limits and support tailored to their specific needs.

The update was announced by the Department for Promotion of Industry and Internal Trade (DPIIT) "**These reforms aim to further strengthen India's position as a global innovation hub,**" said Commerce and Industry Minister Piyush Goyal in a formal statement about the changes.

The revisions also included new eligibility criteria that recognise scientific and engineering breakthroughs as part of the deep tech startup definition. This policy evolution reflects a broader shift in India's approach to innovation, moving from shorter-term targets toward sustained, research-driven developments that ensure India is capable of global impact.

Conclusion

These developments collectively highlight a technology landscape that is more inclusive, automated and supportive of innovation. **India is shaping a future where technology serves both people and industries.**

Smt Meenakshi S

233-year-old Valmiki Ramayana in Ayodhya Museum

A rare 233-year-old Sanskrit manuscript of the Valmiki Ramayana has been gifted to the International **Ram Katha Museum** in Ayodhya. The manuscript dates back to **1792 CE**. The manuscript was presented by Central Sanskrit University Vice Chancellor Shrinivasa Varakhedi to Nripendra Misra, Chairman of the Executive Council of the Prime Ministers Museum and Library. It has now been permanently gifted to the **Antarrashtriya Ram Katha Sangrahalaya**. The manuscript is a rare copy of the Valmiki Ramayana, originally composed by Valmiki, the revered ***Adi Kavi*** **of Sanskrit literature**. It includes a classical commentary known as ***Tattvadipikatika***, written by **Maheshvara Tirtha**. The text is written in Sanskrit using the Devanāgarī script. As a preserved textual tradition, it holds immense historical, literary and philosophical value within Indian *itihāsa*.

The gifted manuscript contains five major kāṇḍas of the Ramayana ***Balakanda, Aranyakanda, Kiskindhakanda, Sundrakanda*** and ***Yuddhakanda***. These sections collectively narrate the life, exile, struggles and victory of Lord Rama while also presenting deep moral and philosophical teachings. The manuscript reflects the narrative richness and ethical framework of ancient Indian civilisation. Its careful preservation over centuries makes it a valuable source for academic research, textual comparison and understanding the evolution of Ramayana traditions.

The addition of this rare Valmiki Ramayana manuscript strengthens the museum's role in conserving ancient texts and promoting cultural education. It also aligns with broader efforts to protect India's manuscript heritage through institutional care and public display.

DO YOU KNOW ?

The Ram Katha Museum was established in 1988 at the Tulsi Smarak Bhavan in Ayodhya to collect and preserve artefacts related to *Ram Katha*, including illustrated manuscripts, sculptures, *Ram Leela* and other related art forms.

The museum aims to safeguard the archaeological remains, rare cultural heritage and display arts of the Ayodhya region.

Kum Pavithra S

IIT-Guwahati to track Himalayan glacier hazards

As climate change accelerates, Himalayan glaciers are melting faster than ever. The meltwater collects in natural depressions, forming glacial lakes.

Remember the Kedarnath floods of 2013? Or the more recent Uttarkashi disaster in August 2025? These weren't just random natural catastrophes. They were Glacial Lake Outburst Floods (GLOF) and scientists have been desperately trying to predict where the next one might strike.Now, researchers at IIT Guwahati have developed something that could save countless lives.

In January 2026, a team led by **Prof. Ajay Dashora** from the Department of Civil Engineering announced a breakthrough: a predictive framework that has identified **492 locations** in the Eastern Himalayas where new glacial lakes are likely to form.

These are **potential high-risk locations.**

As climate change accelerates, Himalayan glaciers are melting faster than ever. The meltwater collects in natural depressions, forming glacial lakes. When these lakes burst, they release massive volumes of water, ice and debris downstream, destroying everything in their path including villages,

roads, hydropower projects, farmland etc.

Unlike earlier models that mainly focused on climate data, this new approach closely studies the shape and structure of the land.

The innovation

The research team used high-resolution Google Earth images and digital elevation models to study the terrain in detail. They tested three prediction methods such as **Logistic Regression** (LR), **Artificial Neural Networks** (ANN) and **Bayesian Neural Networks** (BNN) and found that the BNN was the most accurate.

This model considers factors most researchers overlooked: neighbouring lakes, bowl-shaped depressions called **cirques**, gentle slopes and retreating glaciers.

Published in *Nature's* Scientific Reports, the framework doesn't just predict, it estimates uncertainty, making forecasts more realistic.

Prof. Dashora explains the impact clearly: "By pinpointing high-risk areas, the framework can guide early-warning systems, help plan safer locations for infrastructure and support long-term water management."

What makes this breakthrough truly significant is its global adaptability. The framework can be applied to other glacier-covered mountain regions worldwide, from the Andes to the Alps, making it a valuable tool for international climate resilience.

Smt Anuradha V R

India's first 'musical road'

Mumbai has introduced India's first "musical road", a 500-metre stretch on the Coastal Road that plays the tune of '*Jai Ho*' when vehicles pass over it within a specific speed range. The melody is audible only inside the vehicle and is not broadcast externally. **The feature has been developed to encourage motorists to maintain safe driving speeds.**

The stretch is located on the northbound lane from Nariman Point towards Breach Candy, just after the exit of the underground tunnel at Breach Candy. The musical installation runs along a 500-metre section adjacent to the road divider. The project has been implemented at a cost of ₹ 7.5 crore.

How the musical effect is created

The effect is produced through specially designed grooves or rumble strips, cut into the road surface. Rumble strips are used globally to alert drivers through vibration and sound. These grooves are laid at fixed intervals with precise measurements. When vehicles travel over them at a specific speed, vibrations are generated. The friction between the tyres and the grooves creates the tune inside the vehicle.

The melody selected for the stretch is from the film ***Slumdog Millionaire.***

Driving guidelines

Motorists must maintain a speed between 70 and 80 kmph to hear the tune clearly. Signboards have been installed at 60 metres, 100 metres and 500 metres before the stretch. Advance signage along the route guides drivers to maintain a steady speed to experience the musical effect.

Musical roads around the world

Musical roads have been introduced in several countries, including Japan, Hungary, South Korea, UAE, United States, China, Iran, Russia and Turkey. **The Mumbai installation uses internationally developed technology adapted to local conditions.**

Shri Bharath

Manipur's new CM

President's rule was imposed subsequent to the resignation of Chief Minister N.Biren Singh in February 2025 in the aftermath of the ethnic clashes that commenced in May 2023. A new government has been formed in Manipur. **Yumnam Khemchand Singh** was administered the oath of office and secrecy by the Governor A.K.Bhalla on 4th February 2026. The longstanding grievances and animosity between the Meitei and the Kuki-zo communities turned into violent clashes in 2023 and it is rearing its head on and off since then. The problem is still not behind us and it is at this juncture that the new Chief Minister has taken over.

Profile

Yumnam Kemchand is a senior leader of BJP and an RSS veteran. He was first elected to the State Assembly of Manipur in 2017 from the Singjamel constituency. He served as the Speaker of the Assembly till 2022 and in that year he was again elected to the Assembly. He became a minister in the Biren Singh cabinet heading three ministries – Municipal Administration and Housing, Rural development and Panchayati Raj and Education.

An interesting sidelight to his personality is that he is **a martial art practitioner. He was instrumental in forming the Taekwondo Federation of India and is widely recognised for popularising the martial art as a sport across India.** In December 2025 he became the **first Indian to receive a 5th Dan Black belt** in traditional Taekwondo from the Global Traditional Taekwondo Federation in Seoul, South Korea. **5th Dans are recognised as masters of the art**.

The road ahead

The choice of Yumnam Khemchand and his cabinet seems to have been done after a careful analysis and understanding of the current ground realities in Manipur. The cabinet has two Deputy Chief Ministers – Nemcha Kipgen and Losii Dikho. Nemcha Kipgen is the first woman and the first Kuki-Zo community leader to occupy this position and Losii Dikho belongs to the Naga people's Front which is an alliance partner of BJP. In terms of representation the cabinet seems to be well balanced.

One of the first acts of the Chief Minister was to visit Jiribam wherein he reached out to the Meitei and Kuki-zo people. This is the first visit of the State's CM since the ethnic conflict broke out. This has instilled some confidence in the people but it is still early days. Known for his administrative skills and bi-partisan approach Yunman Khemchand Singh is widely believed to bring the much needed peace and development to Manipur. He has started on the right note and as the common saying goes "well begun is half done"!

Smt Laxmi A

BHARAT TAXI launched

The Government of India has launched Bharat Taxi, **India's first cooperative-based ride-hailing platform.** Bharat Taxi was officially launched at Vigyan Bhavan, New Delhi. The platform started commercial operations in Delhi-NCR and Gujarat after a two-month pilot. It now aims to cover the entire country within three years. The move is being seen as a game-changer for drivers and passengers alike.

How is it different from other ride apps?

- The biggest strength of Bharat Taxi is driver ownership.
- Unlike private ride-hailing companies, Bharat Taxi allows drivers to become stakeholders.

- Profits are shared directly with drivers, giving them dignity and financial security.
- According to the Cooperation Ministry, this is the **world's largest driver-owned mobility platform.**
- The platform follows four guiding principles - **ownership, security cover, dignity and inclusive growth**—making Bharat Taxi a **people-centric alternative** in the ride-hailing market.

Commission model and driver earnings

- Out of every ₹100 earned, ₹80 goes directly to the driver's bank account, while the platform keeps only ₹20.
- Bharat Taxi also follows a **zero-commission and surge-free pricing model, ensuring transparency**.

Services offered

Customers can book cars, three-wheelers and two-wheelers.

- This multi-mobility option makes the platform suitable for urban and semi-urban areas.
- With affordable fares and no surge pricing, Bharat Taxi aims to attract daily commuters, office-goers and short-distance travellers.
- The **cooperative structure ensures reliability and fair treatment for both drivers and passengers**.

Expansion plan

- Bharat Taxi plans to expand across India within three years, from Kashmir to Kanyakumari and Dwarka to Kamakhya.
- As per official data, over 2.5 lakh drivers in Delhi-NCR have already joined the platform and more than 8.5 lakh passengers are registered.
- The platform is backed by eight major cooperative organisations. Agreements with large companies are in the final stages, strengthening its future prospects.

Col Shashidhar M V (Ret)

Futuristic Defence Strategies

Military quantum technology framework launched

Overview

In January 2026, the Chief of Defence Staff General Anil Chauhan released the Military Quantum Mission Policy Framework, marking a decisive shift in India's defence modernisation trajectory. The framework lays down policy direction and an implementation roadmap for integrating quantum technologies into the Armed Forces.

Why does this matter? Because warfare is no longer confined to land, sea and air. It now spans cyber, space, electromagnetic and informational domains. Quantum capability will define who holds decision superiority in that battlespace.

Quantum technology

Quantum technology leverages principles of quantum mechanics—superposition and entanglement—to perform tasks beyond classical limits.

Its four pillars include:

- **Quantum communication** – ultra-secure, un-hackable data transmission.
- **Quantum computing** – exponential processing power.
- **Quantum sensing & metrology** – extreme precision in detection and navigation.
- **Quantum materials & devices** – next-generation defence hardware.

In military terms, this translates into secure command networks, faster war-gaming simulations, GPS-independent navigation and superior intelligence fusion.

Policy document

The framework aligns military quantum adoption with India's National Quantum Mission. It defines governance structures, milestones and civil–military fusion mechanisms. It is a strategic directive.

Framework

The document emphasises

- Tri-Service integration and jointness.
- Dedicated governing bodies across ministries.
- Phased, time-bound implementation roadmap.
- Synergy between research, industry and operational commands.

Jointness is not optional. It is foundational.

Necessity

Adversaries are investing heavily in quantum warfare capabilities. Classical encryption can be broken by quantum computers. Sensors can detect submarines without active sonar. Navigation systems can function without satellites.

The question therefore is simple whether India should lead or lag?

Implications

Operationally, this enhances secure communications, ISR dominance, faster targeting cycles and resilient systems in contested environments. Strategically, it positions India among leading quantum-enabled military powers.

Conclusion

The Military Quantum Mission Policy Framework signals intent by technological dominance through integration and not incremental upgrades. **Quantum technology will not merely support warfare. It will redefine it**. India has chosen to be prepared and ready, not react.

Tri-Services Future Warfare Course

The Third Edition of the Tri-Services Future Warfare Course (FWC-3) was conducted at the Manekshaw Centre, New Delhi, in February 2026 under the aegis of Headquarters Integrated Defence Staff (HQ IDS) in partnership with the Centre for Joint Warfare Studies (CENJOWS). The programme reflects India's deliberate effort to institutionalise strategic foresight within professional military education.

Background

FWC-3 builds upon earlier editions that recognised a fundamental shift in the character of war. Conflict today spans conventional battlefields and invisible domains such as cyberspace, space, information ecosystems and the electromagnetic spectrum. **The course was designed to prepare officers not for the last war but for a battle space shaped by disruption, data and decision velocity**.

What is future warfare?

Future warfare is multi-domain, technology-enabled and cognition-driven. It blends kinetic and non-kinetic means. Artificial intelligence, autonomous systems, hypersonics, cyber tools and information operations compress the traditional observe–orient–decide–act (OODA) loop. Victory increasingly depends on decision superiority, resilience against influence operations and the ability to operate in contested information environments.

Course contents

The third edition featured an enhanced curriculum covering specialised and domain-specific warfare developments. Modules included cognitive and cyber warfare, multi-domain operations, land, maritime and air power integration; and scenario-based

operational problem solving. Emerging technologies such as AI, neural networks and automated intelligence systems were examined in operational contexts. Experts also addressed critical and rare earth elements, supply chain vulnerabilities and regional geopolitics influencing future campaigns.

Participation

The course brought together officers from the Army, Navy and Air Force, ranging from Majors to Major Generals and equivalents. Scientists from DRDO, academics and representatives from start-ups, MSMEs, DPSUs and private industry participated, creating a rare tri-services and civil-military knowledge exchange platform.

Uniqueness of the course

Its rank-agnostic structure fostered candid dialogue between tactical innovators and strategic leaders.

The integration of industry, academia and operational commanders ensured alignment between battlefield requirements and technological innovation.

Key focus

The emphasis was clear that cognitive and cyber domains are no longer adjuncts but central to deterrence and operational advantage. Jointness, adaptability and technological integration formed the intellectual backbone.

Learnings and takeaways

FWC-3 reaffirmed that preparedness demands anticipatory thinking. Future commanders must be technologically literate, strategically agile, ethically grounded. In an era where narratives travel faster than missiles, the course underscored a decisive truth that "**Wars of tomorrow will be won as much in minds and networks as on land, sea and air.**"

Col Shashidhar M V (Retd)

ARMY and ITBP joint exercise

By the end of the exercise, participating troops were capable of independently executing multiple artillery drills under guidance, a substantial enhancement in integrated combat competence.

Background

In January 2026, the Indian Army and the Indo-Tibetan Border Police (ITBP) conducted **Exercise Agni Pariksha** in Arunachal Pradesh across two distinct phases. Phase I was held at Sigar in East Siang district from 19th –24th January, followed by Phase II at Tezu from 25th –28th January. Spearhead Gunners under Spear Corps led the initiative alongside infantry regiments and ITBP personnel.

This was not a routine field firing exercise. It marked a doctrinal shift toward operational integration between a conventional Army formation and a Central Armed Police Force deployed along sensitive high-altitude borders.

Phase I focused on structured familiarisation and training. Phase II validated those lessons through live artillery firing. Infantry and ITBP personnel were systematically trained to undertake artillery fire missions under supervision of experienced gunners.

Significance

Traditionally, artillery remains a specialised domain. Agni Pariksha deliberately broke that silo. Non-artillery personnel were exposed to:

- Fire direction procedures
- Target acquisition methods
- Communication protocols
- Artillery mission sequencing
- Realistic battlefield simulation

By the end of the exercise, participating troops were capable of independently executing multiple artillery drills under guidance, a substantial enhancement in integrated combat competence.

Co-operation and learnings

Border security today is layered. Army formations and ITBP operate in contiguous operational grids. This level of technical integration and training has been witnessed the first time.

Agni Pariksha enhanced mutual trust and operational transparency. Infantry and ITBP troops gained clarity on artillery response times, capabilities and limitations. Gunners, in turn, refined coordination with troops that often serve as the first contact in high-altitude contingencies.

The learnings were simple but the message conveyed was powerful; shared firepower awareness reduces battlefield friction.

Joint training with central police organisations

The participation of ITBP reflects the evolving architecture of India's border management model. Central Armed Police Forces are no longer peripheral actors; they are frontline stakeholders in high-altitude theatres.

Joint artillery familiarisation ensures that in crisis scenarios, Army and ITBP elements operate as a unified combat grid rather than parallel structures. **In mountainous terrain where time, communication and accuracy are critical, such interoperability can determine operational success.**

Necessity and implications

Future conflicts will not respect institutional boundaries. Hybrid threats, rapid escalation scenarios and high-altitude standoffs demand seamless integration.

Agni Pariksha signals doctrinal maturity moving from coexistence to convergence. It enhances preparedness along sensitive frontiers, especially in the eastern sector where terrain amplifies both risk and response complexity.

Conclusion

Exercise Agni Pariksha stands as a pioneering initiative in jointmanship and inter-agency integration. By institutionalising collaborative firepower training between the Indian Army and ITBP, the exercise strengthens operational resilience and prepares India's border forces for the demands of future battlefields.

Jointmanship is the collaborative, inter-service integration of military branches (Army, Navy, Air Force) to achieve unified, efficient and cost-effective operations.

Col Shashidhar M V (Retd)

India - Krygyzstan Joint Special Forces excercise

Training was conducted under realistic combat simulations, enabling both contingents to execute coordinated missions and refine interoperability in high-risk operational environments.

Background

Since its inception in 2011, **Exercise Khanjar** has evolved into an annual bilateral military engagement between India and Kyrgyzstan. The 13th edition was conducted from 4th to 17th February 2026 at Misamari, Assam.

The Indian contingent was represented by troops from The **Parachute Regiment** (Special Forces), while Kyrgyzstan was represented by its **Scorpion Brigade.** The alternating venues between the two nations reflect a steadily deepening strategic and defence relationship.

Exercise conduct

Khanjar XIII focused on counter-terrorism and special operations in urban and mountainous high-altitude terrain.

The exercise focused on:

- Small-team tactics
- Precision sniping
- Complex building intervention
- Joint mission planning
- Mountain craft skills

Training was conducted under realistic combat simulations, enabling both contingents to execute coordinated missions and refine interoperability in high-risk operational environments.

Co-operation and learnings

Why does this matter? Because asymmetric threats transcend borders.

The exchange of best practices in counter-terrorism operations improved doctrinal alignment. Indian Special Forces shared operational methodologies honed in varied terrains, while Kyrgyz forces contributed experience relevant

to Central Asian mountainous environments.

Beyond tactics, cultural exchanges including celebration of the Kyrgyz festival Nowruz reinforced camaraderie and military diplomacy. Trust built in training often becomes strategic capital in times of crisis.

Diplomatic gains

Khanjar is not merely a military drill. It is defence diplomacy in action.

In a region affected by evolving extremist networks and geopolitical competition, India's sustained engagement in Central Asia strengthens its strategic footprint.

The exercise reaffirms shared commitments to regional peace, stability and security.

For Kyrgyzstan, cooperation with a major regional power enhances capability and signals strategic alignment. For India, it consolidates outreach under its broader Central Asia engagement framework.

Necessity and implications

Transnational terrorism, radicalisation of networks and mountainous infiltration routes require interoperable Special Forces capable of coordinated response.

Exercises like Khanjar build readiness for coalition-style operations and crisis coordination. They enhance tactical proficiency while simultaneously strengthening strategic trust.

Conclusion

Exercise Khanjar XIII exemplifies how tactical training and diplomatic signalling can align. It strengthens India–Kyrgyzstan defence cooperation, enhances counter-terror preparedness and contributes to stability in a strategically sensitive region.

Sustained engagement of this nature ensures both nations remain aligned, capable and are strategically connected in an increasingly complex security environment.

Smt Deepasri

The INDIA - EU Treaty

DO YOU KNOW ?

A free trade agreement ("FTA") is a legally binding treaty between countries, usually aimed to set out terms impacting trade among the signing countries, and to reduce or eliminate barriers to trade. This could include terms and conditions regarding tariffs, quotas and import duties on goods and services.

After about two decades of on-and-off negotiations, India and the European Union ("EU") announced the conclusion of the India–EU Free Trade Agreement at the 16th India–EU Summit in January 2026. Before we look into the terms and the potential impact of this agreement, let us gain some clarity on the basics.

Trade between India and EU

To set the context before we discuss this particular FTA, the following is a snapshot of trade between India and the EU.

- The EU is India's third-largest trading partner in the world;
- In the financial year 2024–25, trade between the EU and India was worth about USD 137 billion;
- India exported goods worth USD 76 billion and imported goods worth USD 61 billion ; and
- India's top exports to the EU are manufactured goods and energy; and top imports from the EU are high-tech and capital goods such as nuclear reactor parts and aircraft.

The India-EU FTA

- The India-EU FTA seeks to improve an already existing trade relationship, whereby

India will eliminate duties on more than 93% of EU imports and the EU will do so for about 99% of exports from India.

- The FTA allows service providers and suppliers to move between India and EU member countries in several sectors such as education, software and research and development, with fewer transit hurdles.
- The deal also includes a framework for Indian graduates to study in EU; stay there for work. This indicates that India will be exporting its human resources along with products/services. On the other hand, this poses a risk of further brain-drain from India.

Overall, while the FTA offers opportunities to India in terms of trade with the EU and for young professionals and academics to gain more exposure and earnings, India will need to ensure that the talent flow turns out to be a mutually beneficial deal for India as well as the EU.

DO YOU KNOW ?

- **FTAs are negotiated and signed with the intention of fostering economic cooperation, enhancing market access and encouraging investment while protecting the rights and interests of both groups.**
- **'Brain Drain' refers to the movement of educated and skilled people from their country of origin to another country, primarily seeking to work in better conditions or to earn more money.**

Traditional snacks for growing minds

Instead of processed packaged foods, Indian naturopathy recommends snacks made from millets, whole grains, pulses, nuts, seeds, jaggery, fresh vegetables and fruits.

In the Indian tradition, naturopathy emphasises simple, natural and seasonal foods that support the body's innate healing power. Our ancient dietary wisdom teaches that wholesome, freshly prepared foods made from local ingredients nourish not only the body but also the mind. For school-going children, snacks should provide sustained energy, improve concentration and support growth without artificial additives, refined sugar or excessive oil.

Instead of processed packaged foods, Indian naturopathy recommends snacks made from millets, whole grains, pulses, nuts, seeds, jaggery, fresh vegetables and fruits. Such foods are rich in fibre, plant protein, iron, calcium and natural antioxidants essential for growing students.

Millet-based snack ideas

Ragi Laddu

Ingredients

- 1 cup ragi flour
- ½ cup powdered jaggery
- 2 tbsp ghee
- 2 tbsp powdered nuts
- Cardamom

Method

Dry roast ragi flour. Mix with jaggery and nuts. Add warm ghee and shape into laddus.

Benefit

High in calcium and iron; supports bone growth and steady energy.

Foxtail millet vegetable upma balls

Cook foxtail millet and mix with sautéed vegetables and cumin. Shape into small balls for easy packing.

Benefit

Light on digestion and keeps children active throughout the day.

Millet chikki

Mix puffed millet and roasted peanuts with jaggery syrup. Spread and cut into bars.

Benefit

Natural energy booster without refined sugar.

Millet vegetable cutlets

Mix cooked millet with boiled potato, grated vegetables and spices. Shape and shallow roast.

Benefit

Balanced snack with fibre and plant protein.

Other healthy snack options

Indian naturopathy also supports other traditional foods beyond millets. Variety ensures balanced nutrition.

Sprouted green gram salad

Ingredients

- 1 cup sprouted green gram
- Grated carrot
- Lemon juice
- Pinch of rock salt

Method

Mix all ingredients and pack fresh.

Benefit

Rich in protein and enzymes; improves immunity and digestion.

Roasted bengal gram and groundnut mix

Dry roast chana and groundnuts. Add curry leaves and a pinch of turmeric and salt.

Benefit

Protein-rich and filling; avoids junk snacks.

Whole wheat vegetable *paratha* rolls

Prepare *paratha* using whole wheat flour. Stuff with lightly sautéed vegetables. Roll and pack.

Benefit

Provides carbohydrates, fibre and vitamins for sustained energy.

Dates and nut energy balls

Ingredients

- 1 cup seedless dates
- ½ cup mixed nuts
- 1 tsp ghee

Method

Mash dates and nuts together. Shape into small balls.

Benefit

Iron-rich and naturally sweet; supports haemoglobin levels.

Coconut jaggery bar

Mix freshly grated coconut with melted jaggery and cook lightly. Spread and cut into pieces.

Benefit

Traditional and nourishing; supports digestion and provides natural fats.

Boiled corn with butter and pepper

Boil sweet corn. Add a small amount of butter, pepper and rock salt.

Benefit

High in fibre and keeps children satisfied till lunch.

Packing guidelines

- Use steel containers instead of plastic.
- Avoid deep-fried items daily; use pan-roasting or steaming.
- Replace white sugar with jaggery or dates.
- Include seasonal fruits at least twice a week.
- Add small digestive spices like cumin, ajwain or cardamom.

Children's snacks should be simple, balanced and close to Nature. Whether millet-based or made from pulses, nuts, whole grains and fresh produce, these traditional options provide sustained energy, improve immunity and enhance concentration. **By choosing such wholesome snacks for school tiffin, we nurture healthier habits, stronger bodies and sharper minds.**

Sosamma Iype

There is a dire need to document our traditional knowledge in rearing cattle in a scientific manner. Such measures are very crucial for their conservation to boost our economy and national security, in a globalised world.

Our country is blessed with rich diversity, especially with the richest domestic animal diversity. Scientists employ advanced technological tools to characterise these varieties and document them. Alongside, there is a dire need to document our traditional knowledge in rearing cattle in a scientific manner. Such measures are very crucial for their conservation to boost our economy and national security, in a globalised world. Prof. Sosamma Iype, is a torch bearer in this field, whose monumental contribution has helped in conservation of endangered cattle breeds.

Born in 1941, in the erstwhile Travancore *Samasthanam*, little girl Sosamma saw everyone treat cattle as part of their family. Born into an agricultural family in Niranam near Kuttanad, she had basic knowledge about rearing cows and the family had a Vechur cow at home. It was her natural choice to pursue a bachelor's course in veterinary science at the Kerala Agricultural University Veterinary College. After the course,she joined the animal husbandry department as a veterinary officer. Driven by care and compassion, she later pursued research at the National Dairy Research Institute,Karnataka. In 1977, she joined the Department of Animal Breeding and Genetics at the Kerala Agricultural University's Veterinary College (currently, Kerala Veterinary and Animal Sciences University), where she rose to the position of the head of the department.

Vechur *Pasu* variety is considered the smallest cattle breed in the world. It is known by the name of a place Vechur – a small village by the side of Vembanad

Lake near Vaikam in South Kerala. Prof.Sosamma's village Niranam is located near Vechur. **Typically, 90 cm tall and one-metre-long, Vechur cow demands very little food and no special care. It is known for its comparatively high milk yield.** Like other native varieties, this breed too has evolved by natural selection over generations and this has led to their high adaptability to local conditions. This is also the reason why they are more resistant to diseases like foot-and-mouth or have more tolerance to hot conditions. This has special significance as an insurance for the future of the farmers and cattle owners.

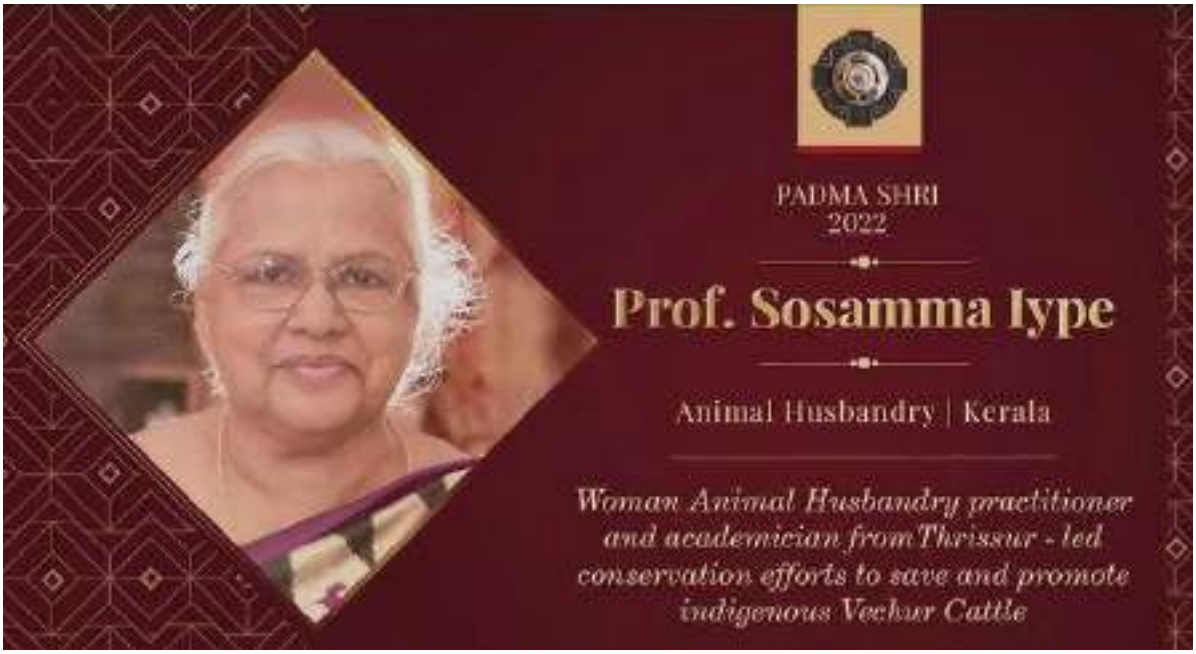
Sadly, this breed had become almost extinct by the 1980s, due to the massive cross-breeding with exotic bulls implemented by the then government in order to enhance milk production. Sosamma's heart bled when she saw these native breed cows disappearing from their soil, giving way to new varieties and unable to sustain. Her mind looked for a solution to bring back the strong ones before it became too late. She believed genomics and other genetic studies are crucial to safeguard the rare species and biodiversity. But intuitively, she knew this path would not be easy.

Around 1987, Prof.Sosamma initiated a conservation effort of this docile native breed in the Kerala Agricultural University. She insisted on selection of the best pedigree with maximum care along with the application of the technology for obtaining the best result. "We launched an extensive search for Vechur cows in 1989, after a few of my students in the university approached me in this regard. There were around 15 - 20 students who actively took part in the search over the years. We used to go from one place to another, checking with farmers and people who reared cattle. My students would often rope in their families to search for the cows in their respective native places," recalled Sosamma in an interview. "Finally, we found our first cow through a farmer named Manoharan. But he wasn't ready to give us his dear cow. We explained the cause to him and convinced him to sell it to us. A fund of ₹65,000 was allotted by the university for our initiative, and we used the money to buy and take care of the cows."

Looking back at challenges throughout her journey, she said, "Gradually, we started finding more cattle, and in a year, we had around 24 Vechur cows. These were then kept and taken care of at the farm at the agricultural university. Our first priority was to make the cows reproduce, thereby increasing their population. It wasn't easy". Eventually, these cows were recognised as an indigenous cattle breed by the Indian Council of Agricultural Research (ICAR).

As it was an initiative taken without the support of the government, against the state's policy of cross-breeding cows, Dr Sosamma had to face different kinds of hurdles. "After almost a year, there was a tragic incident of poisoning that happened in the farm, and we lost several of our cows. There were investigations that followed, but we still don't know who did it. The days following the incident were one of the most testing times in my life. But I didn't want to give up, and fought for the cause," says this crusader for native breeds.

Through technology as a tool of multiplication and genetic improvement, Prof.Sosamma Iype made the embryo transfer technology possible at her university in collaboration with **Milma** (Kerala Cooperative Milk Marketing Federation) in 1995.



With the help of a group of eco-conscious students, she formed the **Vechur Conservation Trust** around 1999, the first of its kind in India. The **Save Vechur Campaign** was a success, and it led to many other groups joining the mission to conserve the breed.

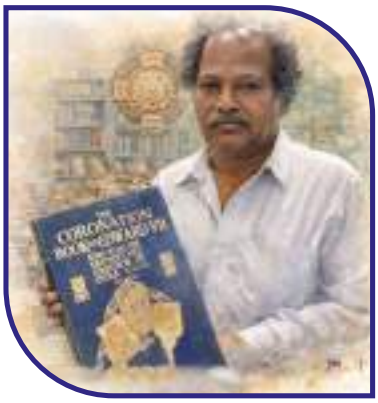
Prof.Sosama's arduous and often wearisome journey, brought back the Vechur cow from the threat of near extinction. In due course, Kerala Livestock Development Board (KLDB) adopted the direct embryo transfer method in Vechur cows as the success rates are relatively high at 60-70%. Her research and field work ensured the survival of this rare breed and contributed to food security, agricultural sustainability and preserving our traditional knowledge. "Understanding the intricate relationship between the species and its natural environment is necessary for successful conservation efforts. A scientist must genuinely interact with and love the species they are working to protect," Dr Iype said while addressing scientists recently. She further stressed the need for inter-institutional collaboration and a multi-disciplinary approach to effectively address challenges in genome decoding, gene editing and other aspects of research for conservation.

Dr.Sosamma has been publishing several research articles in reputed journals on genomics and genetic engineering. She has published a book ***Vechurpasu Punarjanmam*** (Rebirth of Vechur cows) that details her relentless efforts in saving the breed from extinction. **Thanks to her humongous efforts, there are more than five thousand Vechur cows in the state now.** This has also resulted in an increased awareness regarding the importance of the other indigenous breeds across our country.

Sosamma Iype has dedicated her entire life to the noble cause of saving the native breeds through scientific research combined with traditional knowledge. For her extraordinary efforts towards the conservation and bringing back endangered cattle breeds, she has been conferred with the **Padma Shri** award.

She stands as an epitome showing how scientific research can prioritise the well-being of farmers and society.

Smt Ramamani N



ANKE GOWDA

A life built on books: The remarkable journey

In the quiet village of Haralahalli in Karnataka stands an extraordinary monument to knowledge — not built of marble or stone, but of books. At 75, Padma Shri awardee **Anke Gowda** has devoted more than five decades to creating one of India's most astonishing private libraries. His life's work, ***Pustaka Mane*** — meaning "Book House" in Kannada — is home to over 2 million books and remains open to anyone seeking knowledge.

Gowda's story is not one of inherited privilege but of **relentless dedication.** As a young bus conductor, he carefully saved every rupee while pursuing a master's degree in Kannada literature. A professor's encouragement introduced him to the transformative power of books, igniting a passion that would define his life. What began as a personal love for reading soon **evolved into a mission to preserve and share knowledge without barriers.**

His commitment demanded sacrifice. **Gowda invested his earnings entirely in acquiring books**, often foregoing personal comforts. In a defining gesture of devotion, **he sold his house in Mysuru** and chose to live amidst his growing collection. Today, he resides in the library alongside his wife, Vijayalakshmi, and son, Sagar, both steadfast supporters of his vision. Their modest living space occupies a small corner of the vast archive.***Pustaka Mane*** is far more than a private collection. Its shelves hold volumes in over 20 languages, covering classical literature, philosophy, science, technology, poetry and rare manuscripts. **Among its treasures are nearly 500,000 rare foreign titles and more than 5,000 multilingual dictionaries, some dating back to the early nineteenth century.** Scholars, schoolchildren, civil service aspirants, writers and even members of the judiciary have walked through its doors in pursuit of learning.

The library's growth was not without challenges. In its early years, books were stored in bags and crowded rooms. Support from well-wishers, including industrialist Sri Hari Khoday, eventually helped provide a larger structure to safeguard the collection.

Even today, Gowda personally cleans, organises and catalogues thousands of unsorted volumes. Digitisation and funding remain ongoing challenges, yet his resolve is unwavering.

In an age defined by speed and distraction, Anke Gowda stands as a powerful reminder that knowledge, patiently gathered and generously shared, can shape generations. From a small village in Karnataka, he has built not merely a library, but a timeless sanctuary of learning.

Smt Archana Sundar

CURIOSITY CORNER

India's "Inner Space" Odyssey

While most of the world is staring at the stars, India is diving into the abyssal zone. Our scientists are currently perfecting Samudrayaan, a mission to explore the ocean floor 6,000 metres deep. It is a feat of engineering harder than going to the Moon because, in the deep sea, the environment tries to crush you from every angle!

Test your depth perception with these rapid-fire challenges.

Can you navigate the deep?

1. Identify India's first-ever crewed deep-ocean exploration project.
2. Name the three-person submersible designed to reach the ocean floor.
3. State the specific depth in metres this mission aims to conquer.
4. Name the geometric shape used for the crew module to resist high pressure.
5. Identify the rare, lightweight and ultra-strong metal used for the hull.
6. Name the mineral-rich rocks found on the seabed that look like charred potatoes.
7. Give the number of hours the emergency life support is designed to last.
8. How many times higher the pressure is at 6 km compared to sea level?
9. Name the Indian city that serves as the headquarters for the National Institute of Ocean Technology (NIOT).
10. Identify the type of waves used for communication since radio waves fail underwater.
11. Name the ocean zone below 1,000 metres where sunlight never reaches.
12. Identify the chemical process (instead of photosynthesis) that powers life near deep-sea vents.
13. State India's rank among nations with crewed deep-sea tech.
14. Name the specific "colour" of the economy this mission aims to boost.
15. Polymetallic nodules in deep sea contain - used in EV batteries.

The Science Byte

Why a sphere and why Titanium? At 6,000 meters, the weight of the water above is equivalent to having a Boeing 747 aircraft balanced on your head! A sphere is the only shape that distributes this stress equally, preventing the vessel from imploding. Indian engineers used electron beam welding to ensure there are no weak spots in the 80mm-thick metal walls.

Answers on page 66

Shri Natarajan Raman

Ved: Hey Vyas! How are you? Last time we discussed about Transformers, you also mentioned about discussing their ability to handle multi format files – videos, music, etc. I always thought they were only to handle text. How can one model understand so many different things?

Vyas: Great question, Ved! Originally, Transformers were invented for understanding language. The famous research paper ***"Attention is all you need"*** introduced the transformer architecture. To begin with, people thought it would work only with text, but they later realised that the same idea can work for images, audio and even video.

Ved: But how? Words and pictures are completely different, right?

Vyas: You are right, they look different to us, but to a computer, everything becomes numbers. Transformers do not directly see words or images or any format. They see something called **tokens** — small pieces of information converted into numbers.

Ved: Tokens? Do you mean something like the ones we have in games?

Vyas: Nope, not exactly! In text, a token can be a word or part of a word. Consider this as an example, the sentence "Transformers are powerful and multimodal" gets broken into smaller words. Each word becomes a number using embedding – the one we discussed in detail last time.

Ved: Great, I understand about text handling, what about images?

Vyas: Well, the image is divided into small patches — like cutting a photo into small squares. Then each square is converted into numbers. And then they are treated like how tokens generally are by transformers.


TRANSFORMERS CAN UNDERSTAND EVERYTHING?!
Hey Vyas! Our teacher said Transformers can understand images, music and videos too. Aren't they language models?
Transformers started with language, but now they handle many formats!
Here's the secret:
TEXT
IMAGE
MUSIC
Numbers?!
Everything—text, images, audio, video—can be converted into numbers which Transformers then process using the same attention layers!
So they can handle all these?
They can even handle multiple formats together!
Text +
Image
+ Video
Yes! Once everything is numbers, Transformers use attention to that matters.
They can even handle multiple formats together!
Yes! That's why Transformers can write stories, generate images, create music, and describe videos.
Attention is all you need!
Here's how it works:
Convert everything into numbers
Use attention
Understand relationships!
Ved, this is just the beginning!

Ved: So, it is like reading a picture square by square?

Vyas: Exactly! That is how models like vision transformers work. Instead of reading sentences, they "read" image patches and figure out what the picture shows.

Ved: Wow! Then what about audio? Music and speech are sounds, not pictures or words.

Vyas: True. But sound can also be converted into numbers. If you recollect, audio is basically waves. The sound recorded is stored in a waveform — which in turn is just data. That data can be split into small time segments and turned into tokens.

Ved: So, the transformer reads small pieces of sound, like it reads words?

Vyas: Yes! For example, when you speak or anyone speaks, the system can break your voice into tiny sound frames and analyse patterns. That is how speech recognition works. We have seen Siri and Google do this on our smartphones.

Ved: Amazing! But I think handling video must be even more complicated.

Vyas: It gets a little complex, but if you look at the fundamentals, a video is nothing but sequence of many images played quickly along with audio. So, by looking at each frame with attention, a transformer can process changes that happens over a period in the video.

Ved: Do you mean transformer can remember whatever happened earlier in the video?

Vyas: True that! That is where something called attention comes in. Again, if you recollect, we spoke about this last time. Transformers use attention to decide which parts of the input are important. Whether it is a word in a sentence, a patch in an image, or a frame in a video, the model focuses on the most relevant parts.

Ved: I remember discussing attention. So, attention is somewhat like when I focus on the teacher's voice in a noisy classroom?

Vyas: Perfect example! The model "listens" carefully to important signals and ignores less important ones.

Ved: Fine Vyas. But how does one model get the ability to handle all these formats together?

Vyas: That is called multimodal learning. "Multi" means many, and "modal" means modes or types. A multimodal transformer can accept text, images, audio and sometimes video together.

Ved: Oh, something like?

Vyas: Something like say, we upload a picture of mangoes and ask, "What variety it is?" The model looks at the image patches/features and understands your text question. It connects both types of information and gives an answer.

Ved: So, it combines vision features and language?

Vyas: Yes! Not only that, but it can also go even further. For example, you could show a short video and ask the model to summarise what happened. It analyses visual frames, maybe audio too and then generates text.

Ved: Wow, that is like transformer having all the cognitive abilities of a human. Am I right?

Vyas: (Laughs) Not all, but almost. The Transformer architecture is flexible and powerful. If the input file, regardless of the format, can be converted into tokens — numbers arranged in sequences — the model can process it.

Ved: So, the fundamental part is converting everything into tokens?

Vyas: That is a big part of it. Once everything becomes numbers in a sequence, the same attention mechanism can work on it. That is why transformers are so powerful.

Ved: Does that mean in the future they can handle even more formats?

Vyas: Definitely. The amount of development that happens is amazing. We see many are working on models that understand text, images, audio, video and even 3D data together.

Ved: That is unbelievable! So, transformers are not just language models — they are universal pattern learners!

Vyas: Well said, Ved! They're basically pattern-detecting machines that work across many types of data and more importantly someone who can remember huge/vast amount of context together.

Ved: Now I understand. It is not magic — it is math, tokens, context and attention!

Vyas: Exactly! And that is what makes transformers so revolutionary and powerful.

Ved: Great, can you also tell me about various models available?

Vyas: Sure! But in the upcoming session.

Shubhanshu Shukla

As the sole representative of ISRO on a multinational crew, Shukla displayed exceptional bravery, mental strength and presence of mind.

On the eve of Republic Day 2026, the entire nation felt proud as President Droupadi Murmu announced **the Ashoka Chakra, India's highest peacetime gallantry award, for Group Captain Shubhanshu Shukla.** What made this moment historic was that for the first time, this prestigious honour was awarded to an astronaut. His courage was not shown on a battlefield, but in the vast and dangerous frontier of space.

Journey from the skies to Space

Born in Lucknow, Shubhanshu Shukla served nearly two decades in the Indian Air Force as a skilled fighter pilot. His dedication, discipline and excellence earned him recognition.

In 2019, his life took a remarkable turn when **he was selected as one of the four final candidates for India's ambitious Gaganyaan programme.**

After intense training at the Yuri Gagarin Centre in Russia and later with NASA and ISRO, he was selected to pilot Axiom Mission 4 (Axe-4) to the International Space Station in June 2025. This mission ended a four-decade wait for an Indian presence aboard a space station.

Courage beyond the battlefield

Piloting a spacecraft is one of the most challenging tasks in the world. Even the smallest mistake during orbital manoeuvres or re-entry can lead to catastrophic consequences. As the sole representative of ISRO on a multinational crew, Shukla displayed exceptional bravery, mental strength and presence of mind.

His calmness in handling complex microgravity operations and high-risk situations earned him the Ashoka Chakra for "conspicuous bravery" and "exemplary courage."

His achievement teaches that bravery is not only about physical strength; it is also about determination, responsibility and confidence in difficult situations.

Scientific contributions in Space

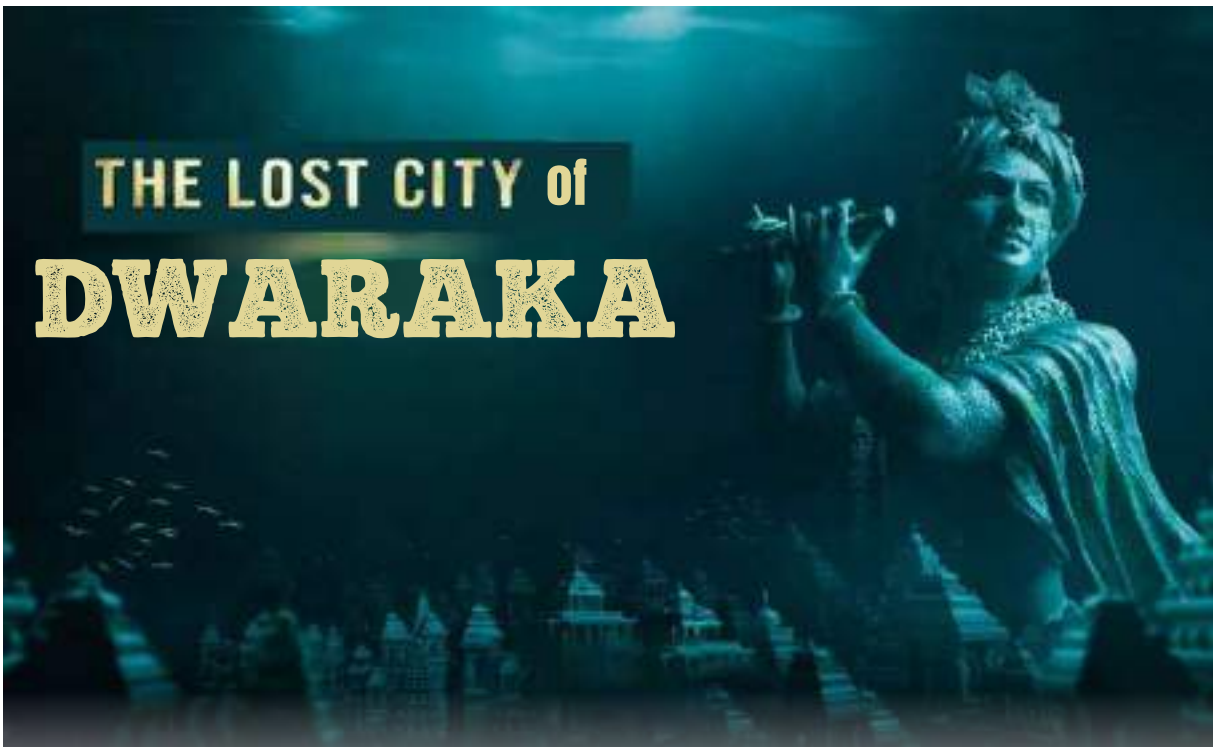
During his 18-day mission, Shukla carried out vital experiments in microgravity. **He researched space anaemia and cardiovascular health to understand how the human body reacts to weightlessness. He also performed materials science experiments on alloy solidification and supervised biological studies on protein crystal growth, which are important for drug development on Earth.**

These experiments provided valuable data for India's future space missions and strengthened safety systems for the upcoming Gaganyaan launch in 2027.

Inspiring the next generation

Today, Group Captain Shubhanshu Shukla is preparing for India's first crewed Gaganyaan mission. His experience is helping improve life support systems and train future astronauts. His story reminds us that dreams can take us beyond the sky. With hard work, courage and dedication, nothing is impossible.

Smt Ghana Saraswathy M



According to ancient texts like the Mahabharata and the *Bhagavata Purana*, Dwaraka was a magnificent city built by Krishna after he left Mathura.

Across India, devotion to Lord Krishna takes many beautiful forms. In Vrindavan, he is the playful child who steals butter. In Mathura, he is the divine son born to defeat evil. In Gujarat, he is worshipped as a wise king and protector. Some see him as a friend, some as a guide and others as the Supreme God. This deep and personal bond with Krishna has shaped India's culture, music, dance and history for thousands of years.

The lost city – Dwaraka

One of the most fascinating chapters of Krishna's story is the legendary city of Dwaraka. According to ancient texts like the Mahabharata and the ***Bhagavata Purana,*** Dwaraka was a magnificent city built by Krishna after he left Mathura. It was described as a golden city filled with grand palaces, wide roads and strong fort walls, located along the western coast of India.

What makes Dwaraka truly mysterious is the belief that it later sank into the sea. For centuries, people considered it a legend. However, marine archaeological explorations off the coast of modern Dwaraka in Gujarat have discovered submerged structures, stone blocks and ancient remains beneath the waters of the Arabian Sea. These findings have led many historians and researchers to argue that Dwaraka was not mythological but a real and thriving port city in the past.

Today, Dwaraka is one of the ***Char Dham*** pilgrimage sites and an important spiritual destination. The famous Dwarkadhish Temple, dedicated to Lord Krishna, stands proudly near the sea, drawing devotees from across the country.

The lost city of Dwaraka remains a powerful blend of faith and history — a reminder that sometimes legends carry echoes of real civilisations waiting to be rediscovered.

How to reach

Nearest Railway Station: Dwaraka Railway Station.

Nearest Airport: Jamnagar Airport (about 130 km away).

Best time to visit

The best time to visit is October to March, when the weather is pleasant and suitable for sightseeing and temple visits.

DO YOU KNOW ?

Dwaraka is one of the four sacred *Char Dham* pilgrimage sites established by Adi Shankaracharya. The other three are:

Badrinath Temple (Uttarakhand) — dedicated to Lord Vishnu in the Himalayas.

Jagannath Temple (Odisha) — famous for the grand *Rath Yatra* festival.

Ramanathaswamy Temple (Tamil Nadu) — dedicated to Lord Shiva and known for its long temple corridors.

Together with Dwaraka in Gujarat, these four sites form a spiritual journey that represents the four directions of India — north, south, east and west.

Smt Archana Sundar

Rouble Nagi wins 2026 Global Teacher Prize

By transforming broken infrastructure into over 800 vibrant, open-air learning centres, she has brought literacy, science and hygiene directly to the doorsteps of those who need it most.

In the heart of India's most neglected urban slums, walls are no longer just barriers—they are becoming bridges to a brighter future. Rouble Nagi, the visionary artist and educator behind the "**Living Walls of Learning**" concept, was recently awarded the 2026 Global Teacher Prize, receiving the USD 1 million award at the World Governments Summit in Dubai.

Selected from over 5,000 nominations across 139 countries, Nagi has spent two decades proving that education does not require a traditional four-walled classroom. By transforming broken infrastructure into over 800 vibrant, open-air learning centres, she has brought literacy, science and hygiene directly to the doorsteps of those who need it most.

Her journey began with a single project in a Mumbai slum; today, her influence spans 100 disadvantaged communities.

Nagi's impact is measured in more than just paint. Her model—integrated through the **Rouble Nagi Art Foundation** (RNAF)—addresses the profound challenges of poverty, child labour and early marriage. Key achievements include:

- **A 50% reduction in dropouts:** By offering flexible schedules and vocational skills, she ensures marginalised children remain engaged in learning.
- **Empowerment through art:** Murals serve as interactive textbooks, teaching environmental conservation,

global citizenship and social responsibility.

- **Scalable leadership:** She has recruited and trained over 600 volunteer and paid educators to sustain these community hubs.

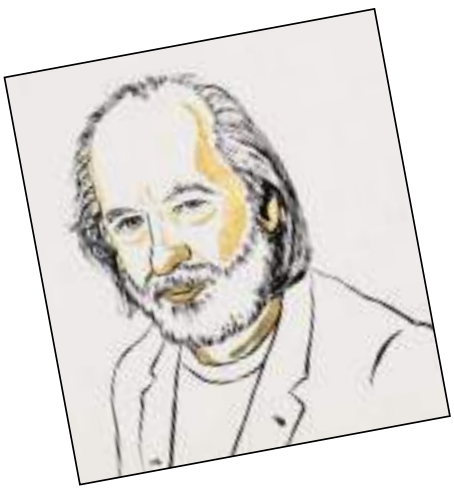
A global benchmark

Sunny Varkey, founder of the prize, noted that Nagi represents the "courage and creativity" essential to modern teaching. While the competition featured exceptional finalists—including Australian digital innovation leaders Colleen O'Rourke and Jade Bassett—Nagi's ability to turn "neglect into pride" set her apart.

The next chapter

With the prize money, Nagi plans to expand RNAF and launch a "**skilling institute**" focusing on digital literacy and vocational courses. As she expands her reach, her message remains clear: **when you change the walls of a community, you change the horizon for every child within them.**

LITERATURE



The Nobel Prize for literature for 2025 was awarded to Hungarian writer **Lazlo Krasznahorkai** for his compelling and visionary appeal in his works.

Early days: Krasznahorkai grew up in Soviet era Hungary and he wrote his novels under very difficult circumstances. His readers were transported to an unsettling, unsure world through his melancholic prose, imagination and fantasy.

He is a keen observer of life and people around him. His novels were peopled by myriad characters, some defenceless against a harsh world. Though he wrote in Hungarian, English readers had no problems because many of his books were translated. English readers were introduced to his work ***"Melancholy"*** written in 1989 and later translated into English by George Szirtes in 1998.

Earlier Krasznahorkai won the **Man Brooker International Prize** for his novel ***Baron Wenckeims's home coming.***

His style: It is often observed that a writer's output often reflect the state of their mind or the state of their living conditions or both. His masterly debut novel ***Santantango*** reflects the existential struggle of a collective farm on the eve of the fall of communism. They live and express themselves in the characters. It is not that writers think on their feet, bent over their writing desk. Their fountainhead of creativity is entrenched deep in their inner thoughts before it is written.

Nobel laureate Krasznahorkai had this habit of framing sentences in his head and jotting them down only when it completes a picture. The central theme of is novels often reflected precious but fleeting value of human lives. One of his famous works is ***Dostoevsky's white nights*** which finds new readers ever passing day.

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India's "Inner Space" Odyssey

1. Samudrayaan
2. MATSYA 6000
3. 6,000 metres
4. Sphere
5. Titanium alloy
6. Polymetallic nodules
7. 96 hours
8. 600 times
9. Chennai
10. Acoustic (sound) waves
11. The midnight zone
12. Chemosynthesis
13. Sixth
14. Blue economy
15. Nickel, Cobalt, Manganese and Copper

NATIONAL GEOGRAPHIC DAY

27th JANUARY

NATURE'S LIVING PATTERN

INTERNATIONAL ZEBRA DAY

31st JANUARY