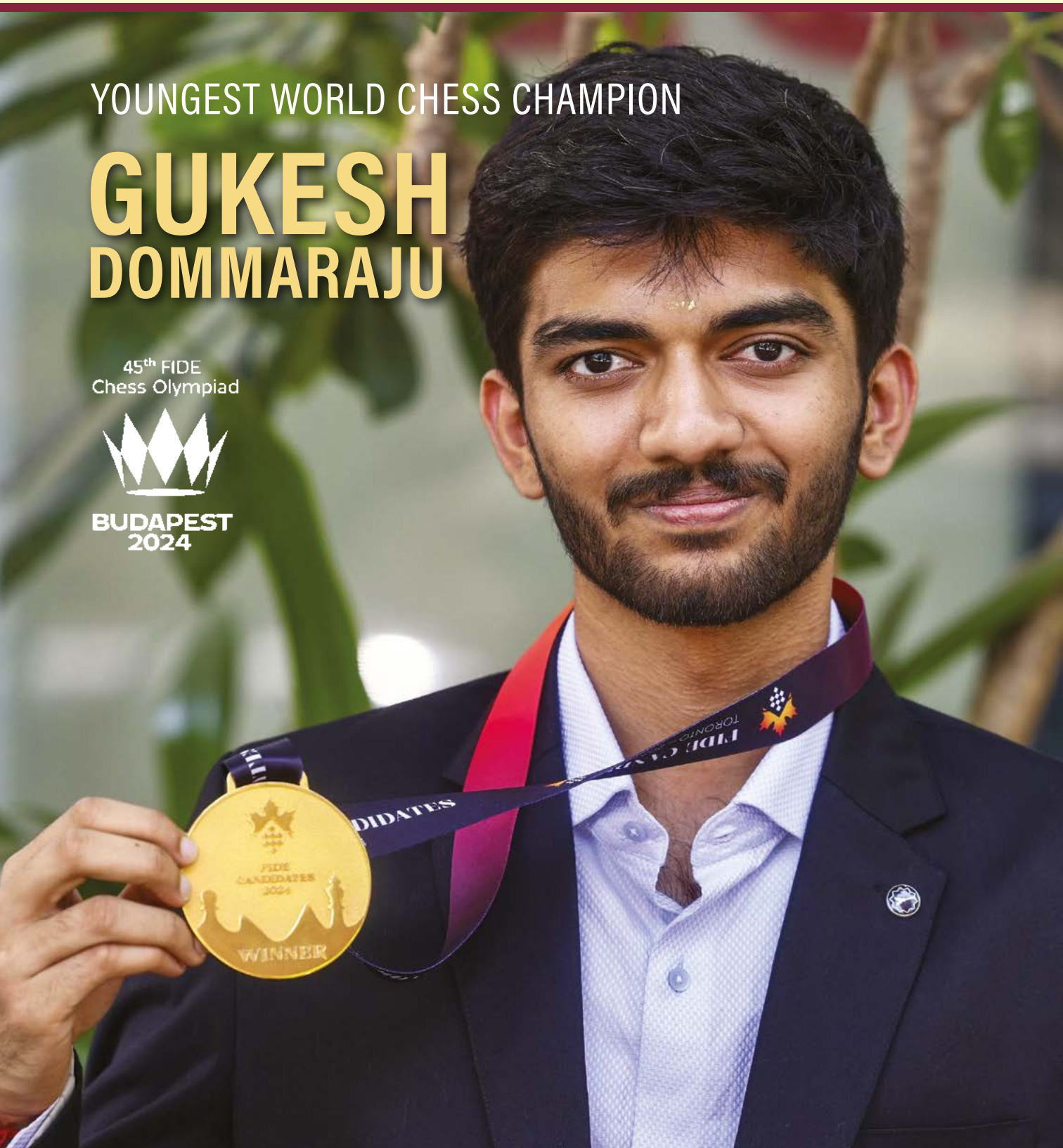
PRAJYA

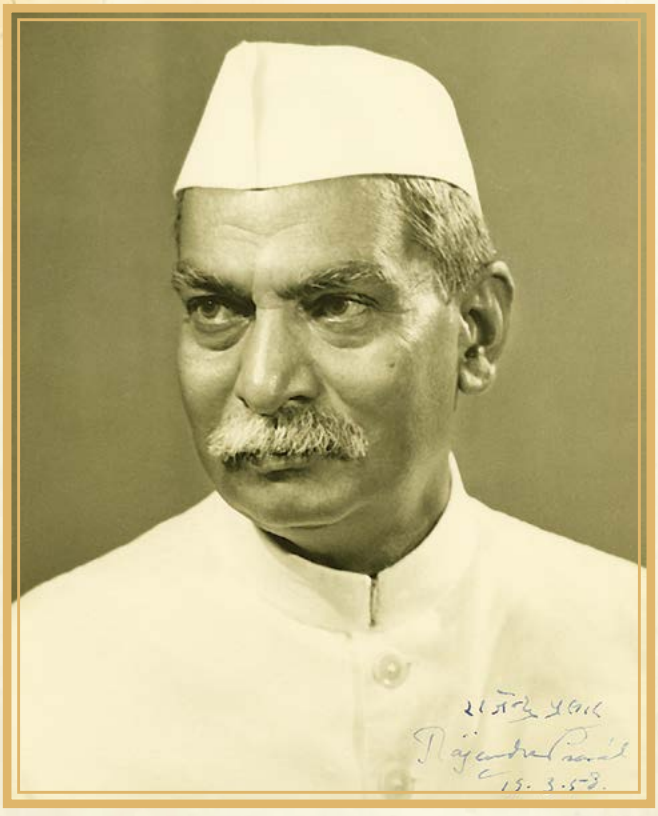
MONTHLY NEWS MAGAZINE FOR CHILDREN

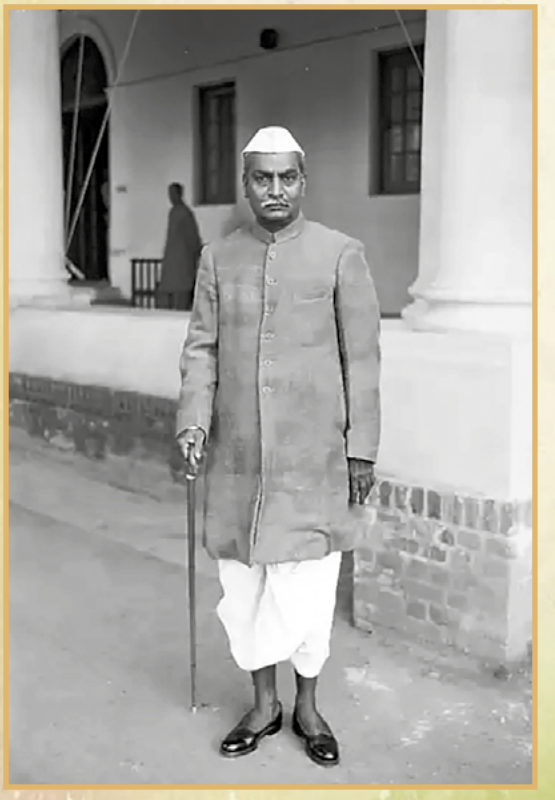
Volume: 04 Issue: 05 January 2025 Rs.85/-



Rajendra Prasad Jayanti

3rd December





Remembering the first President of India, Dr. Rajendra Prasad. His legacy of integrity and service continues to inspire. We pay our respects to him on his Jayanti.

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FROM THE EDITOR'S DESK

"We are a culture of festivals. A way to celebrate all aspects of life."

Bodos of the Brahmaputra Valley are the earliest known ethnic group to inhabit Assam. The first ever **Bodoland Mohotsav** is a celebration of the richness of cultural and linguistic heritage of Bodoland and also a celebration of the remarkable recovery and resilience of the tribe after the signing of the Bodo Peace Accord in 2020. The event also promotes peace and harmony by encouraging participation from other North Eastern states. This will strengthen cultural ties and promote mutual understanding among diverse communities. While showcasing the culture, the mahotsav will also improve tourism in the region, thus contributing to prosperity.

Since the times of Mahabharata, Srimad Bhagwad Gita has been the philosophical guide and spiritual teacher for not only Hindus but all seekers irrespective of their religion. Kurukshetra, the venue of the **International Gita Mahotsav** adds to the sacredness of the event. It is the land where Lord Krishna blessed Arjuna with eternal wisdom; where the famous sage Manu wrote *Manusmriti*. Moreover the Rig Veda and the Sama Veda were also composed here. The land was visited by Lord Buddha and eminent Sikh Gurus.

One ritual followed by visitors during the mahotsav is to take bath in holy water of the sacred tanks – Sannihit Sarovar and Brahma Sarovar. The whole environment becomes divine and spiritual.

The richness of a culture is manifested in the way it celebrates what it holds dear to itself.

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

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General Knowledge

Shri Ramaswamy R

Global news

John Mahama returns as Ghana's President

Ghana in sub-Saharan West Africa received independence from Britan in 1957. After a period of dictatorship governments, since 1993, the country has enjoyed a stable democracy. Ghana is a constitutional democracy with the President as Head of State and Government, and is elected directly by the people to serve for a period of 4 years and a maximum of two terms.

General Elections were held in December 2024 to elect their President and 276 MPs. The contestants were National Democratic Congress (NDC) candidate John Mahama (66) and New Patriotic Party (NPP) candidate Mahamadu Bawumia, the former won 56.6% of the votes. This was an emphatic victory against Bawumia who polled 41.6% votes. **The country also made history by choosing its first female Vice-President, Jane Naana Opoku Agyemang.** The President's immediate challenges include attending to rising cost of living, corruption and drug trafficking.

Francois Bayrou: France's new Prime Minister amid political turmoil

French President Emmanuel Macron has appointed veteran centrist leader François Bayrou (73) as the new Prime Minister. He replaces Michael Bernier who was ousted in a no-confidence vote on an austerity budget. France is undergoing a period of instability with 3 PMs getting appointed within a space of 12 months. Bayrou is head of the MoDem party who are allies with Macron's Renaissance Party. Bayrou resigned as minister in 2017 over accusations of mismanaging EU Funds and was subsequently cleared.

Bayrou now has to do the tight rope walk between his government's survival and pushing through with economic reforms necessary for France's status as an important EU nation.

The President has the unenviable task of running a minority government with three warring blocs inside parliament ever since his gambit to call for snap elections backfired.

Gabon approves new Constitution in historic referendum

Gabon lying in the Atlantic coast of Central Africa is one of the most forested nations of the world enjoying a forest cover as high as 87-88%. Formerly a French colony, the country received independence in 1960. The country was under one party-one family rule of Ali Bongo since 1968. In August 2023, military

Country	Area (km^2) and Ranking	Population (millions)	Language	Capital	Currency (For 1 USD)	Economy (Nominal GDP GR)
Republic of Ghana	2,38,533 82nd	34.7. Over 70% practise Christianity	Multilingual ethnic groups. English official language.	Accra	Cedi (14.64)	Gold and industrial minerals export (90th). 2nd largest cocoa producer
French Republic	5,51,695 49th	68.4. Over 90% practise Christianity	French	Paris	Euro (1.04)	Developed economy (7th).
Gabonese Republic	2,67,667 76th	2.4. Over 90% practise Christianity	Multilingual ethnic groups. French official language.	Libreville	Central African CFA Franc (628,7)	Crude oil and Manganese export. (26th)
Republic of Namibia	8,25,615 34th	3.0. Over 80% practise Christianity	Spoken - Namish variety of English. Official – English.	Windhoek	South African Rand (18.31)	35th largest in Africa Major Exports include diamonds, uranium, zinc, silver, tungsten(141st).

officers staged a coup to depose the President. They also dissolved state institutions including the Judiciary, Parliament and the Constitutional Assembly and named **Gen Brice Oligui Nguema (49)** as **interim president** of Gabon. Nguema promised to hand power back to civilians after a two-year transition. A constitutional referendum was held and approved in Gabon in November 2024. The vote was on a new democratic constitution; it proposed, among other things, a 7-year presidential term, renewable once consecutively.

From freedom fighter to Namibia's first female President – Netumbo Nandi - Ndaitwah

Namibia on the world map can be found in the southwestern coast of Africa. The country has a long coastline of nearly 1600 kms. They received independence from South Africa only as late as 1990.

Netumbo Nandi-Ndaitwah (72) is the first female to be elected President in the elections held in November 2024. Representing SWAPO, she secured 57% of the votes compared to her nearest rival who could poll only 26% votes, her election celebrated all over Africa as historic event in gender representation.

Netumbo started her political life as early as 14 when she was a freedom fighter for SWAPO. She did her higher studies in Zambia, Russia and UK earning degrees in International Relations and Public Administration. In the independent Namibia after 1990, Netumbo held several key ministerial posts. In her personal life she was married to Chief of Defence Force Epaphras Denga Ndaitwah and had three children. Despite her prominent position, she maintained a low profile doing social work for children. On women's rights she helped in passing Domestic Violence Act in 2002. Her immediate challenges are economy, unemployment and social inequality. **Netumbo believes in hands-on approach and would like to be known more as "implementer" than politician.**

Kum Kavya R

AI-powered 5G

Two cutting edge technologies in one!

Have you ever looked at the tiny 4G or 5G symbol at the very top of your phone and wondered what it means? The G in 4G stands for “Generation” and refers to the type of mobile network that your smartphone is tapping into for call and internet connectivity.

What started off as 1G with very simple radio systems, has now become 5G involving highly sophisticated cellphone towers sending electromagnetic waves across various spectrums allowing incredible connectivity across multiple devices.

SoftBank

NVIDIA

In a groundbreaking move aimed at pushing our mobile networks even further, Nvidia and SoftBank have jointly launched the world's first AI and 5G-integrated telecom network.

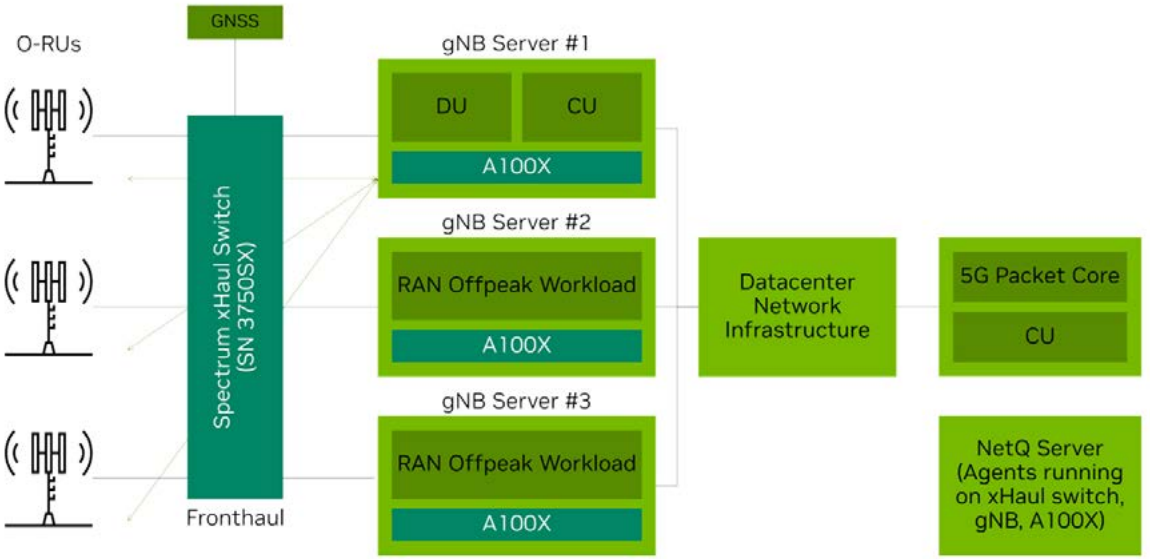
This innovative network, dubbed 5G AI-RAN, seamlessly integrates artificial intelligence (AI) capabilities directly into the 5G infrastructure. This lets telecom operators transform traditional base stations into powerful AI computing hubs accessible to all users connected to their tower.

Imagine a network where AI isn't just a separate system, but an integral part of how the network itself functions. That's the essence of 5G AI-RAN. This revolutionary architecture empowers the network to "think" and adapt in real-time, optimizing performance, improving energy efficiency and enhancing the overall user experience.

The goal is trifold:

AI optimisation: AI algorithms constantly analyze network traffic patterns, identifying places where more data connectivity is required and rerouting the same from places where it is not being utilised. This results in optimising data flow for smoother and faster connections for tasks such as streaming content.This in turn will result in less buffering and smoother streaming.

Energy efficiency: AI can intelligently adjust power consumption based on real-time demand, minimizing energy waste and reducing operational costs for telecom operators. For example during downtimes such as lower device usage at night,



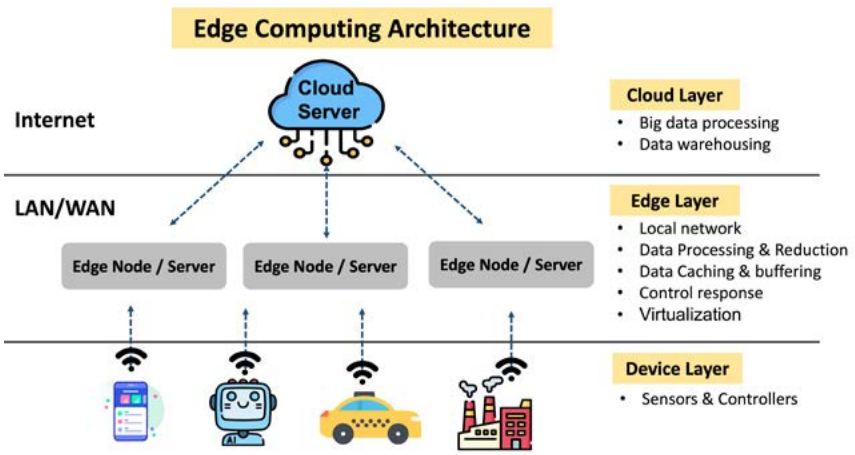


Figure : Edge computing architecture overview
Source : The research team

the energy consumed to keep the tower operational can be reduced, resulting in savings for the telecom provider.

Edge computing: 5G AI-RAN leverages edge computing. When an application raises a query which has to be processed by a server of the company, instead of having to send the query all the way to the server over multiple connections, the data processing can happen at the tower itself. This results in faster response times for applications like autonomous vehicles, online transactions, remote technical connections and remote surgeries.

If implemented properly, users can expect faster speeds, lower latency and more reliable connections, leading to a significantly improved overall connectivity.

5G AI-RAN paves the way for the development of cutting-edge technologies like the Internet of Things (IoT), where billions of devices are interconnected. This will revolutionise industries such as healthcare, manufacturing and transportation.

"The age of AI is upon us, and it's large and diverse," opined Jensen Huang, CEO of Nvidia, speaking to investors about the future.

By integrating AI into the very fabric of the network, Nvidia and SoftBank are unlocking its full potential and paving the way for a future where technology seamlessly integrates into every aspect of our lives.

The partnership between Nvidia and SoftBank signifies a pivotal moment in the telecom industry. **5G AI-RAN is not just about faster speeds; it is about creating a smarter, more responsive and more efficient network that will power the innovations of tomorrow.**

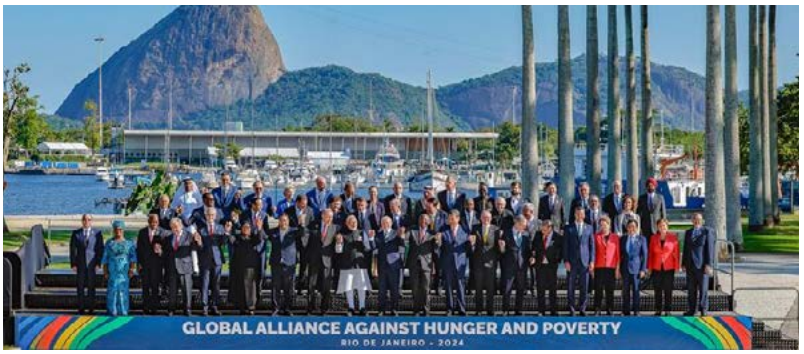
- **Nvidia an American multinational corporation headquartered in Santa Clara, California designs and supplies graphics processing units (GPUs), artificial intelligence (AI) hardware and software and other technologies.**
- **SoftBank Group Corp is a Japanese multinational investment holding company headquartered in Minato, Tokyo, Japan which focuses on investment management.**

Shri Sampath D

G20 Summit

The 18th G20 Summit was held at Rio de Janeiro on 18th and 19th November 2024. The G20 leaders met for a two-day summit hosted by the Brazilian G20 presidency which was attended by 19 member countries and the African Union and the European Union. The theme of the Summit was **"Building a just world and a sustainable planet".**

The members of the G20 represent around 85% of the world's GDP, more than 75% of world trade and around two-thirds of the world's population. Guest countries and international organizations also participate in the G20 activities.



The G20 leaders took part in three sessions on the three priority issues namely:

a) Social inclusion and the fight against hunger and poverty aiming to accelerate efforts to eradicate hunger while reducing inequalities

Global Alliance against Hunger and Poverty was launched to eradicate poverty and hunger and Global Coalition for Local and Regional Production, Innovation and Equitable Access was launched to promote access to vaccines, diagnostics, and other health technologies for neglected diseases and vulnerable persons. With 733 million people facing hunger in 2023, the alliance supports developing homegrown school feeding programmes and improving access to microfinance and reaching

500 million people with cash transfer programmes in low and lower-middle-income countries by 2030. This will look at the prospect of expanding high-quality school meals to an additional 150 million children in vulnerable countries.

b) Sustainable development and energy transition

It welcomed the establishment of Task Force on a Global Mobilization against Climate Change to identify and address structural barriers to foster private capital flows for climate action, particularly for developing countries. G20 leaders pledged their support to the COP29 presidency and committed to accelerating clean, sustainable, just, affordable and inclusive energy transitions in line with the Paris Agreement. They pledged support for the implementation of efforts to triple renewable energy capacity globally and double the global average annual rate of energy efficiency improvements.

c) Reform of the institutions of Global Governance

Pledged to reform UN Security Council aligning with realities and demands of 21st century, which is more inclusive, effective, democratic, accountable etc. It endorsed G20 roadmap towards better, bigger and more effective **Multilateral Development Banks (MDBs)**. It was felt that the duty of this generation was to reform our international organisations to reflect the world we want to live in – fairer, more peaceful, more inclusive and more prosperous.

G20 leaders also adopted declaration consolidating support for solutions such as progressive taxation for ultra-high-net-worth individuals, recognition of the bioeconomy's potential for economic growth and strengthening the United Nations General Assembly, among others.

At the G20 Leaders' Summit, the Brazilian government and the United Nations also launched a joint initiative to combat climate mis and disinformation. The Global Initiative for Information Integrity on Climate Change was introduced as a dedicated multilateral collaboration between states and international organizations, aimed at funding research and actions to promote the integrity of climate-related information requiring urgent action.

Through initiatives like the Voice of Global South Summit, India has ensured that the needs and priorities of developing nations remain central to the G20 agenda. India's expertise in innovation and technology has been shared with developing nations to advance collaborative solutions in healthcare, education and energy.

On the sidelines of the 2024 G20 Summit, India held significant bilateral discussions with countries like Australia, Norway, Indonesia, Portugal, Italy, the UK and France. These talks underscored India's role in fostering strategic partnerships to address shared challenges and explore trade and investment opportunities. For instance, India-UK Free Trade Agreement (FTA) and extradition issues were discussed between India and UK, strengthening economic and judicial cooperation.

Kum Shrivaishnavi R

First atmospheric monitoring station in Antartica

China has inaugurated the first atmospheric monitoring station in Antarctica. While there are 70 research stations in the South Polar continent, this marks the first facility that will exclusively monitor the weather and climatic patterns in the Southern Frigid Zone.

Located in Larsmann Hills in the Eastern part of Antarctica, the Zhongshan National Atmospheric Background Station aims to provide 'continuous and long-term operational observations' which will help in evaluating change in the parameters of the atmosphere – aiding in assessing the composition of the atmosphere and map its variation in real-time. This, in turn, will lead to an accurate assessment of climate change and the role of human factors in it.

Ding Minghu, Director of the Institute of Global Change and Polar Meteorology at the Chinese Academy of Meteorological Sciences, commented that the polar regions are "amplifiers" of climate change since the poles offer a visual and quantitative measure of the effects of climate change. Hence, **such a monitoring station would prove useful in gauging the degree of damage done to the atmosphere and also condensing the factors that are the most influential in contributing to climate change.**

Having inaugurated its 5th research centre in Antarctica and already having 8 atmospheric monitoring stations in its homeland, China seems to be eyeing its global position in studying the atmosphere. The East Asian country is also testing 10 additional atmospheric monitoring stations. It is also in the process of setting up a station to study the Antarctic marine ecology.

Such moves are currently in the premise of the Antarctic Treaty, which prohibits nations from monetising on Antarctic resources. However, some rivals are viewing these steps as a way to hope for modifications of the Treaty, and in the future, be able to utilise Antarctic resources.

India has two research stations in Antarctica – Maitri and Bharati. Its first station, Dakshin Gangotri, was set up in 1983-84, but had to be decommissioned after it got submerged in ice. It is now currently being used as a supply base.

Kum Sunita D Behera

New Damselfish species discovered

A new species of damselfish has been discovered in the deep-sea reefs of the Maldives, enriching our understanding of marine biodiversity. This new fish species has been given the name ***Chromis abadhah.*** 'Abadhah' means 'perpetual' or 'perpetually' in Dhiveli, which is the official language spoken in the Maldives. The team chose this name in recognition of the Rolex Perpetual Planet initiative, which funded the Maldives expedition that led to the discovery. This pearlescent blue fish was found at a depth of around 70 meters in the mesophotic zone, a twilight area of the ocean that receives limited sunlight. This zone, located between 30 and 150 metres deep, is often underexplored due to its challenging conditions, but it is home to many unique species that thrive in low-light environments.

Damselfish, particularly those from the ***Chromis*** genus, play an important role in coral reef ecosystems. They feed on plankton and algae, helping maintain reef health by preventing algae from overtaking corals. Their vibrant colours also make them popular in the aquarium trade, although this newly discovered deep-sea species is likely far beyond the reach of collectors. The small size and shimmering blue scales of *Chromis abadhah* allow it to blend into its surroundings, providing camouflage in the dimly lit waters.

The Maldives is known for its rich marine biodiversity, housing over 1,000 species of fish, including iconic marine life like manta rays, whale sharks and colourful corals. The mesophotic zone is particularly important as a refuge for species that struggle to survive in the increasingly warmer and more acidic shallow waters affected by climate change. These deeper reefs are also less impacted by human activities such as fishing and tourism, making them crucial to conservation efforts.

The team behind this discovery consisted of international marine biologists and oceanographers using advanced diving techniques to explore these hard-to-reach areas. Their findings contribute to better understanding and protection of deep-sea ecosystems, which are vital for sustaining ocean health. As coral reefs face mounting threats from climate change, deeper areas like the mesophotic zone offer hope for conservationists, acting as refuges that can support species in shallow reefs. Protecting both shallow and deep-sea habitats is essential for preserving marine life and supporting the Maldives' economy, which depends heavily on fishing and ecotourism.

Smt Manju Aildasani

University of Wollongong opens India campus

Australia's University of Wollongong (UOW) inaugurated on 15th November 2024, its India campus in **Gujarat International Finance Tech (GIFT)** City Gandhinagar, with the courses of Master of Computing with a specialisation in Data Analytics, Graduate Certificate in Computing, Master of Financial Technology, Master of Financial Technology (Extension) and a Graduate Certificate in Financial Technology.

Speaking at the event, Michael Still, Chancellor of the University of Wollongong, said, "Launching UOW's campus in GIFT City marks an exciting new chapter for our university and I'm incredibly proud to see us become part of India's remarkable educational legacy." The event witnessed high-profile members from the industry, academia and government officials from both Australia and India.

IBM ICE is UOW India's inaugural, global industry partner contributing to cutting-edge curriculum and highly valued industry engagement in artificial intelligence, cloud computing, big data and analytics, cyber security, gaming, contextual mobility and block chain technology. The partnership will also enable placement opportunities for the students.

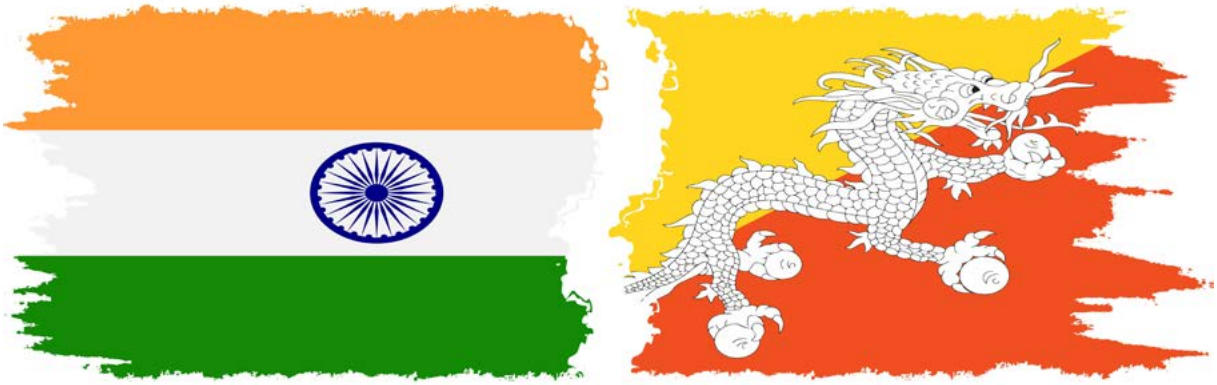
Marisa Mastroianni, Managing Director and Group CEO at UOW Global Enterprises, said, "Students at our GIFT City campus will experience the same high standards as our Australian and global campuses, including those in Dubai, Malaysia and Hong Kong. Our first cohort will receive a fully funded trip to our Dubai campus, immersing them in our global network and international collaborations. UOW India students will join more than 7,000 students offshore, and upon graduation join an alumni community of more than 1,90,000 from 199 countries. We're excited to witness our first cohort of students grow into the leaders of tomorrow."

- **Students will need an undergraduate degree or relevant work experience and a satisfactory English language assessment to apply for the postgraduate programmes.**
- **The institute has already introduced scholarships for students applying for the November intake. These are:**

(i) Women Leaders in FinTech scholarship offers 50% fee waiver.

(ii) 'Inaugural Scholarship' which offers students a 50% tuition reduction on all Master's degrees for the first trimester and a 25% discount on all Graduate Certificate Programmes for the first trimester.

Smt Sarada Devi Ravutu



Indo-Bhutan collaboration for green energy

Bhutan's commercial electricity predominantly comes from abundant hydropower and has even been exported to India. But hydropower is heavily dependent on seasons. In winter as the river system is at its lowest, this Himalayan country must rely on imported energy from India.

Hydropower cooperation has been an important pillar of the India-Bhutan bilateral economy and a productive partnership for both countries.

Recently, India and Bhutan agreed to extend the energy partnership to non-hydro renewables such as solar as well as green initiatives for hydrogen. Prime Minister Modi reaffirmed India's commitment to its unique ties of friendship and cooperation with the neighbouring country.

The Indian side assured necessary technical and financial support for projects in these areas.

India has been a major market for clean energy deployment — solar and wind energy.

The two governments jointly hosted a key session on renewable energy financing in Thimphu that took place at the Bhutan-India Renewable Energy Roundtable.

This roundtable brought together leaders from both countries to discuss sustainable financing options for renewable energy projects.

Pradip Kumar Das, Chairman and Managing Director of the Indian Renewable Energy Development Agency (IREDA), representing India highlighted

- IREDA's willingness to support Bhutan's renewable energy growth through affordable, long-term loan options at competitive interest rates.
- Rooftop solar is a potential area for development, which could complement Bhutan's hydropower.

IREDA is ready to extend support to Bhutan's renewable energy initiatives within the regulatory framework of the Reserve Bank of India (RBI) and the Ministry of New and Renewable Energy (MNRE), Government of India.

This approach would encourage greater investment in Bhutan's solar sector, contributing to the broader renewable energy goals shared by both nations.

Smt Gaayathiri G

74-year-old albatross lays an egg

In December 2024, a Laysan albatross named Wisdom astounded scientists by laying an egg at the age of 74, making her the world's oldest known wild bird to do so. Wisdom was first banded in 1956 at the Midway Atoll National Wildlife Refuge in Hawaii and she has been a subject of fascination ever since.

Laysan albatrosses are large seabirds known for their impressive wingspans and long lifespans, typically living up to 68 years. They are monogamous creatures, often mating for life and returning annually to the same nesting grounds to raise their young. These birds usually lay one egg per year, with both parents sharing incubation duties over approximately two months. After hatching, the chick remains in the nest for five to six months before fledging and venturing out to sea. Wisdom's life has been extraordinary. Since her initial banding, she has likely laid 50 to 60 eggs and successfully raised as many as 30 chicks. Her resilience is evident, having survived numerous challenges, including natural predators and environmental changes. In recent years, her long-term mate, Akeakamai, has not been observed, yet Wisdom has adapted by finding a new partner, demonstrating the species' remarkable adaptability.

This recent event highlights the importance of conservation efforts. The Midway Atoll serves as a critical habitat for millions of seabirds, including the Laysan albatross. Protecting such environments ensures that these magnificent creatures continue to thrive. Wisdom's story is a testament to the success of wildlife conservation and the enduring spirit of nature.

For young learners, Wisdom's journey offers valuable lessons in resilience, adaptability and the significance of preserving our natural world. Her ability to continue reproducing at such an advanced age challenges our understanding of animal biology and underscores the wonders of the natural world.

Bird banding, also known as bird ringing, is a technique that involves attaching a small, numbered metal or plastic tag to a bird's leg or wing to identify it. Bird banding helps researchers and conservation managers study a bird's life cycle, habits and movements. This information can help conserve native birds and their habitats.

Kum Anu Narayan

India re-elected to UN Peacebuilding Commission

In November, India secured re-election to the **United Nations Peacebuilding Commission (UNPBC)** for the 2025–2026 term, reaffirming its dedication to fostering global peace and stability. This milestone underscores India's significant and sustained contributions to international peace building initiatives.

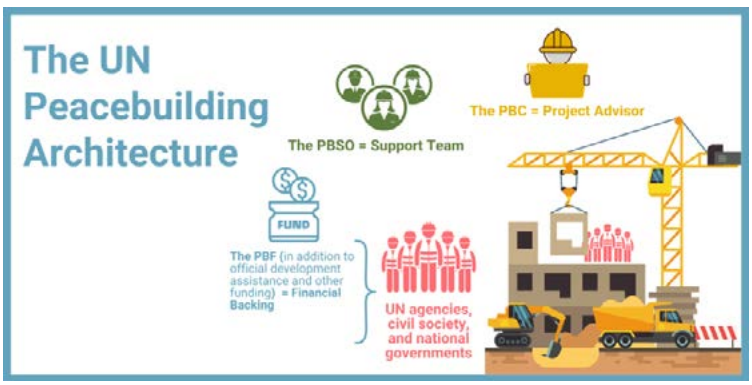
India has been a member of the Peacebuilding Commission since its inception in December 2005 and remains an active contributor to its goals. As a founding member of the PBC and a major supporter of UN peacekeeping missions, India continues to play a pivotal role in advancing global peace agendas.

The role of the UN Peacebuilding Commission

UNPBC was created to support conflict-affected countries in their peace building and reconstruction efforts. Acting as a bridge between the UN General Assembly and the Security Council, UNPBC facilitates a strategic, integrated approach to post-conflict recovery, helping nations transition from instability to sustainable peace.

The commission's key objectives include:

- Advising on peace building priorities and aligning efforts across the UN system.
- Enhancing coordination among humanitarian, development and peace actors.
- Providing a platform for dialogue and collaboration among stakeholders, including peacekeeping operations, UN country teams and regional actors.



By advising the UN's principal organs and fostering inter-agency cooperation, UNPBC strengthens global efforts to sustain peace and stability.

India's role in strengthening peace building efforts

India's re-election highlights its active engagement in facilitating country-specific and regional dialogues within UNPBC. These discussions enable nations to share best practices, develop cohesive strategies and address the unique challenges of post-conflict recovery.

India has consistently supported initiatives that integrate humanitarian assistance, development and peace building efforts. **India's peacekeeping contributions, along with its diplomatic efforts within UNPBC, have made a tangible impact on global stability.**

The path forward

As India assumes its role for the 2025–2026 term, it is expected to continue championing coordinated peace building approaches that emphasize inclusivity and long-term sustainability.

Smt Meenakshi S

Honorary General rank conferred on Nepal Army Chief

President Droupadi Murmu recently conferred the Honorary Rank of General of the Indian Army on **Suprabal Janasewashree General Ashok Raj Sigdel,** Chief of the Army Staff, Nepali Army, at a special investiture ceremony held at Rashtrapati Bhavan for his commendable military prowess and immeasurable contribution to further fostering Nepal's long and friendly association with India. General Sigdel had been to India on a significant official visit which was a key step in strengthening the defence ties between the two nations.

General Sigdel, an alumnus of the Nepali Military Academy, was commissioned into the Nepali Army in February 1987. The General Officer assumed command of the Nepali Army as Chief of Army Staff in September 2024. The citation presented to him highlighted that his selfless service, exemplary integrity, devotion, loyalty and commitment to excellence reflected the finest traditions of military service and brought distinct credit upon himself and the Nepali Army. During his illustrious military career spanning nearly four decades, he has demonstrated exceptional determination and courage. General Sigdel's command assignments include an independent infantry unit (Gulma Battalion), counter-insurgency and jungle warfare school, Brigade, Division and Valley command.

His key senior staff appointments include Chief of General Staff, Acting Chief of Staff, Director General of Department of Staff Duties (Policy and Plans), Master General of Ordnance, Inspector General and Director of Military Operations.

Representing the government of Nepal and Nepali Army on overseas assignments, the General officer has had the honour of serving in former Yugoslavia, Central Asian Republic Tajikistan and Liberia as part of UN peacekeeping operations.During his distinguished career with a wealth of experience, he has been decorated with the "Sainik Dirgha Sewa Patta" and "Suprabal Janasewashree" awards.

DO YOU KNOW ?

There has been a unique tradition of conferring the title of Honorary General on the Army chiefs of Nepal and India since 1950. Nepal's President Ramchandra Paudel had last month conferred the honorary rank of the 'General of Nepal Army' to Indian Army Chief General Upendra Dwivedi at a special ceremony at Rashtrapati Bhawan - also known as Sheetal Niwas - in Kathmandu.

Smt Shyamala Viswanathan

Indian Chemical Council honoured

This year's recognition of ICC underscores the Council's role in promoting chemical safety, industry-wide security and compliance with international norms.

The Indian Chemical Council (ICC) has been honoured with the 2024 OPCW-The Hague Award, marking a significant milestone for the Indian chemical industry. The award was presented during the 29th session of the Conference of the States Parties (CSP) to the Organisation for the Prohibition of Chemical Weapons (OPCW) on 25th November in The Hague. Delegates from 193 member states and global chemical industry leaders witnessed the ceremony, **which for the first time recognised the contributions of a chemical industry organization for chemical safety and compliance with Chemical Weapon Convention (CWC).**

ICC is the Apex national body representing all branches of India's chemical industry, including organic/inorganic chemicals, plastics and petrochemicals. It was established in 1938 to support and drive the growth of India's chemical industry.

This year's recognition of ICC underscores the Council's role in promoting chemical safety, industry-wide security and compliance with international norms.

OPCW-The Hague Award

- OPCW is headquartered – in The Hague, Netherlands.
- It inspects and monitors the facilities and activities of member countries.

- Established in 2014 in collaboration with The Hague Municipality, recognizes individuals and organizations that play a significant role in advancing the goals of the Chemical Weapons Convention.
- Recipient receives a medallion, a certificate and share of the €90,000 award fund.

- OPCW was awarded the Nobel Peace Prize in 2013 for its extensive efforts to eliminate chemical weapons.

The Chemical Weapons Convention

CWC, a multilateral treaty, came into force in 1997, and presently has 193 State Parties. OPCW, with its Secretariat in The Hague, is the implementing body for the Chemical Weapons Convention, with a mission to achieve a world free of chemical weapons. **It prohibits the development, production, storage and transfer of chemical weapons. It destroys them within a specified time period.**

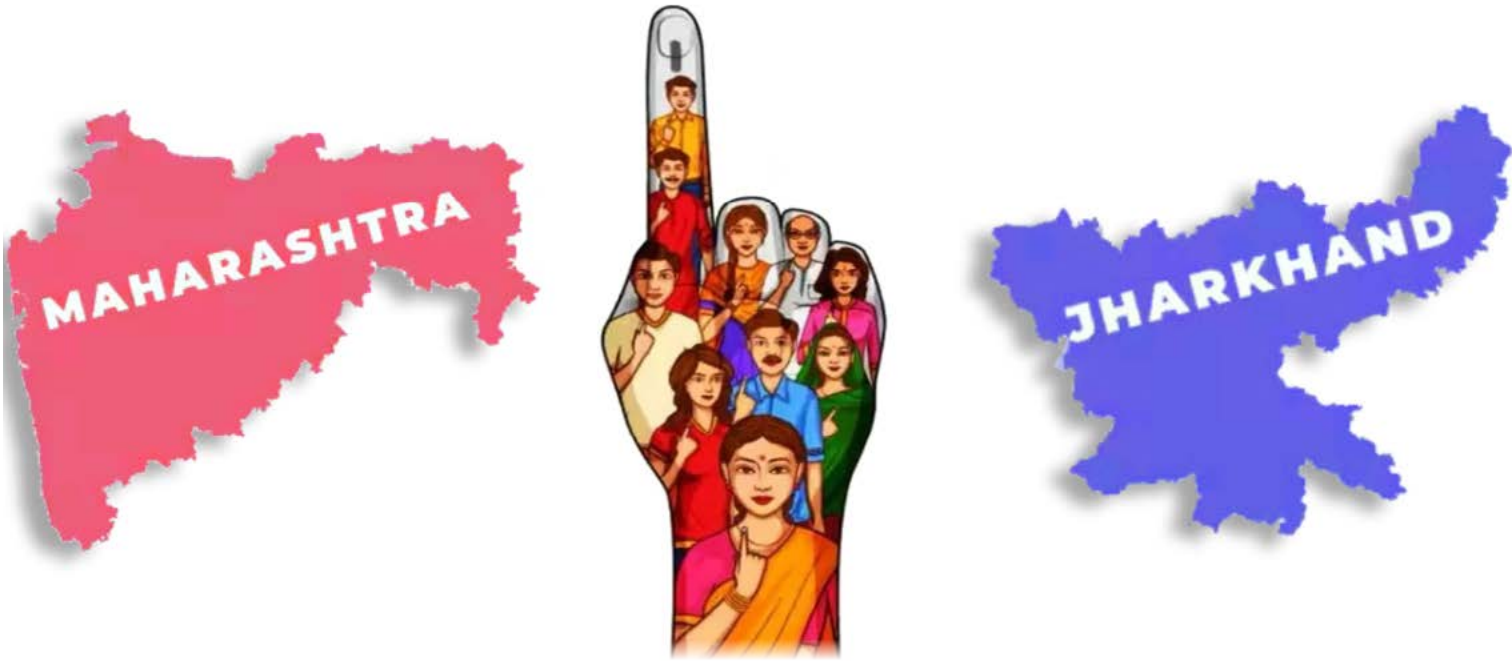
ICC's exemplary contributions

As the leading representative of India's USD 220 billion chemical industry, ICC accounts for over 80% of the sector. The organization has championed initiatives to ensure chemical safety and security, thereby enhancing India's adherence to the CWC.

Their focus on enhancing industry security and advancing national implementation of the Convention in one of the world's largest chemical sectors demonstrates an outstanding commitment to responsible industrial stewardship and the aims of the CWC in this regard.

Key achievements

- Helpdesks to facilitate industry compliance and streamline e-filing processes for chemical declarations.
- Launching the Nicer Globe initiative, a ground-breaking programme that improves chemical transportation safety through real-time monitoring and emergency response systems.
- Advancing safety and security through the Responsible Care (RC) programme, including the introduction of a Security Code to address emerging threats.



Indian elections – an enigma

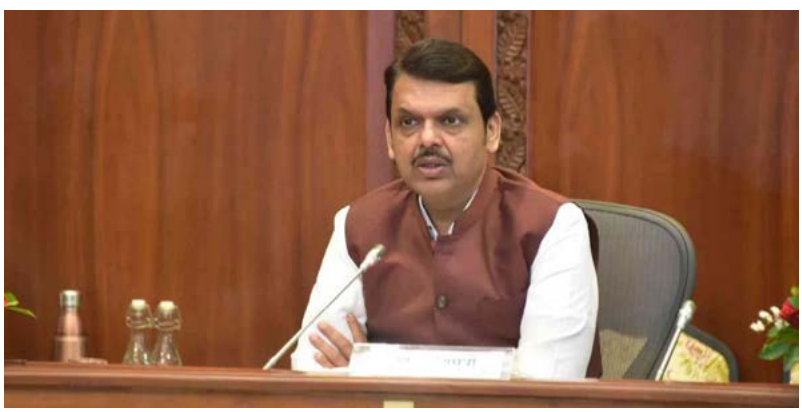
The November 2024 round of elections to the State Assemblies of Maharashtra and Jharkhand forcefully reinforced the point that the wisdom of the Indian electorate cannot be underestimated and it is becoming increasingly difficult to predict election outcomes. In both the states, the 'pollsters' and 'analysts' failed miserably.

In Maharashtra, almost all the surveys projected a victory for the Maha Vikas Aghadi of the Uddhav Thackeray Shiv Sena, Congress, NCP (Sharad Pawar) and some other parties. But it was the **Maha Yuti** led by BJP, that virtually swept the polls. In Jharkhand, while a BJP victory was projected, it was the **Mahagathbandhan** led by the Jharkhand Mukti Morcha, that posted a decisive win and formed the government.

Maharashtra

The BJP led Maha Yuti registered a landslide victory with 49.30% of the popular vote and 235 seats out of the total 288 thus retaining power in the state. It moved from 187 seats in the previous assembly to 235. BJP emerged as the single largest party with 132 seats to its credit. Despite the comfortable win, this alliance had a tough time electing a chief minister. Due to the nature of this alliance and the fact that the outgoing chief minister was Eknath Shinde, it was not all that easy for BJP to have its nominee as the CM. However the alliance was able to arrive at a consensus and **Devendra Fadnavis** was sworn in as the CM on 5th December.

Devendra Fadnavis was born in Nagpur in 1970. His father Gangadhar Fadnavis was a member



of the Maharashtra Legislative Council and his mother Sarita had also been in public life. Fadnavis did most of his secondary schooling with Saraswathi Vidyalaya and then his higher secondary in a Junior college in Nagpur. He did his Bachelor of Law (LL.B) from the Dr.Babasaheb Ambedkar college of Law, Nagpur University. He is also a Post graduate in Business Management and holds a diploma in Methods and Techniques of Project Management from DSE-German Foundation, Germany.

His political journey started very early in his life. He was active in the RSS and was part of its student wing Akil Bharatiya Vidyarti Parishad (ABVP) during his college days. In 1992 he became a corporator and in 1997 when he was 27, he became the youngest Mayor of Nagpur and the second youngest Mayor in the history of India. His contribution in tackling the city's water crisis and his efforts in shoring up the resources of the Municipal Corporation were immense. Since 1999 he has been serving as an MLA. He became the president of Maharashtra State Unit of BJP in 2013.

In 2014, when he was 44 years, he was chosen to be the CM by BJP. Fadnavis acquitted himself admirably well in this tenure. In 2019 after the break up with the Shiva Sena he had a 5 day stint as CM. After being the Deputy CM from 2022 under Eknath Shinde, he has again assumed the CM's responsibility after a spectacular win in the elections.

Due to his aggressive campaign against corruption in his early years he earned the sobriquet of Mr. Clean. As the CM earlier he had ushered in economic success through industrial growth. He had successfully conducted the Make in India summit and the **"Magnetic Maharashtra"** summit. Both together had **MOUs signed to the tune of INR 20 trillion.**

Devendra Fadnavis is credited with the launch of various mega infra projects- the Mumbai-Nagpur Samruddhi expressway, Mumbai and Pune Metro expansions, the coastal road project, Mumbai trans-harbour link and Water grid for Marathwada, to name a few. He also established a war room to monitor the infra projects.

He was also the one who instituted the backward classes commission in 2015.He introduced many welfare schemes and reservations for the Marathas (which was later stayed by the court). His deft handling of the Maratha reservation agitation was praised by all.

At the political level too, he is a shrewd strategist. His contribution to the Mahayuti's landslide win this year was mammoth, both in terms of strategy and field work. Devendra Fadnavis comes out as a man with, vision, extensive legislative and administrative experience, keen political strategy and unwavering commitment. Many might be tempted to say that with such a man at the helm, Maharashtra is in for an excellent spell of governance.

Jharkhand

The **India bloc** led by Hemant Soren's Jharkand Mukti Morcha (JMM) romped home comfortably, winning 56 seats in a house of 81 securing 44.37% of the popular vote.

JMM's tally was 34 seats. The NDA alliance led by BJP won 24 seats with a vote share of 38.14%. In Jharkhand there was absolutely no doubt about the chief ministerial candidate. **Hemant Soren,** the working President of JMM was sworn in as the Chief Minister on 28th November.

Hemant Soren was born in Nemra in Ramgarh District, Jharkhand in 1975. His father Shibu Soren is a veteran politician, who has himself been the CM of Jharkhand, three times. He is also the founder of the JMM. After completing his intermediate course, Hemant Soren enrolled himself in BIT, Mesra, Ranchi for studying Mechanical engineering,but he dropped out.

Hemant Soren has had a successful political career. He started as a Rajya Sabha member in June 2009.He then became a member of the Jharkhand Legislative Assembly in December 2010 and served the state as a Deputy CM from 2010 to 2013. In July 2013 he was sworn in the CM of Jharkhand. He again assumed office as the CM in 2019 and in July 2024 after a break, due to his arrest. In November he was again sworn in as the CM subsequent to the victory of the India bloc.

He has the reputation of being a fighter for the cause of the tribals. He participated in the **Pathalgadi agitation.** In May 2016 the central government introduced two ordinances which enabled the transfer of tribal land to government and other commercial purposes. Around the same time in 2016-17 the Jharkhand Assembly also passed bills amending the Chhota Nagpur and the Santhal Pargana tenancy acts. The amendments were to facilitate the use and sale of tribal land for non – agricultural purposes and other developmental purposes by the government. There were huge protests against these and the Pathalgadi movement gained enormous support among the people. The central ordinances were withdrawn and the bills passed by the State were returned by the President without assent.

Hemant Soren participated in this movement and stood alongside the tribals. He is also a **strong advocate of liquor ban** in the state and an opponent of the direct benefit transfer scheme for ration. His people centric stand has helped him win the elections decisively despite the enforcement directorate's "land grabbing" case against him. He has started on the right note by soliciting the co operation of the people for working towards a **"Golden Jharkhand".** The people are looking forward to a sensitive government and good governance.

Kum Pavithra S

Clean Ganga Mission introduces Dolphin Ambulance

The Clean Ganga Mission has a dolphin ambulance service, a first-of-its-kind initiative to protect the endangered Gangetic dolphin population. The Gangetic dolphin, India's national aquatic animal, is a key species in the Ganga River ecosystem and plays a vital role in maintaining ecological balance. However, pollution, habitat destruction and poaching have led to a sharp decline in their numbers. The dolphin ambulance is a significant step towards conserving this species under the ***Namami Gange*** programme, which focuses on rejuvenating River Ganga.

The dolphin ambulance is equipped with facilities for emergency rescue and treatment of stranded, injured or sick dolphins along the Ganga River. The service is particularly crucial as the Gangetic dolphin is blind, relying on echolocation to navigate and find prey. The highly polluted waters and shrinking habitats make survival even more challenging for these creatures. **The ambulance service aims to assist in quick response efforts to save dolphins in distress and transport them to specialized centres for further care.**

The government has allocated ₹1 crore for this project, and the service will operate in areas where the Gangetic dolphin population is concentrated, including Uttar Pradesh, Bihar and West Bengal. The initiative is part of broader conservation efforts under the **National Mission for Clean Ganga (NMCG),** which also focuses on reducing pollution levels in the river, improving water quality and preserving aquatic life.

The Gangetic dolphin, listed as endangered by the International Union for Conservation of Nature (IUCN), faces significant threats from human activities such as sand mining, fishing, and dam construction, which disrupt their natural habitat. The introduction of the dolphin ambulance highlights the government's commitment to reversing this trend and ensuring the survival of the species.

This initiative also raises awareness about the importance of preserving River Ganga's biodiversity and encourages local communities to participate in

conservation efforts to protect these unique and endangered dolphins.

Here are some key facts about the Gangetic dolphin:

1. The Gangetic dolphin's scientific name is ***Platanista gangetica.***
2. It was declared India's national aquatic animal in 2009 to raise awareness for conservation.
3. These dolphins are functionally blind, lacking a developed lens in their eyes.
4. They rely on echolocation for navigation, communication and hunting.
5. Gangetic dolphins live for 20 to 30 years, though many threats may reduce their life span in the wild.

Shri Ramaswamy R

First Bodoland Mohotsov

The Mohotsov brought together indigenous Bodo people residing in Bodoland and also from other parts of Assam, West Bengal, Nepal and other international border areas of the North East.

Bodoland comprises four districts of Assam namely **Kokrajhar, Chirang, Baksa and Udalguri**. The districts are on the northern banks of Brahmaputra on the foothills bordering Bhutan and Arunachal Pradesh. Known as **Bodoland Territorial Region (BTR),** the region enjoys autonomy within State of Assam and have their own Bodoland Territorial Council (BTC) of 40 elected members with additional 6 members appointed by the Assam Governor. **Bodos numbering 12 – 14 million are the largest community among Assam's notified Scheduled Tribes, and make about 5-6% of the state's population.**

The first Bodoland Mohotsov was a two-day event organised on 15th and 16th November in New Delhi. The theme of the mega utsav was **Peace and Harmony for Prosperous Bharat** and celebrated the socio-economic success of Bodo Peace Accord (BPA 2020) which ended violence and conflict in a democratic set-up.

The Mohotsov brought together indigenous Bodo people residing in Bodoland and also from other parts of Assam, West Bengal, Nepal and other international border areas of the North East. The richness of cultural and linguistic heritage, ecological biodiversity and tourist potential of Bodoland were brought to the fore.

The two day event had sessions such as "The rich Bodo Culture, tradition and Literature Contributing towards Indian Heritage and Traditions".

In recent times, more than 10 thousand youths in Assam have given up violence and returned to the mainstream of development. For BTR, Centre had granted a special package of ₹1500 crores and more than 700 crores spent to develop infrastructure. The Assam government too is spending ₹800 crores every year for the development of Bodoland and ₹5 lacs granted to each family who were victims in the conflict. The **Scheme for Economic Empowerment of De Notified and Nomadic Communities (SEED)** has contributed to welfare of their youth through skilling, entrepreneurship and employment. Two editions of Durand Cup, Asia's oldest Football tournament were held in Kokrajhar with participation of teams from neighbouring nations. The Bodo Literary Festival also being held in Kokrajhar for the last 3 years.

Many of the rich Bodo art and crafts have received Geographical Indication (GI) tag which has helped in maintaining the identity of the products. The government sponsored Sericulture Mission and Handloom Mission have boosted the tradition of weaving existing in every Bodo family, **Dense forests of Bodoland, once hideouts of militant youth are becoming tourist destinations and employment opportunities.**

The medical care for the people of Assam and Bodoland has seen a quantum jump, with four AIIMS type big hospitals, separate cancer specialty hospital, increase in number of medical colleges from 6 to 12, and plans for opening 12 more medical college hospitals.

PM Modi said the golden era of development of Assam and North East whom he called *Ashtalakshmi,* had begun in the last decade, with **25 crore people coming out of poverty** due to the policies of the government.

Smt Vaishnavi V

ISRO's GSAT-N2 deployed by SPACEX

SpaceX successfully launched the Indian Space Research Organisation's (ISRO) GSAT-N2 communication satellite from Canaveral Space Force Station in Florida in November 2024. It was carried by the SpaceX's Falcon 9 rocket marking the first collaboration between ISRO and SpaceX.

GSAT-N2 Satellite

The satellite GSAT-N2, with a lift-off mass of 4,700 kg has a 14-year lifespan and is a high-throughput communication satellite equipped with Ka-band technology designed to

- to enhance broadband connectivity
- provide in-flight internet connectivity
- improve the communication infrastructure, particularly in remote regions
- support initiatives like the Smart Cities Mission and boost India's digital infrastructure.

The satellite is equipped with 32 user beams, comprising 8 narrow spot beams over the northeast region and 24 wide spot beams over the rest of India. These 32 beams will be supported by hub stations located within mainland India.

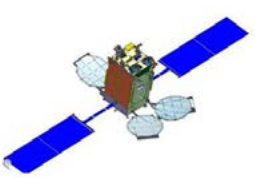
The Ka-Band HTS (High Throughput Satellite) communication payload provides a throughput of approximately 48 Gbps. The payload consists of three parabolic 2.5-metre deployable reflectors.

The satellite carries a Sun Sensor, Earth Sensor, Inertial Reference Unit (IRU), and Star Sensor. All sensors provide altitude data in the form of absolute altitude, while the IRU provides altitude rates and incremental angles about all the axes.

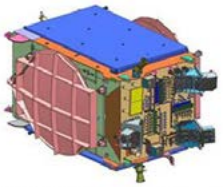
SpaceX's Falcon 9

Falcon 9 is a two stage reusable rocket which is designed and manufactured by SpaceX for transporting people and payloads into Earth orbit and beyond. Falcon 9 is capable of carrying up to 22,800kg to the Low Earth Orbit (LEO) and up to 8,300kg of payload to Geostationary Transfer Orbit (GTO) 4.

It comes with a two stage rocket with the first stage run by nine Merlin engines and a second single use Merlin vaccum engine. According to SpaceX, this was the 19th flight for the Falcon 9.



GSAT-N2 Deployed Configuration



GSAT-N2 Stowed configuration

GSAT-N2 in Cleanroom

GSAT-N2 undergoing Vibration Test

DO YOU KNOW ?

- **Ka band technology** - Ka-band refers to a range of frequencies from 27 GHz to 40 GHz. The main use of Ka-band is communication with satellites.
- **Throughput** refers to the amount of data a satellite can transmit. HT satellites usually transmit 10 to 100 times higher than a conventional satellites..
- **Spot beam** - A spot beam is a satellite signal sent by a high-gain antenna to cover a limited geographic area on Earth transmitting vastly higher amounts of information.
- **Altitude data** - A spacecraft's altitude is its orientation in space, and the motion of a rigid spacecraft is defined by its position, velocity, altitude and altitude motion.
- **Merlin engine** - Merlin is a family of rocket engines developed by SpaceX used in Falcon 9 and Falcon Heavy launch vehicles.
- **Absolute altitude** is the vertical distance of the aircraft above the terrain over which it is flying. It can be measured using a radar altimeter (or "absolute altimeter"). Also referred to as "radar height" or feet/metres above ground level (AGL).
- **True altitude** is the actual elevation above mean sea level.
- **Incremental angle** is a relative angle measurement that uses an encoder to convert angular motion into a digital or analogue code. The encoder uses an index or home position to track the number of full turns of the code disc. The index creates a single pulse per rotation.

Shri Sridhar P

ONE DAY ONE GENOME initiative

A genome is the complete set of DNA or genetic material in an organism. It contains all the information required for an organism to develop and function.

The Department of Biotechnology (DBT) and Biotechnology Research and Innovation Council (BRIC) introduced the "One day one genome" (ODOG) initiative to showcase the enormous microbial potential of India. It aims to publicly release a fully annotated bacterial genome from India, along with a detailed summary, info graphics and genome data. The details of this initiative was launched on the first foundation day of BRIC, held at National institute of immunology (NII, New Delhi).

Pivotal role of microorganisms in sustainging life

Microorganisms are fantastically ubiquitous. Unseen to the naked eye, they quietly go about their routine, yet their roar in sustaining life is loud and clear. Microorganisms are an indispensable part of the human body. Research shows that there are more microbial organisms than the number of human cells. They perform important roles in digestion, development of immunity, controlling inflammation etc. Most infections too are caused by microorganisms which make us postulate that they have a personality of their own, some bent on doing good and some with evil designs. The role of microorganisms in sustaining plant life and soil formation is truly extraordinary. Life on earth is possible because microorganisms perform their ordained roles with remarkable precision.

One day one genome

This initiative will highlight the unique bacterial species found in our country and emphasize their critical roles in environment, agriculture and human health. Microorganisms play a crucial role in biogeochemical cycles, soil formation, mineral purification, degradation of organic waste and toxic pollutants. They help maintain homeostasis (a state of balance to survive and function correctly) of our planet.

Genome sequencing will allow visualization of the hidden potential of our microbial world. Sequencing data can be analysed to find the genome encoding capacities of various enzymes, determine anti-microbial resistance.

This initiative aims to release a fully validated bacterial genome. This will be complimented with a graphic summary. Genome sequencing is fundamentally essential in modern times to keep a tab on our genetic wealth.

Newer technologies are increasingly complementing genome engineering to unleash its potential in fields ranging from health care to agriculture to environmental sciences. A data base of our microbial genetic wealth will enable better use of CRISPR like technologies to augment scientific intervention and genetic engineering. Genome sequencing has transformed the enigmatic gene from an abstract concept in a botanical experiment to a powerful instrument of social control.

CRISPR (Clustered regularly interspaced short palindromic repeats) is a technology that research scientists use to selectively modify the DNA of living organisms. CRISPR was adapted for use in the laboratory from naturally occurring genome editing systems found in bacteria.

Smt Shubha T R

Bima Sugam

Digital insurance ecosystem

India, currently, the 10th largest insurance market, is expected to see rapid growth to be the 6th largest by 2032.

Government of India, with an eye on Viksit Bharat 2047, has made an ambitious launch of a new landscape for insurance sector – "Insuring India by 2047 – Insurance for All".

Insurance Regulatory and Development Authority of India (IRDAI) has formulated the visionary programme,

Bima Trinity initiative

- Bima Sugam
- Bima Vistaar
- Bima Vahak

to increase the availability, affordability and accessibility of insurance products to Indian public and address inefficiencies at every stage of the insurance value chain.

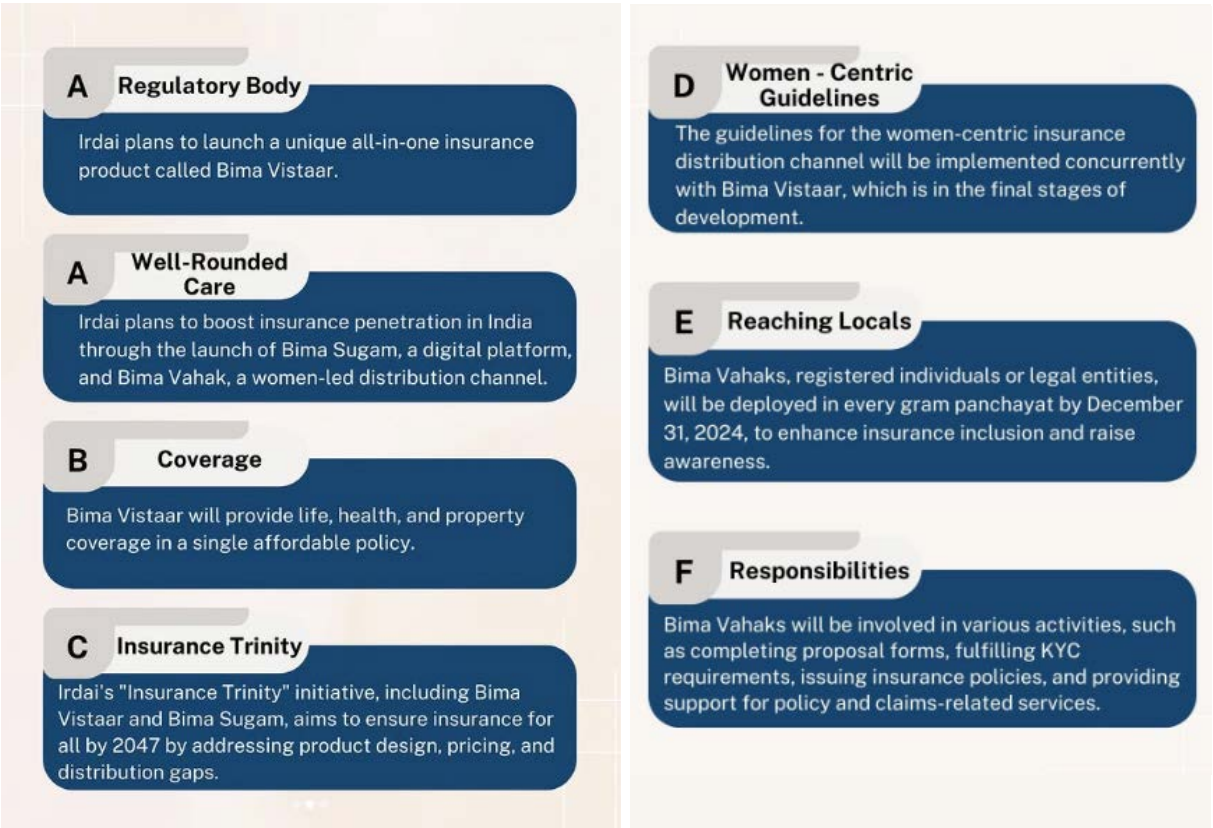
Bima Sugam – Game changer!

IRDAI (Bima Sugam - Insurance Electronic Marketplace) Regulations, 2024, aims to establish a Digital Public Infrastructure, Bima Sugam, with the predominant goal of universalising and democratising insurance services.

Bima Sugam is an e-commerce platform, a ground breaking initiative tailored for insurance products, backed by the Life Insurance Council and General Insurance Council. It acts as a centralized hub, aggregating both life and non-life insurance policies offerings from various insurance companies, all under one virtual roof.

It is a monumental step in revolutionising synergy amongst the three pillars of the Insurance ecosystem, namely, the policyholders (customers), the insurers and the intermediaries.

It aims for a seamless, end-to-end digital experience, covering everything from policy purchase,



renewals, claim settlements and grievance redressal.

It offers a one-stop solution facilitating convergence of all stakeholders and insurance services fostering transparency and efficiency across the entire insurance value chain.

Benefits

Streamlined documentation - Digitized policies accessible through e-insurance accounts.

Reduced premium – Facilitates direct sales between insurance companies and consumers, translating to lower premiums.

All in one place - Unified platform, a single window access to policies.

India is all set to be the beacon of global insurance industry. Its diversity and population size may prove Bima Sugam to be quite successful and a model for other developing economies.

DO YOU KNOW ?

- **Bima Vahak aims to increase insurance accessibility and awareness in every Gram Panchayat.**
- **Bima Vistaar an all-in-one insurance product that provides coverage for life, health, personal accident and property risks in rural India.**
- **IRDAI is an autonomous and statutory body under the jurisdiction of Ministry of Finance, Govt. of India, with a mission to protect the interests of the policyholders, to regulate, promote and ensure orderly growth of the insurance industry.**
- **GoI raised the level of foreign direct investment (FDI) in domestic insurers from 49% to 74% , and there are expectations that the level will increase to 100%.**
- **Policybazaar, Digit and Acko from India are among few InsurTech companies globally that had crossed the USD 1 billion valuation mark by 2021.**

Kum Kavya R

INDIAai
A MEITY, NEGD & NASSCOM INITIATIVE

India launches AI Data Bank

"Artificial Intelligence (AI) is an essential tool but must be used optimally with responsible handling," stated Dr. Jitendra Singh, Union Minister of Science and Technology and Minister of Earth Sciences at the 7th edition of the ASSOCHAM AI Leadership Meet 2024. He introduced India's first practical AI Data Bank.

The event, themed **"AI for India: Advancing India's AI Development - Innovation, Ethics, and Governance",** showcased India's roadmap for using the full potential of artificial intelligence for maximum good while minimising potential harm.

But what is an AI Data bank? For us to understand that, we must first understand how most AI systems work.

At the most basic level AI systems are pattern recognition software. They are able to look at different kinds of data and find similarities. By looking at the components of the data that are similar, AI is then able to generate something similar based on the user's request.

For AI systems to know how to recognize similarities in the data in the first place they need to be exposed to large amounts of data. While this data can come from anywhere, there are often issues of copyright, privacy and plagiarism that need to be considered. What if an AI trained on a particular artiste's songs is used to then generate a song that sounds similar and is used to steal potential revenue from the original artiste?

To prevent this, measures are taken to curate data banks that contain ethically sourced data that can then be used to train AI. **And by curating this database, specific kinds of data can be stored, catalogued and prepared to more easily and ethically train AI systems.**

This is the goal with India's first Data Bank.

This initiative aims to accelerate AI growth and innovation by providing researchers, startups and developers access to high-quality, diverse datasets which can be used to create inclusive AI solutions. This step aligns with India's goal to utilize AI for predictive analytics in fields such as disaster management, national security, space exploration and cyber security.

Dr. Jitendra Singh reaffirmed India's commitment to ensuring transparent and fair AI systems, with clear frameworks to address ethical concerns and data privacy. He also emphasized the need for India to actively participate in global platforms such as the United Nations and G20 to promote a rules-based AI framework.He called for collaborative efforts from all stakeholders to ensure AI's integration for sustainable and inclusive development.

The launch of the AI data bank is a testament to India's commitment to developing AI responsibly and ethically, and it is a sign that India is well on its way to becoming a global leader in AI innovation.

Smt Silpa Nandakumar

BHU-NEER portal

A centralized platform for managing groundwater withdrawal permits, "Bhu-Neer" was launched recently by the Honourable Minister of Jal Shakti, C.R. Paatil. It was developed by Central Ground Water Authority (CGWA), in collaboration with the National Informatics Centre (NIC) and is now live for public use. The aim is to regulate groundwater resources across the country efficiently and sustainably, ensuring transparency and sustainability in groundwater usage.

The "Bhu-Neer" portal is another step towards promoting 'ease of doing business', a vision of the Prime Minister, by making groundwater regulation a seamless and faceless exercise. It was launched during the 8th India Water Week-2024.

The portal gives access to important data on policies, groundwater compliance (adherence to the rules and regulations) and sustainable practices by the citizens. **It ensures a user-friendly experience for common public and business people alike.** Informative features including permanent account number-based identification systems, issue of No Objection Certificates with quick response codes for ease of verification and so on, are made available. Moreover, the portal allows to track the status of project applications.

Clarification of queries on groundwater withdrawal policies and payment of statutory fees can be conveniently executed through this service.

The Central Ground Water Authority (CGWA) is in charge of regulating ground water development and management in India. It was constituted under the Environment (Protection) Act of 1986. CGWA issues advisories, public notices and grant No Objection Certificates (NOC) for groundwater withdrawal, a large part of which will now be done through Bhu-Neer.

Approximately 30% of the world's freshwater is stored as groundwater but it can take hundreds to thousands of years to replenish. Similar to drinking water through a straw, extracting water from a well lowers the water table, unless it is balanced out by recharging through rain. It is high time that we consider water as a shared resource that is not infinite.

"Bhu-Neer" is a great boost to sustainability as the portal encourages the implementation of sustainable groundwater extraction practices, thereby protecting this vital resource for future generations.

The International Gita Mahotsav – 2024

The Gita stands out as the epitome of all spiritual teachings as its knowledge applies to all human beings and does not postulate any sectarian ideology.

The Bhagavad Gita is among the greatest of spiritual guides that the world has ever known. This is acknowledged by scholars cutting across religions, regions and races. The Bhagavad Gita is the Divine discourse given by Lord Krishna to Arjuna.

In this, Sri Krishna reveals the science of self-realization and the process by which a human being can establish the relationship with God. The Gita stands out as the epitome of all spiritual teachings as its knowledge applies to all human beings and does not postulate any sectarian ideology.

It is widely believed that the Bhagavad Gita was revealed to the world on a *shukla paksha* (waxing moon) *ekadasi* of the month *Margashirsha* and every year this day is celebrated as Gita Jayanti. This year the Gita Mahotsav was celebrated from 28th November to 15th December at Kurukshetra, Haryana.

Local to Global

The Haryana Government has been celebrating the Gita Mahotsav since 1989 along with the Kurukshetra Development Board. Initially, religious and cultural programmes were the main events organised. Progressively, a wide range of social and academic events were incorporated. **Blood donation camps, medical camps, mass weddings of youth from the economically weaker sections, adoption of orphans and other welfare programmes became an integral part of the Mahotsav.**

In 2016 the Haryana Government decided to celebrate the festival as International Gita Mahotsav and more than two million people visited Kurukshetra that year. That was a significant milestone in the history of the Gita Jayanti celebrations.

This year Tanzania has got on board as a partnering country and Odisha as a partnering state.

Highlights

Events included complete recitation of the Gita, Global Gita chanting, Gita *yajnas* and *pujans, Sant Sammelans,* Bhajans and *Aarti,* seminars on the Gita, *Gita Shoba Yatra*, All India Devasthanam Conference, State level exhibitions, Pavilions of Haryana, Odisha and Tanzania, Confluence of craftsmen, Book fairs, Cultural evenings and many more.

There were two significant milestones this year. **Madhya Pradesh earned a Guiness world record for the recitation of the Bhagavad Gita**. At the Lal Parade Ground in Bhopal, **over 5000 acharyas recited the Karma Yoga chapter of the Gita.** Chief Minister Mohan Yadav received the certificate with pride and he drew a link between the spiritual event and social empowerment. On this occasion, an amount of ₹1,572 crores to a record 1.28 crore women was transferred under the Ladli Behans scheme.

In Kurukshetra, **18000 children chanted the Gita and they were joined online by 1.5 crore people across the globe.** The State Chief Minister Nayab Singh Saini and Union Ministers participated.

At a religious and spiritual level, Gita embodies the core of Indian spirituality and the essence of Vedic culture. At a materialistic level it is a manual for Dharmic action. One well known preacher of the Gita says that it motivates people to look for Monday mornings and not Friday evenings. It has thus become globally relevant with the message of global unity, peace, harmony and development.

No wonder the International Gita Mahotsav is experiencing enhanced traction year after year.

Smt Anuradha V R

AOMSUC-14

Innovating weather monitoring

The **Asia-Oceania Meteorological Satellite Users' Conference (AOMSUC-14),** hosted by the India Meteorological Department (IMD), was held as a face-to-face only event in December 2024 in New Delhi with focus on the application of satellite data in meteorology and climatology.

Major goals

1. Promoting the importance of satellite observations and highlighting their utility;
2. Advancing satellite remote sensing science by enabling information exchange between scientists from the Asia/Oceania region and focusing on regional issues;
3. Providing a means for satellite operators to interact directly with the user community with respect to current and future satellite related activities and plans and respond to the requirements of those users;
4. Informing community about the current status and future plan of international space programmes;
5. Unifying and optimising usage of all types of satellite and other meteorological and environmental data and information;
6. Innovating new technology and science to invest in and develop future weather satellite sensing capabilities; and
7. Engaging young scientists entering the field.

The conference included high-quality oral and poster presentations as well as panel discussions that addressed topical issues such as the utilisation of satellite data in reception, processing, dissemination, product generation, weather analysis, nowcasting and forecasting, climate and environmental monitoring, numerical weather data assimilation, prediction, and disaster monitoring.

Over the past decade, the AOMSUC has become the premier annual event for the meteorological and broad earth sciences community across Asia-Oceania, where satellite operators, users, scientists and students across the globe come to share their findings and plans for the use of meteorological satellite data.

Smt Sandhya Nair

First Uber Shikara service in Srinagar

Uber Shikara is Asia's first water transport service. The ride-hailing giant Uber has launched Uber Shikara in the picturesque Dal Lake often referred to as "Srinagar's jewel". It plays a crucial role in the region's tourism and recreation sectors. The lake is the second-largest in Jammu and Kashmir and supports various commercial activities.

The service commenced with seven shikaras and aims to enhance the tourism experience while providing economic benefits to local operators.

How does it work?

Rides are available at government-regulated rates, ensuring fair pricing. One can book a shikara ride on the Uber app and the service is available on Dal Lake's four basins: **Nehru Park, Nishat, Hazratbal, Nigeen and Barari Nambal.**

Each booking accommodates up to four passengers per ride. Each ride lasts one hour and can be booked from 12 hours up to 15 days in advance, operating daily between 10 a.m. and 5 p.m.

These rides are equipped with safety features and digital payment options.

Uber does not charge commission from shikara operators so the full fare goes directly to them, thus fostering a sustainable economic model for local drivers.

The launch of Uber Shikara as a promising step towards fostering sustainable tourism while preserving cultural heritage. This initiative not only enhances visitor experiences but also uplifts local communities by providing them with reliable income sources. It is a testament to how technology can enhance our cultural heritage.

Shikara is a traditional wooden boat that symbolises Kashmir's culture and is primarily used for scenic rides by tourists.

Kum Anu Narayan

Nanobubble technology to purify pond water

Revolutionising algae control and lake management

Algae, with its slimy and stinky presence, is an ancient organism that can wreak havoc on golf course lakes and irrigation systems, tarnishing both their beauty and functionality. For years, property managers have grappled with finding the best way to eradicate harmful algal blooms. Traditional methods involve either natural management techniques or the application of EPA-registered algaecides. However, a ground-breaking innovation—nanobubble technology—is reshaping how algae is managed, delivering long-lasting, environmentally friendly results.

Nanobubble technology

Nanobubble technology is a scientifically proven and EPA-registered solution that naturally eliminates algae by oxygenating water bodies in an unprecedented way. Nanobubbles are incredibly small—about a million times smaller than ordinary bubbles—and invisible to the naked eye. Unlike regular bubbles that rise to the surface and burst, nanobubbles remain suspended within the water column for up to 2–3 months, continuously improving water quality and controlling algae growth.

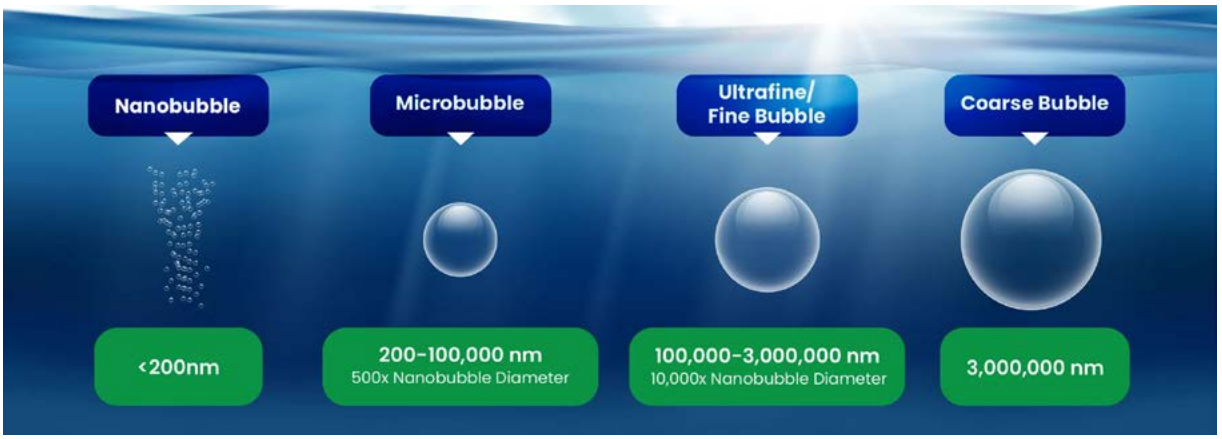
These tiny bubbles are produced by compact, on-shore generators, making the technology easy to implement in lakes, ponds and other water features.

How nanobubbles combat algae

Nanobubbles directly target the root causes of algae blooms by:

1.Oxygenation

- Nanobubbles significantly boost oxygen levels in the water, which helps convert phosphorus—a key nutrient for algae growth—into forms that cannot sustain algal development.
- This combats the nutrient overload that often results from grass clippings, fertilizers, wildlife droppings



and other debris entering water systems.

2. Algae elimination

- By depriving algae of the nutrients they need to thrive, nanobubbles safely and effectively eradicate harmful blooms without the need for harsh chemicals.

Additional benefits

- **Improved water quality:** Enhanced oxygen levels help balance pH, reduce foul odours and break down organic muck build-up at the bottom of ponds and lakes.
- **Support for aquatic life:** Nanobubbles foster an environment that encourages the growth of fish, native organisms and beneficial phytoplankton, while deterring harmful bacteria like E. coli and cyanobacteria.
- **Reduced toxicity risks:** Cyanobacteria species, often linked to neurodegenerative diseases such as ALS, Alzheimer's and Parkinson's, are effectively controlled, protecting human and wildlife health.

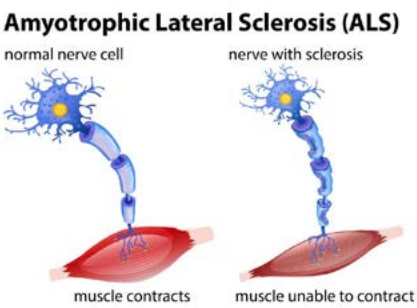
A game-changer for golf courses

Nanobubble Technology not only keeps water features algae-free but also promotes a healthier aquatic ecosystem. Its environmentally friendly, long-lasting impact makes it an invaluable tool for golf courses and property managers striving to maintain pristine, functional water bodies.

By investing in nanobubble treatments, properties can ensure cleaner, healthier and more sustainable aquatic environments—ultimately redefining the way algae and water quality are managed.

EPA United States Environmental Protection Agency

- **EPA – Environmental Protection Agency is an independent agency of the United States government tasked with environmental protection matters.**
- **ALS - Amyotrophic lateral sclerosis is a nervous system disease that affects nerve cells in the brain and spinal cord. ALS causes loss of muscle control.**



News from RBI

Smt Archana Sundar

The Reserve Bank of India (RBI) is taking a significant step towards strengthening its fight against digital fraud with the launch of MuleHunter, an AI-powered platform. Simultaneously, Sanjay Malhotra has assumed the role of the 26th Governor of RBI, bringing his expertise in finance and economic policy to the central bank.

MuleHunter AI

Developed by the RBI Innovation Hub, MuleHunter aims to identify and mitigate the use of "mule accounts" – often unknowingly used for money laundering. By analysing data from various financial institutions, MuleHunter can effectively detect suspicious patterns and alert authorities. This public infrastructure will be valuable for all financial institutions, especially smaller ones with limited resources for fraud detection. MuleHunter will provide an additional layer of security, enhancing overall fraud prevention capabilities.

Sanjay Malhotra assumes charge as RBI Governor

Sanjay Malhotra has assumed the role of the Governor succeeding Shaktikanta Das. A seasoned bureaucrat with extensive

experience in finance and economic policy, Malhotra brings a unique perspective to the role, having previously served as Revenue Secretary in the Finance Ministry. During his tenure, he spearheaded key policy decisions including the rationalization of capital gains tax, the overhaul of income tax slabs and advocating for a 28% GST on online gaming.

Malhotra's appointment comes at a critical juncture for the Indian economy, facing challenges such as slowing growth and persistent inflation. These challenges have led to differing views between the government and the RBI on monetary policy.

Prior to his appointment, Malhotra led the Financial Action Task Force (FATF) evaluation of India, resulting in positive ratings. Notably, his views on crypto currencies differ from RBI's stance. While RBI has sought to restrict them, the Finance Ministry under Malhotra's leadership has aimed to bring them into the mainstream.

Malhotra, known for his data-driven approach and efforts to develop predictive models for government revenue, is poised to play a crucial role in guiding the Indian economy through its current challenges.

The launch of MuleHunter and Malhotra's leadership signal the RBI's commitment to leveraging technology and expertise to maintain financial stability and foster sustainable growth.

Shri Arpith Vijayan

Champions of the Earth 2024

The highest environmental honour of the United Nations, Champions of the Earth Award, was announced recently for 2024. Established in 2005, the award is given to those extraordinary individuals and organisations, whose actions have brought a transformative impact around the world.

The award is given in five categories:

- Lifetime achievement
- Policy leadership
- Inspiration and action
- Entrepreneurial vision
- Science & innovation.

In an era marked by a multitude of global challenges, environmental disasters have become increasingly prevalent. Issues such as climate change, deforestation, soil erosion, mass extinction, pollution and the scarcity of clean water have been steadily rising in recent years.

The awardees this year were primarily those who have restored degraded land, thereby preventing issues like drought and desertification.

The Awardees

1.Sonia Guajajara (Brazil) Policy leadership

Brazil's Minister of Indigenous Peoples has dedicated over two decades to advocating for indigenous rights. In 2023, she made history as Brazil's first Minister of Indigenous Peoples and the country's first female indigenous minister. Under her leadership, 13 territories have

been officially recognized as indigenous land, helping to combat deforestation, illegal logging and the influence of drug traffickers.

2.Amy Bowers Cordalis (USA) Inspiration and action

She has been actively involved in the restoration of the Klamath River in the United States, while

also raising awareness about sustainable fishing practices to help safeguard the future of the Yurok tribe.

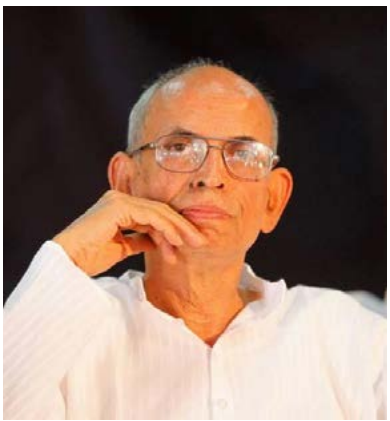
3.Gabriel Paun (Romania)
Inspiration and action

He is the Founder of Agent Green which is a non-governmental organization (NGO) dedicated to protecting Europe's old-growth forests in the Carpathians. Despite facing threats for exposing illegal deforestation, his NGO has been constantly active since 2009.

4.Lu Qi (China)
Science and innovation

She is known for spearheading the Great Green Wall afforestation project has fostered global partnerships for restoring degraded lands. She has been recognised for her efforts in stopping desertification.

5.Madhav Gadgil (India)
Lifetime achievement



A prominent Indian ecologist who is known for his contributions to the environmental conservation efforts. He was awarded for his efforts in conducting research and promoting biodiversity conservation in the Western Ghats covering several Indian States such as Tamil Nadu, Kerala, Karnataka, Maharashtra, Goa and Gujarat. As the chairman of Western Ghats Ecology Panel, a report (Gadgil Committee Report) was submitted in 2011 which highlighted the fact that 64% of the Western Ghats were ecologically sensitive.

ESZ (Ecologically Sensitive Zone) are areas / zones that require special attention for their conservation because of its landscape, wildlife and biodiversity. He also influenced environmental policies and worked with grassroots to develop the fragile region of the Western Ghats.

6.SEKEM Initiative Egypt
Entrepreneurial vision

Founded in 1977, this organisation promoted sustainable agriculture initiatives such as farming, afforestation, reforestation and transforming vast areas of the desert in Egypt. The Sahara, one of the largest deserts in the world, covers 90% of Egypt. The organization has played a crucial role in Egypt's agricultural sector, which has historically been a key driver of economic growth and a vital source of support for other sectors.

According to the UNEP, approximately 3.2 billion people globally are currently at risk from desertification. Furthermore, by 2050, it is projected that over three-quarters of the world's population will be impacted by droughts. The efforts of the 2024 Champions of the Earth proves that if we have the right policies, scientific innovations, systemic reforms, activism, leadership and wisdom of the people from grassroots, we can still hope to have our ecosystems restored or conserved.

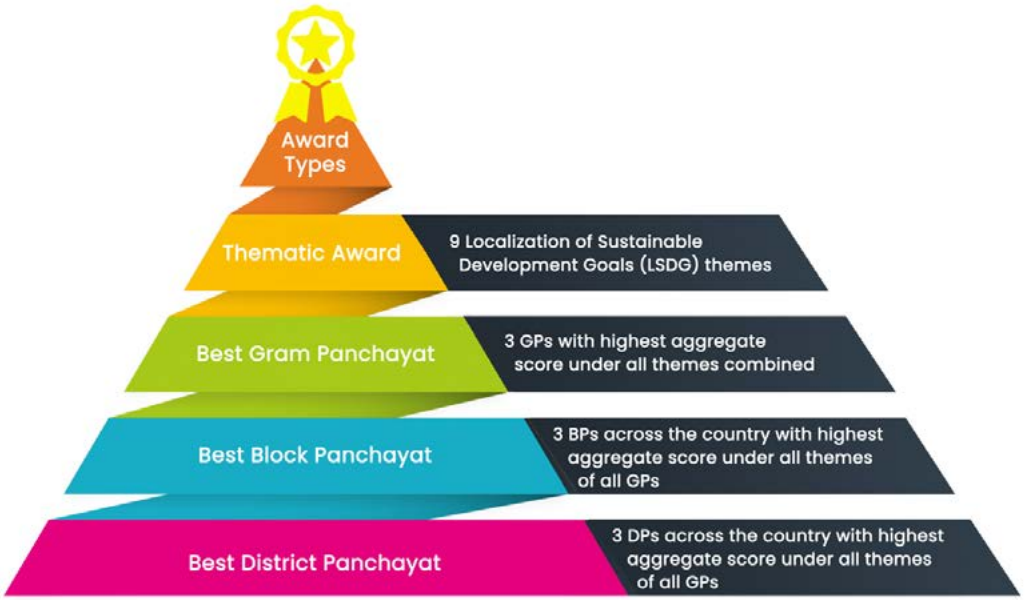
Smt Laxmi A

National Panchayat Awards 2024

The National Panchayat Awards 2024 honoured 45 exceptional panchayats for their contributions to sustainable and inclusive growth. The event presided over by President Droupadi Murmu was held on in December 2024 at Vigyan Bhawan, New Delhi.

Historical context and significance

- The awards commemorate the 73rd Constitutional Amendment Act of 1992, which granted constitutional status to Panchayats as institutions of local self-governance.
- Traditionally celebrated on 24th April, the 2024 ceremony was rescheduled due to the General Elections to the Lok Sabha.
- **The primary objective of these awards is to promote and acknowledge the contributions of panchayats in the socio-economic development of rural India and to motivate other panchayats to adopt best practices for inclusive growth and sustainable development.**
- In 2022, the awards were revamped to align with the United Nations Sustainable Development Goals (SDGs) through a focused approach called Localization of SDGs (LSDGs).
- Under this updated framework, panchayats were ranked and recognized based on their performance across 9 thematic areas of sustainable development:
  - Poverty-free and enhanced livelihoods
  - Healthy panchayat
  - Child-friendly panchayat
  - Water-sufficient panchayat
  - Clean and green panchayat
  - Self-sufficient infrastructure
  - Socially just and secured panchayat
  - Panchayat with good governance
  - Women-friendly panchayat



Categories of National Panchayat Awards 2024

- **Deen Dayal Upadhyay Panchayat Satat Vikas Puraskar (DDUPSVP):** Top 3 Gram Panchayats (GPs) under each of the 9 Localization of Sustainable Development Goal's thematic areas
- **Nanaji Deshmukh Sarvottam Panchayat Satat Vikas Puraskar:** Awarded to the top 3 GPs, Block Panchayats (BPs) and District Panchayats (DPs) with the highest average score across all 9 themes.
- **Gram Urja Swaraj Vishesh Panchayat Puraskar:** Awarded to the top 3 GPs for their significant contributions to adopting and utilizing renewable energy sources.
- **Carbon Neutral Vishesh Panchayat Puraskar:** Given to the top 3 GPs for their efforts in achieving net-zero carbon emissions.
- **Panchayat Kshamta Nirmaan Sarvottam Sansthan Puraskar:** Awarded to the top 3 institutions that have provided exemplary institutional support to panchayats in achieving LSDGs.

Highlights

- **Booklet unveiled:** 'Best practices on works of Awardee Panchayats' - documented the innovative and impactful practices implemented by the award-winning panchayats.
- **Digital transfer:** Award money to the winning panchayats.
- **Short film featured:** Exceptional efforts of some award-winning panchayats, which focussed on the pivotal role of training institutes in enhancing the capabilities of Panchayati Raj Institutions (PRIs).

DO YOU KNOW ?

- **Total number of panchayats competed - 1.94 lakh; Panchayats led by Women – 42% of 42 award winning Panchayats.**
- **Odisha and Tripura have won 7 awards each which is the greatest of all.**

Shri Mrithyunjay GN

The titans of Indian chess

A decade ago if you asked an Indian about chess you would probably hear one name - Viswanathan Anand. If you asked them about someone else, they would probably think for a while and come up with a blank look.

But, today, if you walk up to a student in school who is marginally interested in chess and ask them about a player they know you will get a veritable smorgasbord of names.

The last few years have redefined India's relationship with the sport that originated here. A sport that was mainly known for players from outside India has now come to be dominated by homegrown talent.

The latest chess sensations to come out of this remarkable time for Indian chess are **Gukesh D**, and **Arjun Erigaisi.** At the tender age of 18, Gukesh has etched his name in history by becoming the youngest-ever undisputed World Chess Champion. Meanwhile, Arjun Erigaisi, has joined the elite 2800 Elo club of the highest rated chess players in the world.

Gukesh's journey to the pinnacle of chess has been nothing short of meteoric. He first gained international recognition by becoming the third-youngest Grandmaster at 12. He clinched the World Rapid and Blitz Chess Championships in 2022 and finally reached the summit by earning a victory at the 2024 World Chess Championship in Singapore, catapulting him to global stardom.

Defeating the reigning champion, Ding Liren, Gukesh secured a decisive victory in the 14th game which made him the second Indian to achieve this feat after Viswanathan Anand.

"I've been dreaming about this and living this moment since I was 6 or 7," Gukesh shared, speaking on his monumental win, going to show how much this victory mattered to him.

Arjun Erigaisi, the 19-year-old grandmaster has been steadily climbing the ranks of world chess players. His consistent victories in tournaments like the Tata Steel Masters, has propelled him into the exclusive 2800 Elo club.

The **Elo rating system** is a method for calculating the relative skill levels of players in zero-sum games such as chess or esports. It is named after its creator Arpad Elo, a Hungarian-American physics professor.

Across the world there are just 15 people in chess who have a rating over 2800.

Magnus Carlsen, Fabiano Caruana and Ian Nepomniachtchi are but a handful of them and among these 15 are 2 Indians, Viswanathan Anand and, now, Arjun Erigaisi.

While Gukesh and Erigaisi rightfully garner headlines, India boasts many other talented players who are making their mark on the international stage:

- **Rameshbabu Praggnanandhaa (2737):** Youngest GM ever, known for his aggressive attacking style and tactical brilliance. He defeated Magnus Carlsen in the FTX Crypto Cup.
- **Pentala Harikrishna (2695):** Renowned for his deep positional understanding and strategic acumen. He was a member of the gold medal winning Indian team at Chess Olympiad 2024 held at Budapest, Hungary.
- **Vidit Gujrathi (2727):** Known for his attacking style and tactical flair, he finished sixth in the Candidates Tournament 2024, notably defeating Hikaru Nakamura in both of their games.
- **Aravindh Chithambaram (2718):** Known for his solid positional understanding and strategic acumen, he earned his International Master title in 2014 and his grandmaster title in 2015. In 2024, he won the Chennai Grand Masters tournament.
- **Divya Deshmukh (2483):** Known for her tactical prowess and aggressive attacking style. She is the current women's world chess champion.
- **Tania Sachdev (2396):** Known for her tactics and attacking style, in July 2019, Sachdev won Commonwealth women's championship.
- **Vantika Agrawal (2392):** Known for her solid positional understanding and strategic expertise. In 2024, she was part of the gold winning women's team at the 45th Chess Olympiad in Budapest.
- **Vaishali Rameshbabu (2476) :** is an Indian chess grandmaster.She became a Woman Grandmaster (WGM) in 2018. She was the part of the gold medal-winning team at Online Olympiad 2020, where India won its first ever medal. She received her International Master (IM) title in 2021. In 2022, Vaishali won her second Grandmaster norm.

The achievements of these players are a testament to the burgeoning chess culture in India, which can be attributed to increased access to quality coaching, increased interest in the game through online play and a growing number of tournaments.

Moreover, one cannot discount the inspiration that legends like Viswanathan Anand, and these youngsters, provide to aspiring chess players across the country.

India is well on its way to becoming a global powerhouse in the game. The future of Indian chess is truly filled with the promise of many more world champions.

- **Grandmaster (GM)** is a title given to chess players by the Fédération Internationale des Échecs (FIDE). It's the highest title a chess player can achieve, aside from World Champion. Once a player earns the title, they keep it for life, unless they are found to have cheated.
- **International Master (IM)** is the second highest title in chess awarded to players who are highly skilled but not yet at the level of a grandmaster.

Col Shashidhar M V (Retd)

Ekalavya Digital Platform

VOLLEY - BYTES

- General Upendra Dwivedi, Chief of the Army Staff (COAS) recently launched an online learning platform for the Indian Army officers nicknamed as *"Eklavya"*.
- A software platform developed by Bhaskaracharya National Institute of Space Applications and Geoinformatics at zero-cost with support from Directorate General of Information Systems and under the aegis of Headquarters Army Training Command with Army War College as the sponsor agency.

- A searchable Knowledge Highway allowing functions on the platform to access various journals, research papers and articles that are uploaded under a single window.
- Will encourage continuous professional military education in officers during service.

About the Master

Headquarters Army Training Command, Shimla through the Army Data Network's scalable architecture aims to seamlessly integrate number of training establishments under the Army located all over India, each of these establishments capable of hosting extensive range of training courses as part of capacity building.

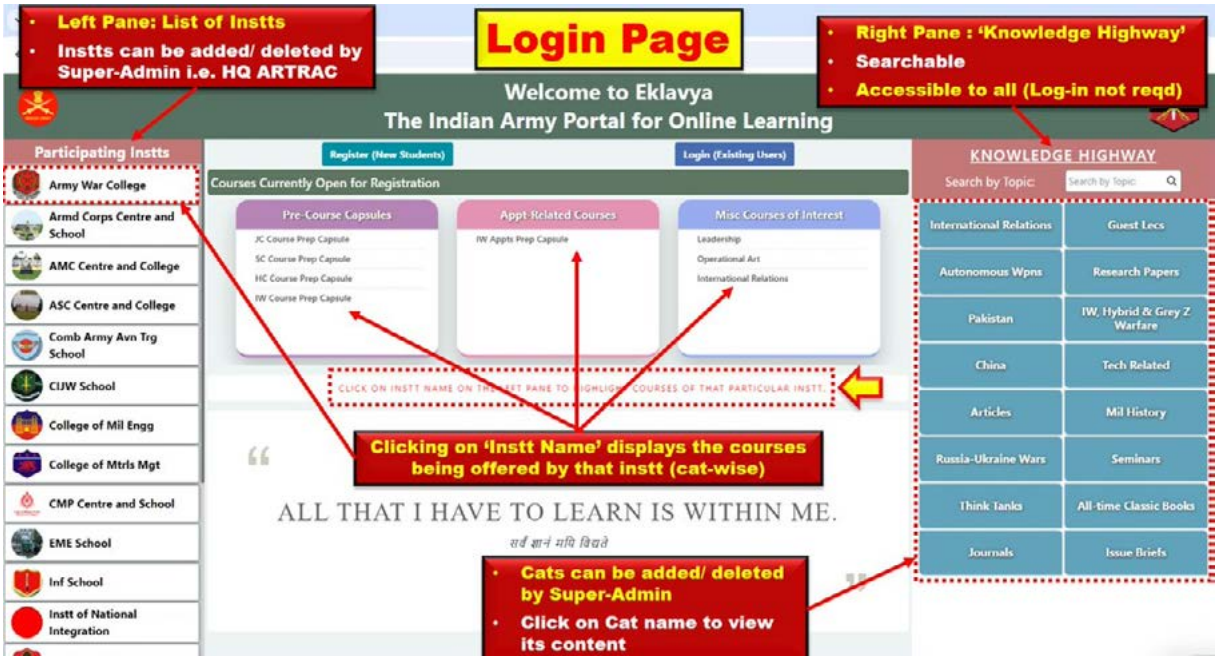
Student officers are permitted to register for multiple courses simultaneously.

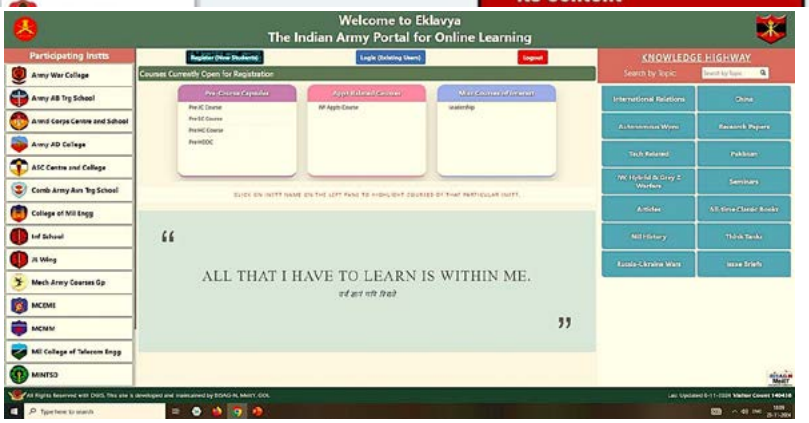
Highlights

- Continuous professional military education.
- Existing physical courses are simplified and emerging concepts enhanced.
- Officers are prepared for specialist appointments.
- Domain specialization.

Featuring 96 courses from 17 premier training establishments, these are categorized into three main types-

- Focused on foundational knowledge to support offline training.





- Appointment/assignment-specific courses.

- Tailored modules for officers in specialized roles.

Eklavya is a professional development suite which Includes courses on leadership, strategy and emerging technologies.

It allows officers to enrol in courses at any stage of their careers, promoting continuous learning and operational readiness and a flexible learning environment. This flexibility aims to decongest physical training programmes and better prepare officers for modern challenges.

Bull's eye

Eklavya as an initiative aligns with our Army propelling itself into the "Decade of Transformation" and by upholding the theme for 2024 as the "Year of Technology Absorption."

Training objectives

Eklavya platform will host three categories of courses.

- **First category -** 'Pre-Course Preparatory Capsules' with study material for all offline physical courses being conducted at various training establishments.

Pay offs

- To shift the "basics" to online courses so that physical courses have more and more contemporary content with a focus on the application part.

- Students can register for any course at any point of their service.

- **Second category-** Appointment or specific assignment-related courses.

Pay offs

- Officers on getting posted to specialist appointments have to learn the craft by getting on-the-job training (OJT) thus only allowing finite amount of time to efficiently function. Few such areas being domain of information warfare, defence land management, financial planning, discipline and vigilance, works, provost and veteran affairs.

- **Third category-** Professional Development Suite to include courses on strategy, operational art, leadership, organisational behaviour, finance, art of reading, power writing, emerging technology etc.

Col Shashidhar M V (Retd)

INS Tushil commissioned

REWIND

- INS Tushil is the first of two upgraded stealth frigates signed in an MOU in 2016; the second being INS Tamal with expected delivery timelines in 2025.
- INS Tushil is being constructed under a USD 2.5 billion contract and will be built at the **Yantar Shipyard in Kaliningrad, Russia.** These ships are part of Project 1135M under the Talwar-class vessels previously acquired.
- The Indian Navy currently has six stealth frigates—three Talwar class and three Teg class all bought from Russia.
- The project has faced several delays due to the Covid-19 pandemic, geopolitical tensions stemming from the Ukraine conflict and subsequent Western sanctions affecting supply chains.

Commissioning

INS Tushil (F 70), the latest multi-role stealth-guided missile frigate was commissioned in the presence of Indian Defence Minister Rajnath Singh and Navy Chief Admiral Dinesh K Tripathi at the Yantar Shipyard in Kaliningrad, Russia.

INS Tushil – Tracing the keel

'Tushil' means 'the protector shield' and its crest represents the *'Abhedya Kavacham'* (impenetrable shield).

The ship sailed out for her maiden sea trials in January 2024 before completing an exhaustive schedule of factory trials followed by State Committee trials and finally the Delivery Acceptance trials, both in the harbour and at sea carried out in September 2024.

What is a frigate-class warship?

A frigate is a class of warships that is known for its versatility, speed, and manoeuvrability. Frigates are generally smaller than destroyers and are designed to perform a variety of missions, such as escorting and safeguarding larger ships, anti-submarine warfare and maritime patrol. They are a key component of modern naval fleets. They carry a host of weapons such as surface-to-air missiles, anti-ship missiles, torpedoes and close-in weapons systems to tackle incoming threats.

Salient features

Class and design- As part of the Project 11356M which are modified Krivak III-class ships designed for multi-role naval warfare incorporating both Indian and Russian technologies.

Stealth technology- Equipped with advanced stealth features it minimises radar and sonar signatures, making it difficult for adversaries to detect.

Dimensions and displacement- With a displacement of approximately 3,620 tonnes and measures 124.8 metres in length the ship can reach speeds of up to 30 knots and a cruising range of about 4,850 miles.

Armament- Armed with a sophisticated array of weaponry which includes

- BrahMos supersonic cruise missiles for surface-to-surface engagements.
- Surface-to-air missiles for air defence.
- Anti-submarine warfare (ASW) systems, sonar and radar capabilities.
- Optically controlled close-range rapid-fire gun system, anti-submarine torpedoes and rockets and advanced electronic warfare and communication suite.

It is capable of embarking the upgraded Russian-origin anti-submarine and airborne early warning helicopters Kamov 28 & Kamov 31.

Implications

INS Tushil is designed to operate effectively in both littoral and blue waters thus capable of engaging in air defence, anti-submarine warfare and surface combat operations. It can function independently or as part of a naval task force and will bolster our naval presence and operational flexibility in the Indo-Pacific region thus enhancing our ability to safeguards maritime interests amid increasing challenges to freedom of navigation.

From the Gulf of Oman to the Gulf of Aden, from Suez to Malacca and from Australia to Madagascar our Navy has been playing the essential role of a net security provider in the Indian Ocean Region by foiling the designs of piracy, arms and drug smugglers and non-state actors in various hotspots.

Conclusion

Tushil and Tamal are the last of the foreign-built ships that our Navy will be inducting with all future orders of ships and submarines to be fulfilled by Indian shipyards thus promoting the Govt's vision of homegrown shipbuilding efforts and boosting the national economy.

Approximately 26% of the ship's systems were indigenously developed thus showcasing India's growing self-reliance in defence manufacturing with notable contributions coming from BrahMos Aerospace and BEL.

Col Shashidhar M V (Retd)

Missile news

India's hypersonic missile test

Rewind

- Developed own R&D on hypersonic weapons in 2007.
- India's primary hypersonic pursuit is premised on the remarkably successful medium-range, supersonic BrahMos missile.
- DRDO successfully tested the **Hypersonic Technology Demonstrator Vehicle (HSTDV)** in 2020.
- HSTDV is an unmanned scramjet demonstration aircraft designed to cruise at hypersonic speeds.

The successful test marked a significant advancement in India's efforts to develop hypersonic capabilities.

Hypersonic missiles

Hypersonic projectiles and platforms are emerging as a highly valued weapon system for militaries the world over due to their unique combination of attributes.

Characteristics

- Sustained high speed (between 5 & 25 times the speed of sound).
- Increased manoeuvrability and high-altitude trajectory thus making them difficult to be intercepted by the existing missile defence systems.
- Designed to carry various payloads over distances exceeding 1,500 km.

- Designed to fly at lower altitudes compared to traditional ballistic missiles, making them harder to detect and intercept.
- Allows for rapid response times and mid-flight target changes.

Hypersonic missile test

On 17th Nov 2024, a successful test of first long-range hypersonic missile was carried out off the coast of Odisha. This missile can travel at speeds exceeding Mach 6 (over six times the speed of sound) and is designed to carry various payloads over distances greater than 1500 km. Its ability to execute mid-flight manoeuvres makes it exceptionally difficult for existing missile defence systems to intercept, marking a pivotal advancement in India's strategic capabilities.

Effect on future warfare

Hypersonic missiles are commonly depicted as a "game changer" and the unprecedented capabilities of these weapons portend a revolution in missile warfare. It is considered that the speed, accuracy and manoeuvrability of hypersonic boost-glide weapons will fundamentally change the character of warfare by their near-immunity to detection thus making them nearly invisible to existing early warning systems.

The hypersonic missile is not just a technological marvel but serves as a potential carrier killer aimed at enhancing own naval strike capabilities against adversaries like China.

This development places India in an elite group alongside the US, Russia, and China who have also developed hypersonic technologies.

K-4 missiles tested

Backdrop

The K series of missiles is emerging as the principal submarine-launched ballistic missile. This follows the development of naval platform launched missiles which began in the late 1990s as a step towards completing India's nuclear triad- the capability of launching nuclear weapons from land, sea, and air-based assets.

The K-15 underwent at least twelve development trials from a submerged pontoon aimed at simulating a submarine, its limited range being an interim system.

The K-4 was first tested in 2014 from a submerged pontoon followed by another in 2016 reportedly tested from the INS Arihant itself.

The K family of missiles

The K family of missiles are primarily **Submarine Launched Ballistic Missiles (SLBMs),** which have been indigenously developed by DRDO and named after Dr Kalam, the centre figure in India's missile and space programmes and who served as the 11th President of India.

Launched from submarines they are lighter, smaller and stealthier than their land-based counterparts, the Agni series of missiles which are medium and intercontinental range nuclear capable ballistic missiles. While K family are primarily submarine-fired missiles to be fired from India's Arihant class nuclear powered platforms, the land and air variants of some of its members have also been developed by DRDO.

K-4 Missile

The K-4 is a nuclear-capable, intermediate-range, submarine-launched ballistic missile (SLBM) about 12 metres long, weighs nearly 20 tonnes and carries a 2-ton payload. It has a maximum range of about 3,500-4,000 km and is powered by 2-stage solid rocket propellant.

The missile's **Circular Error Probability (CEP)** is much more sophisticated than Chinese missiles. The CEP determines the accuracy of a missile. The lower the CEP, the more accurate the missile is.

The **High Energy Material Research Laboratory (HEMRL)** and the **Advanced Centre for Energetic Materials (ACEM)** of DRDO played crucial roles in developing the missile's propulsion systems.

The Naval Systems Group of the Research and Development Establishment (Engineers) developed the launch system for K-4.

Significance

Once inducted these missiles will be the mainstay of the Arihant class of indigenous ballistic missile nuclear submarines (SSBN) and will give us the stand- off capability to launch nuclear weapons submerged in Indian waters. INS Arihant, the first and only operational SSBN is presently armed with K-15 Sagarika missiles with a range of 750 km.

Successful launch

On 27th Nov 2024, a successful test launch was carried of K-4 nuclear-capable SLBM from the newly commissioned INS Arighaat and marked a significant advancement in own nuclear deterrence capabilities besides validating our second-strike capability against potential nuclear threats.

INS Arighaat, India's second nuclear-powered submarine is equipped to carry four K-4 missiles or twelve K-15 missiles significantly enhancing India's sea-based nuclear deterrent capabilities. This submarine represents a gigantic leap forward in India's strategic defence posture.

Plans are afoot to conduct additional tests of the K-4 missile system as part of ongoing efforts to enhance our naval capabilities.

Col Shashidhar M V (Retd)

Bharat NCX 2024 launched

The Bharat National Cyber Security Exercise (Bharat NCX 2024) was conducted in November 2024, as a key initiative aimed at strengthening India's cyber security resilience. The 12-day exercise was designed to equip professionals and national leadership with the skills to manage complex cyber threats, enhance incident response capabilities and improve strategic decision-making.

Overview

- Serves as a unifying platform for over 300 participants.
- Represents a diverse spectrum of government agencies, public organizations and the private sector, all resolutely committed to the safeguarding of critical information infrastructure.
- Organised by the National Security Council Secretariat (NSCS), GoI in strategic partnership with Rashtriya Raksha University (RRU). NSCS serves as the apex body for all matters concerning internal and external security.
- NCX 2024 was the third in series of this milestone event.

Cyber security

- Cyber security is the practice of protecting computer systems, networks and data from theft, damage or unauthorised access.
- Increasing dependency on digital technologies entails the importance of cyber security.
- Encompasses a wide range of practices, technologies and measures that work together to safeguard the integrity, confidentiality and availability of data and information systems. This comprehensive approach is vital because cyber threats and attacks are constantly evolving in complexity and sophistication.

Challenges

- **Cyber security skills gap:** Shortage of skilled cyber security professionals globally making it challenging to defend against evolving threats.
- **Rapidly evolving threat landscape:** Cyber threats constantly evolve and become more sophisticated leading to serious disruptions

Components of Cyber Security

- Network Security
- Endpoint Security
- Application Security
- Cloud Security
- Data Security
- Identity And Access Management (IAM)
- Security Awareness Training

Cyber Threats

- Malware
- Phishing
- Denial of Service (DoS) Attacks
- Advanced Persistent Threats (APTs)
- Insider Threats

Cyber Security Measures

- Firewalls and Intrusion Detection Systems
- Antivirus and Anti-Malware Software
- Encryption
- Regular Updates and Patch Management
- Incident Response Plan
- User Education

- **Data privacy and compliance:** Increasingly strict regulations around data privacy require organisations to invest in compliance efforts.
- **IoT devices:** The proliferation of the Internet of Things devices presents new security challenges as many of these devices have weak security measures.

HIGHLIGHTS

- **Cyber defence and incident response training-** Focus on defensive cyber security skills, preparing participants to defend against cyber attacks. Live-fire simulations will provide hands-on experience with real-time cyberattacks on IT and Operational Technology (OT) systems.
- **Strategic decision-making simulations-** Senior management from across sectors were exercised on decision-making in a national-level cyber crisis and exercise their ability to swiftly respond swiftly and strategically in high-pressure scenarios.
- **CISO's conclave-** This brought together Chief Information Security Officers (CISOs) from government, public and private sectors on panel discussions by updating the latest cyber security trends and government initiatives and for exchange of knowledge and collaboration.
- **Bharat cyber security startup exhibition-** Exhibition highlighting innovative cybersecurity solutions developed by Indian startups.
- **Leadership engagement and capacity building-** Leadership engagement by ensuring that high-level decision-makers are prepared to lead national cyber security efforts by fostering a unified approach in dealing with emerging cyber threats.

The event concluded with a review session wherein all participants reflected on the lessons learnt for evolving the best practices to improve future cyber security strategies.

Introduction to Competition Law

As you may be aware, India follows a socialist model of economy, which involves the free market with a certain level of state intervention. This model was set up with the aim to bring efficiency and better economic development. One key element of any economy is the competition amongst the players in its markets, which has the potential to drive economic growth as well as innovation.

Competition in most market economies has been accepted to have advantages such as efficiency and innovation on the part of the market players, while simultaneously offering lower prices and variety of choice to the consumers.

However, in a scenario of little to no state intervention in the market, there may be scope for foul play by players, for gaining power over the market. Such actions may hamper the possibilities of other players and the level of innovation in the market. This threat necessitates a framework laying down the 'rules of the game,' which is what competition law aims to do.

Background of Competition Law in modern India

The Monopolies and Restrictive Trade Practices Act, 1969 ("MRTP Act") was one of the early legislations intended to govern competition law. The MRTP Act has its genesis in the Directive Principles of State Policy embodied in the Constitution of India, which provides that the State shall direct its policy towards ensuring:

(i) that the ownership and control of material resources of the community are so distributed as to best serve the common good; and

(ii) that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment.

As the name indicates, the MRTP Act contained provisions to restrain trade practices and activities that could lead to a monopoly of players or restrict competition in the market.

However, the subsequent 'New Economic Policy' of India in 1991, brought in a flood of change. In light of the economy being opened up to global competition, it was necessary to re-assess certain aspects of competition law, in light of international economic developments. It was decided that **there was a need to shift the focus of competition law from curbing monopolies to promoting competition.**

The Indian Competition Act, 2002

The above shift in perspective was the root for the inception of the Competition Act, 2002 ("Competition Act"). The primary objectives of the Competition Act are to

(a) prevent practices having adverse effect on competition,

(b) promote and sustain competition in markets,

(c) protect the interests of consumers and

(d) ensure freedom of trade of the participants of the markets in India.

AVOIDING SUGAR

Finding healthy alternatives

In a world where convenience often takes precedence over health, sugar has become a ubiquitous part of our daily lives. From sweetened beverages to processed snacks, refined sugar lurks in countless forms, contributing to a myriad of health issues such as obesity, diabetes, cardiovascular diseases and weakened immunity. However, adopting a natural living perspective offers a healthier way to enjoy sweetness without the harmful consequences of refined sugar. This approach involves embracing natural alternatives such as jaggery, palm candy and other indigenous sweeteners that align with a balanced and holistic lifestyle.

Refined sugar, often referred to as **"white poison,"** undergoes extensive processing that strips it of nutrients, leaving behind empty calories.

Consuming sugar in excess disrupts the body's metabolic processes, leading to weight gain, insulin resistance and inflammation. Additionally, sugar is highly addictive; its consumption triggers a release of dopamine in the brain, creating a cycle of dependency.

This addiction not only impacts physical health but also takes a toll on mental well-being, contributing to mood swings, fatigue and reduced focus. These effects are more profound in children in their growing years.

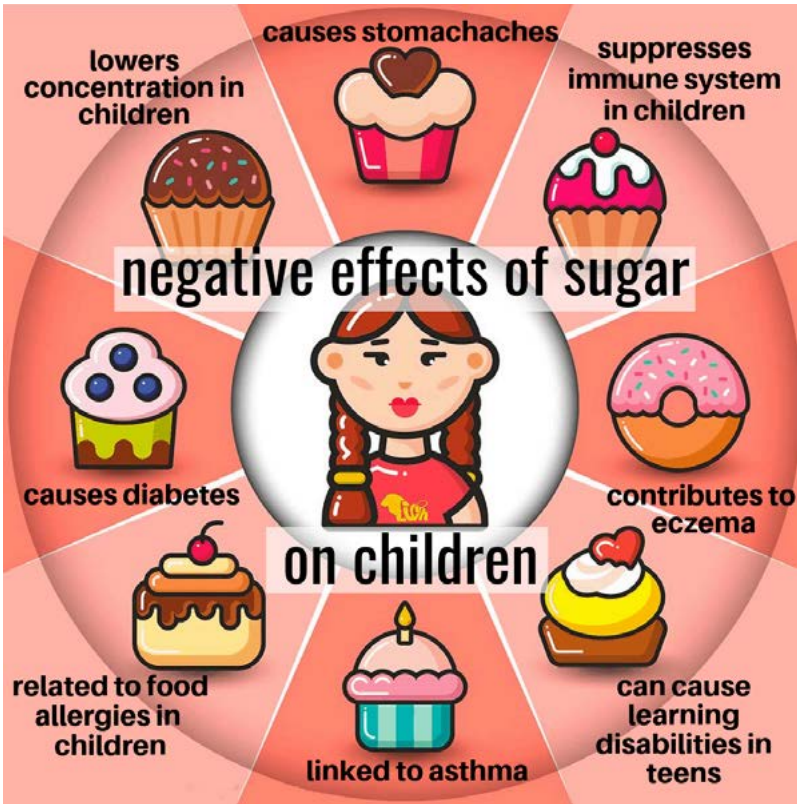
From a natural living perspective, avoiding refined sugar is about returning to the roots of wholesome nutrition. It emphasizes consuming foods in their natural, unprocessed forms to preserve their inherent nutritional value and ensure the body receives what it truly needs.

Natural sweeteners - Alternatives

India has a rich tradition of using natural sweeteners that are not only flavourful but also packed with health benefits. These alternatives have been part of Indian culinary and medicinal practices for centuries, offering a sustainable way to satisfy the craving for sweetness without compromising health.

1. Jaggery *(Gur)*

Jaggery, an unrefined form of sugar made from sugarcane or palm sap, is a nutrient-rich alternative to refined sugar. Unlike sugar, which undergoes chemical processing, jaggery is prepared using traditional methods that retain its iron, magnesium, potassium and calcium content. Known for its warming properties, jaggery is often consumed during winters



to boost immunity and improve digestion. In Indian households, jaggery is used in sweets like *til ladoos* (sesame seed balls), *gur roti*, and as a sweetener in beverages like herbal teas. Its robust flavour and health benefits make it a staple in Ayurveda for balancing bodily *doshas*.

2. Palm candy *(Panam kalkandu)*

Derived from the sap of palm trees, palm candy is another natural sweetener widely used in India. It has a mild, caramel-like sweetness and is packed with essential nutrients, including B vitamins and minerals like potassium and iron. Palm candy is particularly valued in Ayurveda for its cooling properties and is often used to treat coughs and sore throats.

In South India, palm candy is commonly dissolved in warm milk or herbal concoctions like pepper rasam to enhance flavour and medicinal value.

3. Honey *(Madhu)*

A golden elixir in Ayurveda, honey is a versatile sweetener with antibacterial and antioxidant properties. Raw, unprocessed honey is a natural remedy for sore throats, wounds and digestive issues. Its low glycaemic index makes it a healthier alternative for diabetics when consumed in moderation.

In Indian cuisine, honey is drizzled over fruits, added to desserts like *shrikhand* or stirred into herbal teas like *tulsi chai* for a soothing effect.

4. Coconut sugar

Extracted from the sap of coconut flowers, coconut sugar is a natural sweetener with a low glycaemic index. Rich in nutrients like zinc, iron and potassium, it provides a steady release of energy without causing sugar spikes. In Kerala, coconut sugar is used in dishes like payasam and as a topping for breakfast staples like *idlis* and *dosas*.

Transitioning away from refined sugar

Transitioning away from refined sugar to natural alternatives requires a conscious effort to make healthier choices. Here are some strategies to adopt a sugar-free lifestyle:

1. Mindful cooking: Replace sugar with jaggery or palm candy in traditional recipes. For example, use jaggery in desserts like kheer or palm candy in beverages.

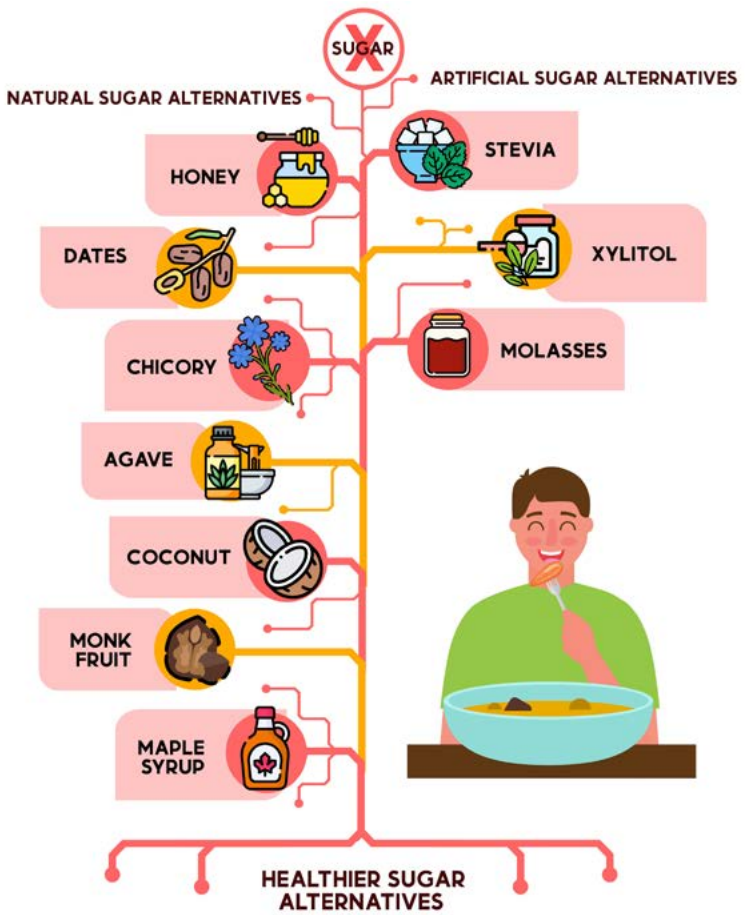
2. Reading labels: Processed foods often contain hidden sugars. Opt for whole, unprocessed foods to eliminate unnecessary sugar from your diet.

3. Incorporate spices: Spices like cinnamon, cardamom and

nutmeg add natural sweetness and enhance the flavour of dishes without needing sugar.

4. Fruits as sweeteners: Naturally sweet fruits like bananas, dates and figs can be used to sweeten smoothies, porridges and baked foods.

5. Homemade snacks: Prepare snacks at home using natural sweeteners. For instance, make energy balls with dates, nuts and jaggery or bake muffins sweetened with ripe bananas.

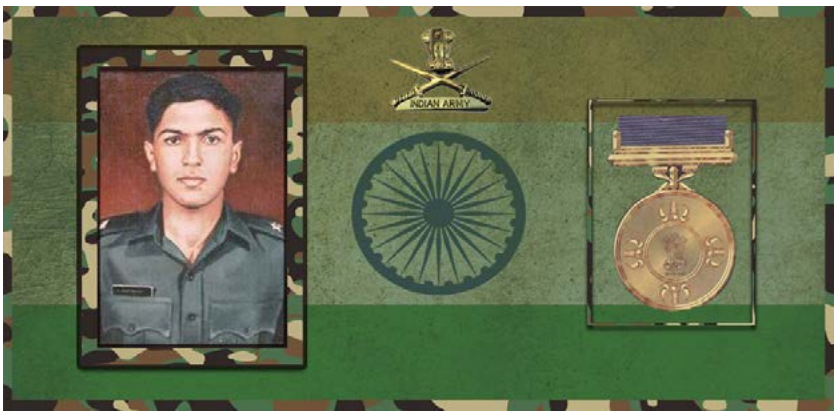


Benefits of natural alternatives

Switching to natural sweeteners offers numerous health benefits. Unlike refined sugar, natural alternatives are nutrient-dense, providing essential vitamins and minerals along with sweetness. They have a lower glycaemic index, preventing sudden sugar spikes and crashes, making them suitable for individuals with diabetes or those seeking sustained energy levels.

Moreover, natural sweeteners align with a sustainable lifestyle. Their production involves fewer chemicals and supports traditional agricultural practices, benefiting both health and the environment.

Avoiding refined sugar is a step towards a healthier, more mindful way of living. By embracing natural alternatives we can enjoy the sweetness of life without compromising our health. Rooted in India's rich culinary and medicinal heritage, these sweeteners not only nourish the body but also reflect the wisdom of living in harmony with nature. Through conscious choices and a commitment to natural living, it is possible to lead a life that is both sweet and sustainable.



Second Lt. Arun Khetarpal

Second Lieutenant Arun Khetarpal (lC-25067), son of Brigadier M L Khetarpal, was born on 14th October 1950, in Pune, Maharashtra. He was commissioned into the Poona Horse (17th Queen Victoria's Own Cavalry) on 13th June 1971.

During the 1971 Indo-Pak War, the 47 Indian Infantry Brigade and Poona Horse established a bridge-head across the Basantar River by 21:00 hours on 5th December. The engineers needed to clear enemy minefields for the Poona Horse's support, but while they were working, Indian troops reported increased enemy armour and requested urgent tank support, as the minefields were only partially cleared.

At 0800 hours on 16th , the enemy launched a counter-attack with an armoured regiment against the regimental pivot at Jamal, using a smoke screen. Outnumbered, the Commander of B Squadron requested reinforcements. Arun Khetarpal, positioned nearby with two tanks, responded and advanced to confront the enemy. His troops came under fire from enemy positions, but Khetarpal attacked aggressively, overrunning defences and capturing enemy soldiers and recoilless guns.

During one of the attacks, the commander of his second tank was killed instantly, leaving him alone. However, he continued to assault the enemy strongholds single-handedly until all enemy positions were overwhelmed. He then rushed to the 'B' Squadron position. By the time he arrived, the enemy tanks were retreating. He pursued and destroyed one of the tanks. After much effort, the commander persuaded him to fall back into line.

The enemy launched a second attack on the sector held by Arun Khetarpal and two other officers, deploying an entire armoured squadron against their three tanks. A fierce battle ensued, destroying ten enemy tanks, four of which were taken out by Khetarpal alone.

During the fight, two of the Indian tanks became casualties—one was hit and another had mechanical failure. Khetarpal's tank also received fire and caught fire. Despite this, he refused to abandon his tank and said to his commander, "No sir, I will not abandon my tank; my gun is still working and I will get these…"

He continued to engage the enemy, destroying the last tank at nearly 100 meters. His tank was hit again and he was killed, but his actions prevented the enemy from breaking through. For his bravery, Second Lieutenant Arun Khetarpal was posthumously awarded the Param Vir Chakra.

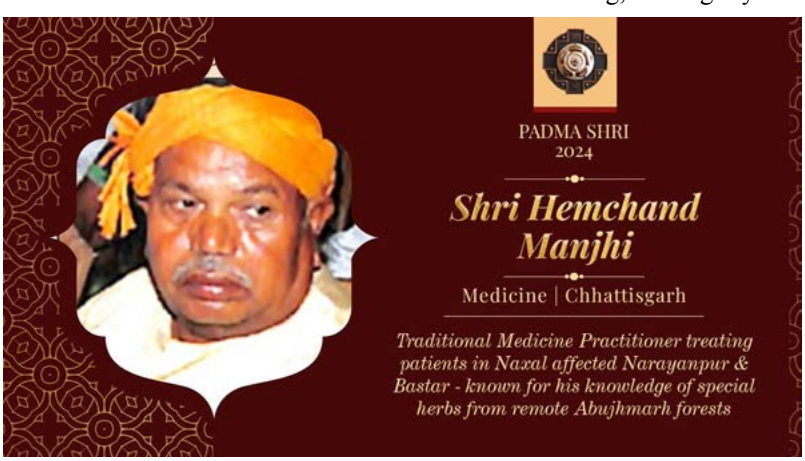
DO YOU KNOW ?

***'Ikkis'*, a film depicting the life of Second Lieutenant Arun Khetarpal PVC, showcasing his heroic story, was released this year.**

Hemchand Manjhi

Hemchand Manjhi is a renowned traditional medicine practitioner known as *'Vaidyaraj'* in the Narayanpur district of Chhattisgarh, where he has been offering affordable healthcare to villagers for over five decades. Born on 1st January 1953, into a poor family, Manjhi had the opportunity to attend school for just one day. Due to family obligations and household chores, he could not continue his education and instead began working by grazing cattle. After the untimely passing of his father during his childhood, he took on the role of supporting his family by working as a fire watcher in the nursery section of the local forest department.

Throughout his dedicated working years, Manjhi faced a significant decline in health, and despite many local treatments, he saw no improvement. Then, one night, he had a divine dream that directed him to specific herbs in the forest for healing. The next morning, he eagerly set out to find these herbs and with determination, he successfully identified and gathered them. After preparing the herbs and taking them, he experienced a remarkable restoration of his health. Motivated by his recovery, he began to share these herbal remedies with others, leading to transformative health improvements in the villagers. This journey not only changed his life but also brought hope and healing to his entire community.



Manjhi transitioned from being a fire watcher to serving the community selflessly. He has been practising traditional health care for the past 15 to 20 years, providing treatment for incurable diseases. People travel from all corners of the country to seek his help. With his extensive traditional knowledge, he has been successfully treating numerous patients. Additionally, he employs 20 local villagers to assist him in this work. **Manjhi is now gaining national recognition for his selfless contributions.**

Smt Vaishnavi V

CURIOSITY CORNER

Jamshedpur

I Quick five!

1 Located in this state - _____

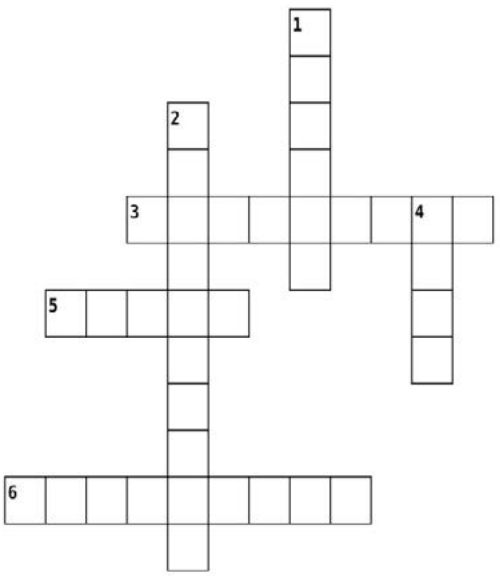
2 Founder of the city - _____

3 Rivers that flow through the city - _____

4 Surrounded by these picturesque hills - _____

5 Regional languages spoken here - _____

II Crossword



Across

3. The Dalma Wildlife Sanctuary near Jamshedpur is famous for which animal? (9)

5. Popularly known as "The _____ City of India". (5)

6. Jamshedpur is also known as _____, named after its founder. (9)

Down

1. Jamshedpur was known earlier as _____. (6)

2. The Subarnarekha River is also known as the _____ River due to its golden colour during sunsets. (10)

4. This tribal festival is widely celebrated in the Jamshedpur region. (4)

8. The entire city is divided as _____, a part of the grid plan. (7)

III Landmarks and attractions

1.Name the largest park known for its fountains and greenery and the zoo located inside it.

2.Which famous sports stadium is the home ground of Jamshedpur FC?

3.Which industrial museum highlights the city's steel-making history?

4.This place is known for boating, migratory birds and a musical fountain.

5.An artificial reservoir built by Tata Steel for water supply and tourism.

IV DID YOU KNOW?

- Jamshedpur is the first planned industrial city of India.
- It has been ranked consistently as one of the cleanest cities in India by Swach Survekshan , a survey launched as a part of Swachh Bharat Abhiyan.

Answers on page 66

Smt Ghana Saraswathy M

Gingee Fort

Gingee Fort, located in Villupuram district of Tamil Nadu, is one of the most impressive forts in India. Known as the **"Troy of the East"** for its strength and design, it stands on three hillocks: Rajagiri, Krishnagiri, and Chandrayandurg. This fort is a symbol of Tamil Nadu's rich history and architectural brilliance.

Highlights

- **Strategic design:** The fort is spread over 3 hills, making it highly secure and difficult to conquer.
- **Granite walls:** The walls are 13 kilometres long and rise to a height of 60 feet.
- **Citadel:** Located on the Rajagiri hill, it was the centre of the fort's defence system.
- **Kalyana mahal:** This is a beautiful marriage hall with a pyramid-shaped tower, showcasing Indo-Islamic architecture.
- **Granaries and tanks:** Large storage areas and water tanks ensured the fort could sustain sieges for long periods.
- **Temples and mosques:** The fort has several temples and mosques, reflecting the cultural diversity of its rulers.
- **Secret passages:** Hidden tunnels and pathways were used for escape and movement during battles.

Contributions of kings

Chola Dynasty laid the foundation of the fort with early structures. Later the **Vijayanagara rulers** strengthened the fortifications and added key elements like the Kalyana Mahal. Marathas maintained the fort's strategic importance during their rule. Mughals and Carnatic Nawabs used the fort as a military base.

Gingee Fort is a perfect example of India's ancient architectural wisdom. It tells stories of bravery, strategy and artistic skills. **Students and history enthusiasts can learn a lot about Tamil Nadu's glorious past by visiting this historical marvel.**

Shri Sridhar P

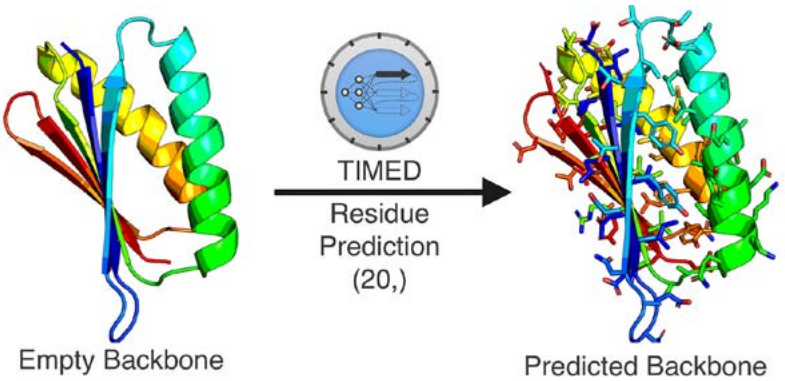
Nobel Prize for Chemistry

The Nobel Prize for chemistry for 2024 has been jointly awarded to **David Baker** for his work on computational protein design and to **Demis Hassabis and John Jumper** for developing technologies to predict the structure of proteins.

What functions do proteins perform in our body? Proteins are the work horses of a cell. Proteins compose the structure and motor elements in a cell. Proteins are needed for the growth and maintenance of tissues. Proteins are important components of enzymes that are involved in aiding various biochemical reactions in our body. Proteins are important structural components of hormones that perform important bodily functions. Proteins are vital for proper functioning of the immune system.

How is the structure of protein determined? Proteins are long chain amino acids linked together by peptide bonds and are structurally complex. Xray crystallography is the most commonly used method. Solid crystals of purified protein is placed in an Xray beam. The pattern of deflected Xrays is used to predict the positions of thousands of atoms within the protein crystals.

Alpha fold problem: Protein structure is complex and folds itself, called the “alpha fold”.



Determination of the 3D structure with its alpha fold has been a hot scientific pursuit for 50 years. Nobel Laureate Demis Hassabis developed a novel deep learning machine learning model called alpha fold.

Alpha fold ML model that incorporates physical and biological knowledge about protein structure helps in determining 3D structure of a protein molecule.

The company **Demis Hassabis found is called Deep mind**, which launched alpha2, another ML model for determining protein structures. Later John Jumper worked on developing Alpha3, using and predicting how protein molecules interact with each other. Their work enabled 3D structure determination of protein molecules in a matter of hours.

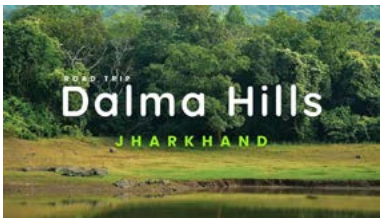
Nobel Laureate David Baker designed tools for designing new protein molecules with specific shapes and functions. He and his colleagues created a novel protein and determined its 3D structure using a computer programme called **"Rosetta"** which he developed in 1999. The capability to create new protein molecules has far reaching implications in the field of health, industry and environmental protection.

Baker and his colleagues have succeeded in designing new enzymes to support organic chemistry reactions of commercial value, which enabled designing atorvastatin - a cholesterol-lowering drug and vitamin B6. Designing new complex protein molecules opens the door for treating many metabolic and genetic diseases. One of the well known hormones to be created synthetically using genetically modified vectors is insulin. This new technology is further enhanced by commercial application of CRISPR like technologies. AI use in determining the complex protein structures further opens up frontiers for use of CRISPR technology in novel ways. Faster adoption of newer technologies and the power of AI as an enabler is the future. The Nobel Prize for chemistry 2024 demonstrates that very well.

Answers of page 62

I Quick five!

1. Jharkhand
2. Jamshedji Nusserwanji Tata in 1919
3. Subarnarekha, Karkai
4. Dalma hills
5. Hindi, Nagpuri, Bengali, Odia, Santhali, Urdu, Magahi, Bhojpuri, Tamil, Telugu, Kurmali



II Landmarks and Attractions

1.Jubilee Park, Tata Steel Zoological Park

2.JRD Tata Sports Complex

3.Tata Steel Museum

4.Jayanti Sarovar

5.Dimna lake

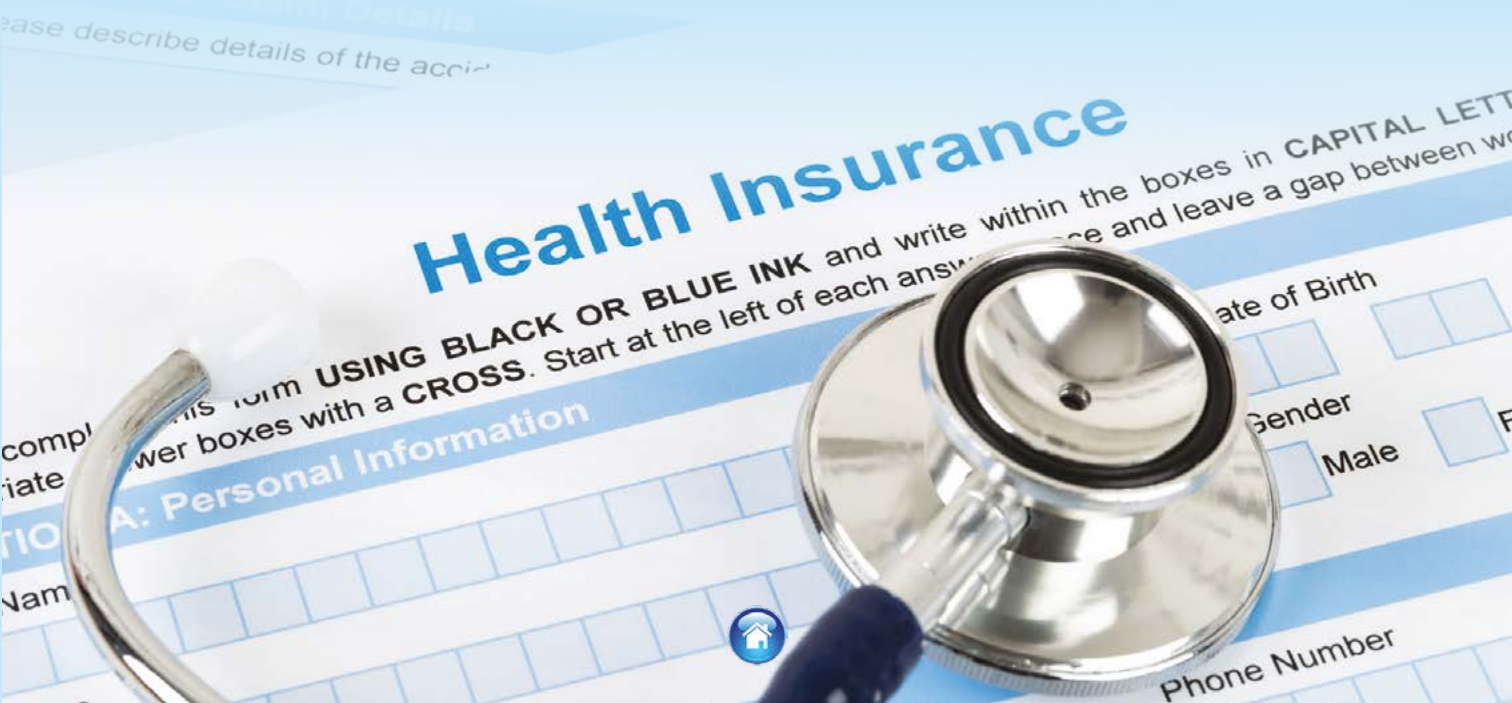
III Picture quiz

				[1]S						
				a						
		[2]G		k						
		o		c						
[3]E	l	e	p	h	a	n	[4]T	s		
		d		i			u			
[5]S	t	e	e	l			s			
		n					u			
		l								
		i								
[6]T	a	t	a	n	a	g	a	r		
				e						

Universal Health Coverage Day

12th December

Is the annual rallying point for advocates to raise their voices and share the stories of the millions of people still waiting for health, call on leaders to make smarter investments in health and remind the world about the imperative of UHC.



International Volunteer Day

05 DEC

Is an international observance mandated by the UN General Assembly in 1985. It offers an opportunity for volunteer-involving organizations and individual volunteers to promote volunteerism.

World Soil Day

05 DEC

The spotlight is on soil as a critical resource for life on Earth. Held annually, the event raises global awareness about the need to protect and sustainably manage our soils.