PRAJYA

MONTHLY NEWS MAGAZINE FOR CHILDREN

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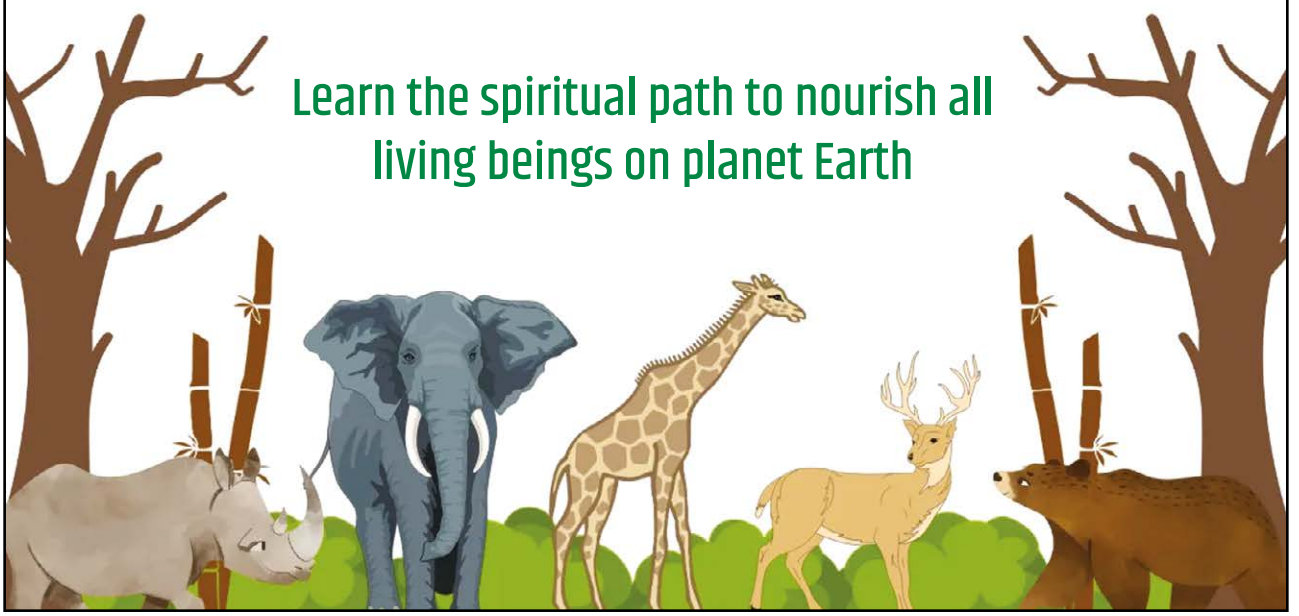
WORLD WILDLIFE DAY

03 MARCH

Aim of this day is to raise awareness about the conservation of the world's wild animals and plants.

Roughly 28% of the world's land surface is managed by indigenous people who are the front line in maintaining the relationship between humans and forest ecosystem.

Learn the spiritual path to nourish all living beings on planet Earth



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FROM THE EDITOR'S DESK

"Creativity is seeing what others see and thinking what no one else ever thought."

- Albert Einstein

Life poses many challenges. The best way to overcome these is to find innovative solutions. It is easier to blame the problem-ridden situation and languish in inaction. But it takes an inventive mind to overcome the difficulties.

Government of India's Direct Benefit Transfer scheme was one such move. The idea of including the poorest of the poor in the banking system not only achieved the objective of financial inclusion but also prevented the large-scale leakage in the public distribution system of benefits to the underprivileged. Preventing thousands of crores of rupees from landing in the wrong hands also helped the government to take up more developmental initiatives.

Using bamboo as crash barriers is another manifestation of divergent thinking. The bonus is that it is also eco-friendly.

Converting erstwhile coal mines into spots of eco-tourism is another innovative idea that can create a greener earth.

Lab grown diamonds are yet another example of unorthodox thinking and cutting-edge technology.

Humans have caused enough trouble on Earth with waste accumulation. ISRO's attempts to mitigate debris in space by bringing non-functional satellites back to the earth safely is purposeful thinking.

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

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

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

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

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

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

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

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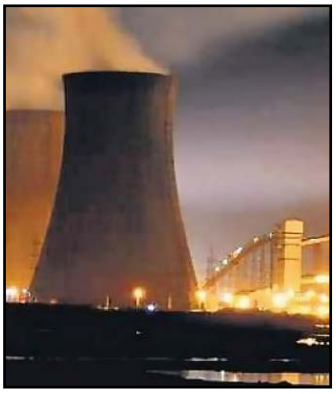
Happy Reading !

Watch out for the Monthly Prajya Quiz online

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

Content



International Current Affairs

National Current Affairs

Defence Updates

General Knowledge

Shri Sampath D

Why the world's biggest enterprises seek India

The rapid internet penetration and 5G technology present a significant chance for impact driven enterprises to create low-cost offerings for customers.

India is a favourable destination for global companies on account of being the most populous country combined with a huge talent pool of youth and skilled work force. India has been attracting quite a high volume of foreign investments in various sectors of the country. The government on its part has not left any stone unturned in making the country the best destination for foreign investors by making reforms in the FDI policies.

The rapid internet penetration and 5G technology present a significant chance for impact driven enterprises to create low-cost offerings for customers. India is also an information technology hub, and the IT sector employs 3.9 million, making it the largest private sector jobs creator in the country. Digitalisation in India has facilitated tech-enabled enterprises to scale up and drive innovation across sunrise sectors such as climate work.

Unlike many other emerging economies, India is able to showcase a positive macroeconomic environment, with inflation under control. It boasts of record high foreign exchange reserves and a tamed current account deficit – which reduces vulnerability to global economic shocks. India's economy is projected to grow at 6.7% in 2022, the fastest in the world during the year.

Nearly 7,000 projects across different sectors costing above ₹100 crore per project and totalling ₹111 lakh crores have been

Inflation

[in-'flā-shən]

A rise in prices, which can be translated as the decline of purchasing power over time.

identified in sectors such as Energy (24%), Roads (18%), Urban (17%) and Railways (12%) which amount to around 71% of the projected infrastructure investments in India.

India has the world's largest adolescent and youth population. It will continue to have one of the youngest populations in the world for time to come. English is spoken by a good percentage of Indians which helps MNC's.

India has been a World Trade Organization (WTO) member since 1995. WTO member nations must include some IP protection in their national laws. India is a signatory to the International IP agreements such as Paris Convention, Berne Convention, Madrid Protocol, Patent C-operation Treaty etc. which helps it in no small measure.

Smt Meenakshi S

SAUDI ARABIA to send its first WOMAN ASTRONAUT in space

Rayyanah Barnawi will be responsible for conducting mission experiments during her stint aboard the ISS.

Space and the universe have always been a mystery and venturing into space has been the dream of mankind since time immemorial. This quest has given us pioneers in Space Research like Yuri Gagarin, Neil Armstrong, Rakesh Sharma, Sunitha Williams, Kalpana Chawla and many more. Adding to this coveted list of personalities is Rayyanah Barnawi, who will be the first woman from the Kingdom of Saudi Arabia to fly to space on a 10-day mission to the International Space Station. Barnawi will be accompanied by fellow native Ali Al-Qarni, a fighter jet pilot. They will become the second and third Saudi Arabians to fly to space.

Barnawi is a biomedical researcher and completed her Bachelors in Biomedical Sciences from Otago University, New Zealand. She also completed her Masters in Biomedical Sciences at Riyadh's Al Faisal University. According to the Saudi Space Commission, Barnawi has over nine years of experience in cancer stem cell research. As part of the upcoming Saudi Arabian space mission, she will be responsible for conducting mission experiments during her stint aboard the ISS.

Shri Mrithyunjay GN

BEL signs MOU for developing cyberwarfare and cyber defence systems

Countries across the world are working on improving their cyberwarfare capabilities, both to protect against incoming threats, and also to retaliate effectively, if necessary.

The future of warfare is cyber. As much as this sounds like a tagline for an action movie about robots, this is more truth than fiction. The first point of attack between different countries is not soldiers or missiles anymore.

Enemy nations aiming to harm our country will first do so through digital disruption. Cyberwarfare involves hacking essential systems of a country to make day-to-day activities impossible. This will ensure a complete breakdown of communication and order, even before a single bullet is fired, thereby making a coordinated response to an attacking nation very difficult.

This is why countries across the world are working on improving their cyberwarfare capabilities, both to protect against incoming threats, and also to retaliate effectively, if necessary.

Bharath Electronics Limited, an Indian aerospace and defence company, has signed a memorandum of understanding with Global ITES private limited, which will allow them to partner in technology development and innovation, specifically in the field of cyber defence and cyber warfare systems.

Signed during the 5-day Indian Airforce's Aero India Presentation in February 2023, this partnership that started in Yelahanka Airforce Station in Bengaluru will go on to play an important role in bolstering India's cyberwarfare potential.

The result of this partnership is expected to be advanced cybersecurity solutions that can be used to effectively combat any disruption of Indian systems. This, along with the ₹3700 crore contract that BEL has with the Indian Airforce, signals a more defensible future for India.

Shri Sivakumar R

“India continues to be a bright spot.” - IMF

India continues to remain a relative "bright spot" in the world economy, and will alone contribute 15% of the global growth in 2023.

During the years from 2020 till the recent period, multiple shocks have hit the world, one by one starting with COVID related supply chain disruptions, food & energy crisis on account of Russia – Ukraine War and volatility in financial markets. Through all this adversity, India continues to remain a relative "bright spot" in the world economy, and will alone contribute 15% of the global growth in 2023, International Monetary Fund (IMF) Managing Director Kristalina Georgieva remarked recently.

A statement comparing projected growth of India with China, USA and the world is given below, to better understand this compliment from the IMF.

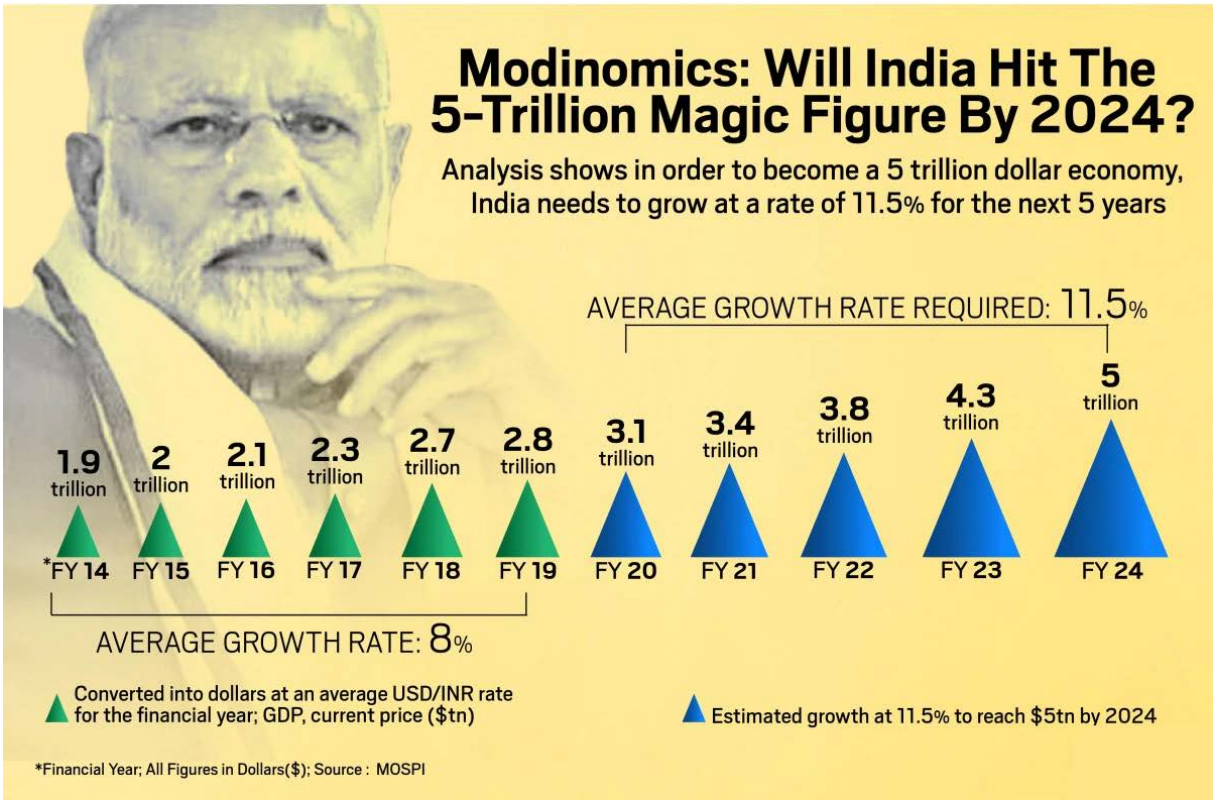
IMF's World Economic Outlook Projections

	2021 Actuals	2024 Projected
India	8.70%	6.80%
China	8.40%	4.50%
World	6.20%	3.10%
USA	5.90%	1%

At 6.8% growth rate in 2024, India’s will have the fastest growth rate among major world economies.

How did this happen?

According to IMF, India has used **digitalisation** as a major driver of overcoming the disabilities caused by the COVID pandemic and in creating opportunities for growth and jobs. Besides, during this period,



Indian economy has the potential to become a 5 Trillion Dollar Economy by 2025-26 and a 7 Trillion Dollar Economy by 2030.

India has followed an aggressive trade oriented diplomacy, which resulted in the first ever FTA (Free Trade Agreement) being signed with UAE. India has also recently signed trade agreements with Australia and Mauritius. A similar agreement with UK is under negotiation.

India is also working on plans to becoming a global chip making hub, as concerns grow about the West's reliance on Taiwan. **India is already the world leader in digital payments.** We are now looking to develop in areas like Solar, Wind and Green Hydrogen production.

Internally a combination of a strong and stable political environment coupled with significant government investments in infrastructure have provided the basis for strong economic growth. Further the taxation ecosystem in India has also undergone substantial reforms in the post 2014 period which is another causative factor for the high GDP growth. Significant initiatives have been introduced under Aatmanirbhar Bharat and Make in India programmes to enhance India's manufacturing capabilities and exports across industries.

According to our Chief Economic Advisor, Dr V. Anantha Nageswaran, Indian economy has the potential to become a 5 Trillion Dollar Economy by 2025-26 and a 7 Trillion Dollar Economy by 2030.

By 2030, we could well become the world's 3rd largest economy, only behind USA and China.

Shri Sampath D

NTPC

World's top independent power producer

Return on Investment: A calculation of the monetary value of an investment versus its cost.

The ROI formula is: (profit minus cost) / cost. If you made ₹10,000 from a ₹1,000 effort, your return on investment (ROI) would be 0.9, or 90%.

Market capitalization or market cap is the total value of a publicly traded company's outstanding common shares owned by stockholders. It is calculated by multiplying the total number of shares by the present share price.

National Thermal Power Corporation Limited (NTPC), the country's largest power generating company has been ranked No.1 Independent Power Producer and Energy Trader among 250 energy producers in the world, in S&P Global Commodity Insights Company Rankings®-2022.

The rankings are based on 4 key metrics:

(1) Asset worth,

(2) Revenues,

(3) Profits and

(4) Return on Investment (ROI).

NTPC is one of the key pillars sustaining India's economic growth and development. On a share of 17% of the installed capacity, **it currently contributes 24% of the total electricity produced in India.**

It operates 55 power stations, and it currently offers diversified energy comprising coal-based units, combined gas/liquid fuel, hydro, wind and solar projects. NTPC has said that its goal has always been to deliver power that is economical, efficient and ecologically sustainable.

NTPC is targeting non-fossil fuel-based capacity to make up nearly 50% of the company's portfolio, which includes renewable energy capacity of 60 GW and total portfolio of 130 GW by 2032.

The company leads India's energy transition, in terms of scale, efficiency and energy generation from cleaner and greener sources. It has also teamed with NITI Aayog for India's Net Energy Zero effort.

NTPC currently produces 25 billion units of electricity per month. Over and above its operations in India, it operates in Sri Lanka and Bangladesh. The market cap of NTPC in December 2022 was ₹1,66,249.34 crore.

Kum Silpa Nandakumar

Ajay Banga to lead World Bank

As the new head, Ajay Banga will face the challenge of trying to balance the immediate financial needs of low-income countries while tackling issues such as climate change, global conflict and pandemic risks.

Latest to join the Indian origin global leaders is Ajay Banga, nominated by US President Joe Biden to lead the World Bank. Banga is the first Indian - American to head either of the two top international financial institutions: the IMF and the World Bank. US banker David Malpass, the previous president of the World Bank Group gave an early resignation.

Raised in India, Ajay Banga finished schooling at Hyderabad Public School, earned a Bachelor's degree in Economics from the University of Delhi's St. Stephen's College and an MBA degree from the Indian Institute for Management, Ahmedabad. He further went on to work with Nestle, Pepsico and Citigroup before becoming the president and CEO of Mastercard.

In 2016, Banga was awarded the Padma Shri. Banga currently serves as Vice Chairman at General Atlantic, a private equity company.

As the new head, he will face the challenge of trying to balance the immediate financial needs of low-income countries while tackling issues such as climate change, global conflict and pandemic risks. US officials said Banga had the experience to help the bank work with the private sector towards achieving its goals.

Kum Anu Narayan

Supermassive black holes on collision course

In some ways, dwarf galaxies are our galactic ancestors, which have evolved over billions of years to produce large galaxies like our own Milky Way.

Observed for the first time are two dwarf galaxy black hole duos on separate collision courses. This will eventually result in a merger that will leave two massive black holes behind, in a larger galaxy composed of the merged dwarf galaxies. This cosmic clash could have implications for our understanding of the early universe and how these titans and the galaxies they inhabit grew.

Using NASA's Chandra X-ray observatory, the scientists examined the colliding black hole pairs and discovered that as the dwarf galaxies are racing toward each other, they are pulling in gas that is "feeding" their inhabitant black holes - causing them to grow even before the merger.

Brenna Wells, a researcher at the University of Alabama at Tuscaloosa who took part in the observations, stated that thanks to the repeated mergers, most of the dwarf galaxies and black holes in the early universe are likely to have grown much larger by now. "In some ways, dwarf galaxies are our galactic ancestors, which have evolved over billions of years to produce large galaxies like our own Milky Way."

Dwarf galaxies are small galaxies containing stellar mass equivalent to around 3 billion times that of the sun. By comparison, the entire Milky Way is believed to contain a stellar mass of around 60 billion times that of our star. In the first hundreds of millions of years after the Big Bang, the early universe is believed to have been replete with these dwarf galaxies, most of which merged to form larger galaxies like ours.

These early galaxies have thus far been impossible to observe because they are extremely faint and are located at great distances away. However, astronomers have seen closer dwarf galaxies in the process of merging, but with no sign of black holes until now.

Kum Shrivaishnavi R

Hari Balakrishnan wins Marconi Prize

Balakrishnan's path-breaking research papers on networking traffic, wireless data exchange and sensor-based vehicular data have been the key to establishing the framework of high-speed network, data sharing and safe driving experiences.

Hari Balakrishnan, a scientist and entrepreneur of Indian origin, has won the prestigious Marconi Prize for 2023. The Marconi Prize, given by the Marconi Society, is awarded to individuals who have made remarkable contributions to developments in Information and Communications Technology.

Hari Balakrishnan, a student of IIT-Madras, went on to do his PhD at the University of California. His research work has been creating waves since his graduate days. He has published several papers in the field of networking, mobile sensing, and web applications. He is currently the Founder, Chief Technology Officer and Chairman of Cambridge Mobile Telematics (CMT).

CMT is his latest entrepreneurial endeavour, where they analyze data from several public sensors, IoT devices and their mobile applications.

The collected data is used to analyze the activity and behaviour of drivers on any given roadway. This analysis is used to give a view of the riding and driving environment on any road. By accumulating real-time data, the application is making road safety an attainable reality in 25 countries.

Balakrishnan's path-breaking research papers on networking traffic, wireless data exchange and sensor-based vehicular data have been the key to establishing the framework of high-speed network, data sharing and safe driving experiences.

Balakrishnan's stellar contribution is in the development of modern network practices and applications of abundantly available data for practical purposes.

Kum Pavithra S

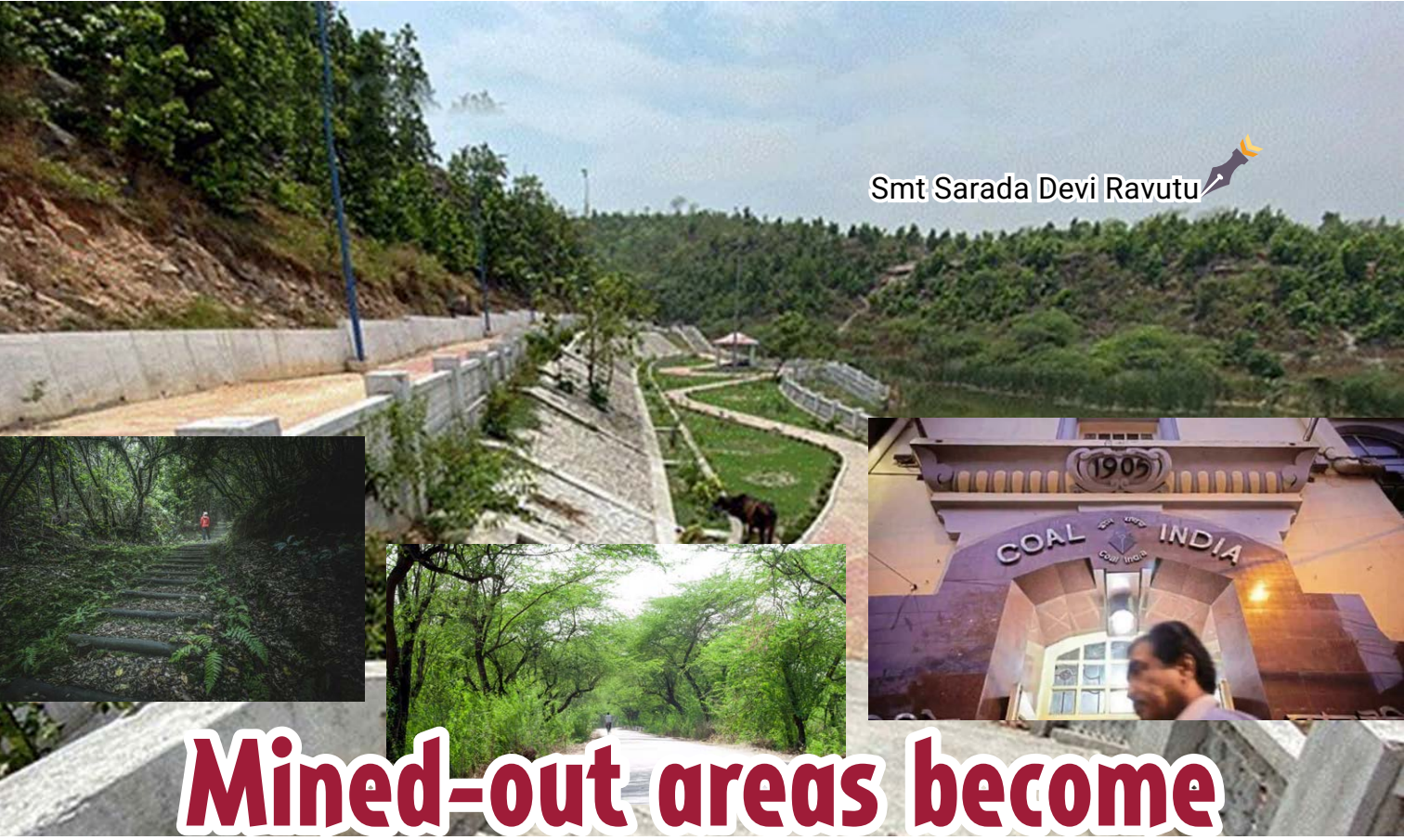
Denmark the first to import CO_2 and bury it under the sea

With the goal of becoming carbon neutral by the year 2045, Denmark launched the "Greensand Project" to store carbon dioxide 1,800 metres beneath the North Sea and became the first nation in the world to bury CO_2 from abroad which will assist the country in achieving its climate targets.

British chemical firm Ineos and German oil major Wintershall Dea started this project to capture and trap CO_2 to reduce global warming. It is projected that nearly eight million tonnes of CO_2 will be stored every year. While the **carbon capture and storage (CCS)** initiatives are still in their early stages and expensive, the "Greensand Project" sets itself apart by bringing in carbon from a great distance along with CO_2 from close-by industrial sites.

The process involves the CO_2 being liquified first at the source and then transported across countries through ships. It is also looking towards transportation via pipelines in the future. It is later stored in reservoirs or exhausted oil and gas fields as the subsoil present there has a storage capacity greater than that of their own emissions.

The North Sea is particularly suitable for this type of project as the region already has pipelines and potential storage sites after decades of oil and gas production.



Smt Sarada Devi Ravutu

Mined-out areas become Eco-Tourism destinations

Seed ball plantation – Throwing seeds rolled within a ball of clay on the ground using drones.

A carbon sink is anything that absorbs more carbon from the atmosphere than it releases –e.g., plants, ocean and soil.

Miyawaki method – An efficient technique started by Japanese botanist Akira Miyawaki for creating mini-forests quickly on degraded land previously used for construction or agriculture, using native vegetation.

Land is finite. Activities like mining cause land degradation. As sustainable development is the need of the hour, Coal India Limited (CIL), the largest coal-producing company globally has transformed thirty abandoned mining areas into eco-parks and eco-tourism destinations, providing a source of income for locals and boosting the region's green cover.

Gunjanpark, Eastern Coalfields Limited, Gokul eco-cultural park, Kenapara eco-tourism site and Ananya Vatika, Krishnashila eco-restoration site and Mudwani eco-parks, Ananta medical garden, Bal Gangadhar Tilak eco-park, Chandra Sekhar Azad eco-park have been developed by CIL and its subsidiary companies.

By using techniques like seed ball plantation, seed casting through drones and Miyawaki plantation in its various mines, CIL has expanded its green cover to 1610 hectares during 2022-23 and planted over 30 lakh saplings in the current fiscal. Mined-out areas and overburdened dumps are reclaimed as soon as they get delinked from the active mining zones. Various species for biological reclamation is selected in consultation with central and state-aided expert agencies.

Monitoring of land reclamation is being done through remote sensing and as of now, around 33% area is under green cover. These afforestation activities are also creating carbon sinks. The dense tree coverage also helps to control air pollution and arrests the suspended dust particles emitted during mining operations.

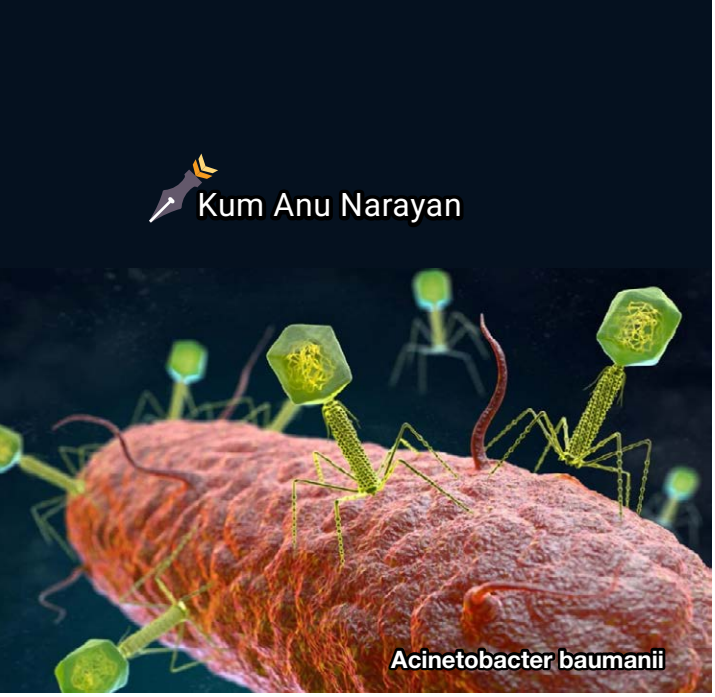
Smt Meenakshi S

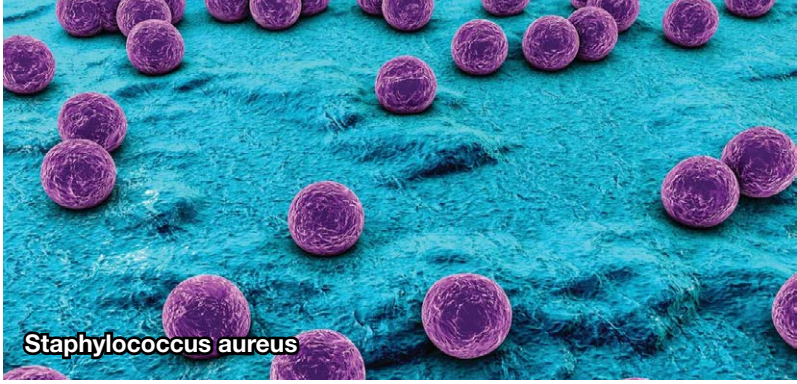
Rail Kaushal Vikas Yojana

Skill building can make an individual self-reliant and improve employability chances in the chosen field of work. It is the need of the hour and Skill India Mission toes this line of thought. Taking cognisance of the industrial demand, Ashwini Vaishnaw, Minister of Railways, Communications, Electronics and Information Technology launched the Rail Kaushal Vikas Yojana, a programme under the aegis of Pradhan Mantri Kaushal Vikas Yojana. Under this scheme, Indian Railways will impart training to 50,000 candidates over a period of three years. The curriculum has been developed by Banaras Locomotive Works.

Training will be provided in four trades: Electrician, Welder, Machinist and Fitter and will comprise initial basic training of 100 hours. Training programmes in other trades will be added by zonal railways and production units based on regional demands and needs assessment. Training shall be provided free of cost and trainees will also be provided toolkits relevant to their trade which will help them utilize their learnings and enhance their capacity for self-employment as well as employability in various industries.75 railway training institutes spread across the country have been shortlisted to provide training in aforesaid trades, to cover youth from all over the country.

Kum Anu Narayan





Nano composite coatings to prevent post-surgical infections

According to WHO, these post-surgical site infections (SSIs) affect 11% of patients in low and middle-income countries and are caused by the development of biofilms.

A recently developed nano composite coating can inhibit biofilm formation and kill attached bacteria, thus reducing post-operative infections, which is a common occurrence triggered by increasing antibiotic resistance in bacteria. According to WHO, these post-surgical site infections (SSIs) affect 11% of patients in low and middle-income countries and are caused by the development of biofilms (bacterial groups growing in formation that are highly resistant to antibiotics) on the incision site or in the soft tissue inside.

The biofilm matrix may form from a transfer from the hospital environment through potential carriers like surgical equipment, wound dressing or bandage/surgical sutures or from existing infections in the patient's body. It acts as a shield against antibiotics administered during the operation, slowing down their penetration. Therefore, antibacterial coatings on the surface of these materials are important to prevent SSIs. Traditionally, these coatings contain biocides like nanosilver, nanocopper, triclosan and chlorhexidine.

Although triclosan and chlorhexidine exhibit antibacterial effects against a broad-spectrum of bacteria, they and other biocides produce cytotoxicity. Thus, there is an increasing focus on developing alternatives.

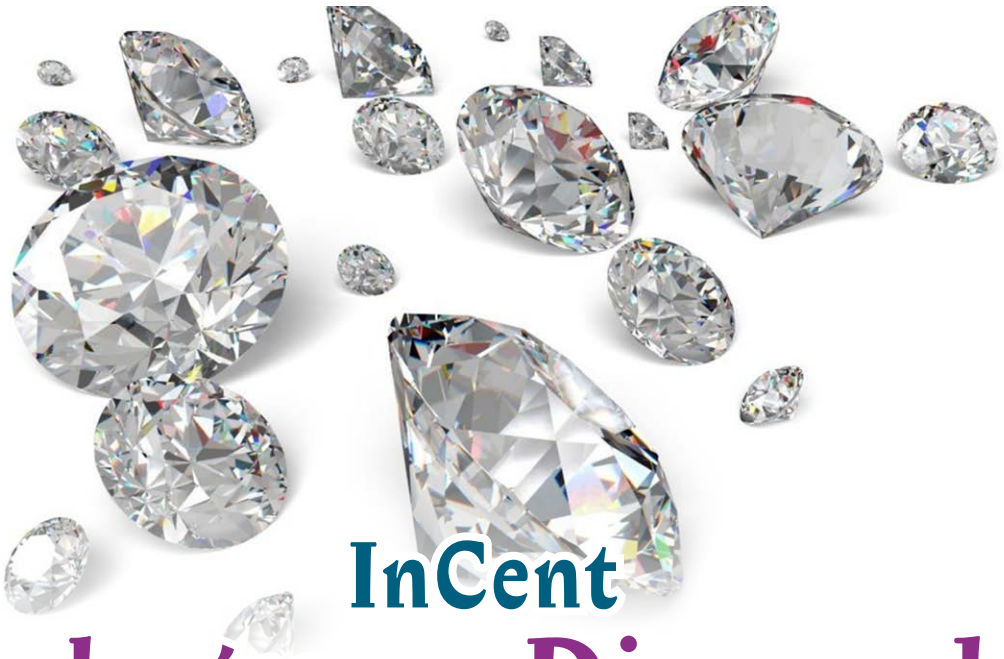
The ATL-coated vicryl exhibited higher percentage biofilm inhibition as compared to commercially available triclosan-coated antibacterial sutures.

Scientists from ARCI, an autonomous institute of the Department of Science and Technology (DST), have developed a nanocomposite coating (named ATL), by combining water repellence and biocidal property (combinatorial approach), which exhibits both hydrophobic and biocidal behavior. This coating inhibits biofilm formation by restricting bacterial and water adhesion, and kills any attached bacteria.

ATL was deposited on different surgical sutures made of nylon, silk and polyglactin 910 (vicryl) in addition to surgical-instrument grade stainless steel. These were tested for biofilm inhibition against American Type Culture Collection (ATCC) and clinical isolate strains of proven biofilm-forming bacteria such as *Acinetobacter baumanii, Staphylococcus aureus, Pseudomonas aeruginosa* and *Escherichia coli* at the Translational Health Science Technology Institute (THSTI) and LV Prasad Eye Institute (LVPEI) respectively.

The ATL-coated vicryl exhibited higher percentage biofilm inhibition as compared to commercially available triclosan-coated antibacterial sutures. Cytotoxicity of the formulation was evaluated on coated surface, and the ATL coatings were found to be non-cytotoxic.

Smt Sumathi Ramakrishnan



InCent
Lab-grown Diamonds

LGDs are produced through two technologies, namely High-Pressure High Temperature (HPHT) and Chemical Vapour Deposition (CVD).

The gems and jewellery sector contributes around 9% to India's total merchandise export. Over the past decade, one of the major technological developments globally has been laboratory-grown diamonds (LGD).

LGDs are produced through two technologies, namely High-Pressure High Temperature (HPHT) and Chemical Vapour Deposition (CVD). India is one of the leading producers of lab grown diamonds using CVD technology.

A five-year research grant for one of the Indian Institutes of Technology (IITs) was announced to encourage the indigenous production of LGD machinery, seeds and recipe, in the union Budget 2023-2024. After a joint determination of its capabilities, it

Globally, the market stood at USD 1 billion in 2020, the LGD jewellery market is expected to rapidly rise to USD 5 billion by 2025 and exceed USD 15 billion by 2035.

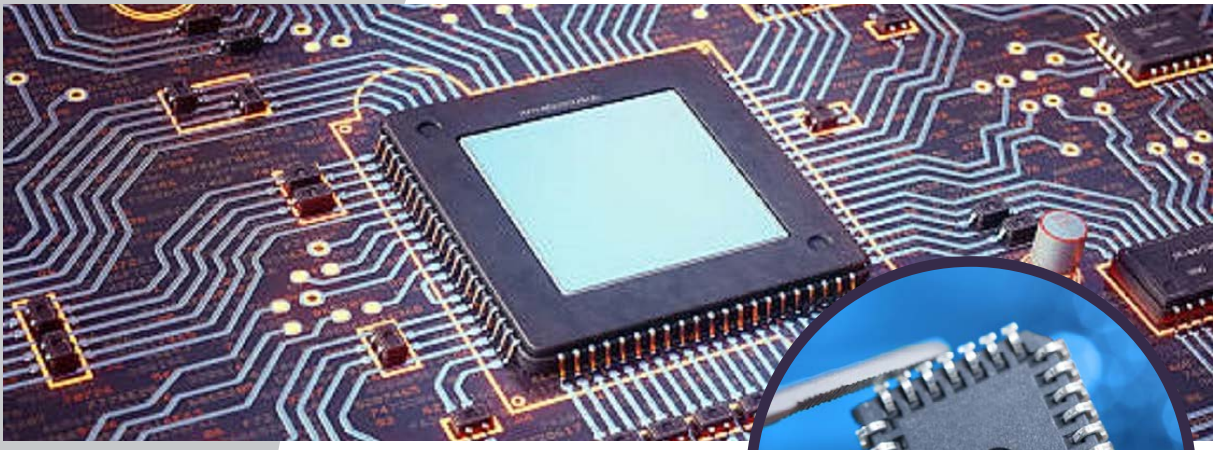
- **HPHT synthetic diamonds are produced from carbon material in apparatuses that mimic the high pressure, high temperature conditions of natural diamond formation in the earth.**
- **CVD involves filling a vacuum chamber with carbon-containing gas that crystallizes on a synthetic diamond seed. This method uses lower temperatures and pressures than HPHT.**

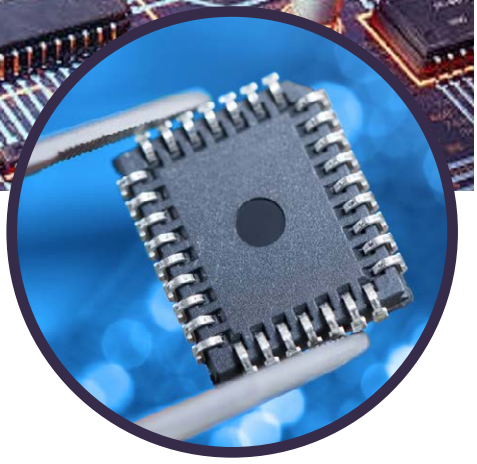
has been decided to give this project to IIT- Madras by a joint committee of Government, export promotion council and industry representatives to establish an India Centre for Lab-grown Diamond (InCent-LGD) with the estimated cost of ₹ 242.96 crores over 5 years.

The aim is to provide, in mission mode, technical assistance to the industries, and entrepreneurs in the country, to promote indigenous manufacturing of both CVD and HPHT systems along with the recipes for expanding the LGD business at the higher end. Research efforts would make the technology available for start-ups at affordable cost, increase employment opportunities, increase exports of LGD thus playing a significant role in fuelling India's economic growth.

Globally, the market stood at USD 1 billion in 2020, the LGD jewellery market is expected to rapidly rise to USD 5 billion by 2025 and exceed USD 15 billion by 2035.

Shri Mrithyunjay GN





ChipIN facility launched

A new facility ChipIN that will aid in designing of chips, virtual prototyping tools and access to semiconductor fabrication was launched at the Centre for Advanced Computing (CDAC) in Bengaluru, on 24th February 2023.

At the launch of the facility, Union Minister of State for Electronics and information technology (MeitY) Rajeev Chandrashekar spoke on India's rapidly developing role in the development of global electronics and how there is a great need to improve our manufacturing processes and capabilities to meet the future demand we are poised to encounter.

The growth in the level of digitization due to the government's increasingly internet forward approach, has resulted in rapid digitization across the country and access to digital infrastructure can only be ensured by continued research and development.

He also stressed that "New India is becoming a trusted partner in terms of delivering talent, global products, digital products and services."

The ChipIN centre will give scientists and designers access to state-of-the-art tools involved in electronics and computer design. They are expected to bridge the gap present in the semiconductor industry caused due to the COVID-19 pandemic. These chips will go on to become integral parts in smartphone, PCs and even supercomputers.

Advancements made here will help in all fields of study and are also expected to have a big impact in the semiconductor-based start-ups.

AI research is another area in which India will greatly benefit from better semiconductor fabricating facilities. Access to better hardware will help in prototyping of hardware that can meet the computational requirements of AI.

With the future being one where AI integrated workflows are ubiquitous, the need for better computing technology and the ability to research and fabricate the same will provide India with a significant leg up globally.

Kum Kavya R

Medicinal plant holds key to HEART HEALTH

The dried pulp, when administered, also reduced cardiac hypertrophy indicators, oxidative stress and heart inflammation brought on by isoproterenol.

Garcinia pedunculata, a medicinal plant commonly known as 'Bothekera' in Assamese, has been reported to protect from heart diseases.

Researchers from the **Institute of Advanced Study in Science and Technology** (IASST), which is an autonomous institute of the Department of Science and Technology (DST), discovered that sun-dried slices of the ripe fruit are known to have anti-inflammatory, antibacterial, antifungal and even antidiabetic activity. While G. *pedunculata* is a rich source of antioxidants, its cardioprotective potential had yet to be explored until recently.

To assess this potential, the scientists injected a double dosage of bioactive chloroform fraction of the herb to Wistar rats at 24-hour intervals for 28 days. This was followed by injection of isoproterenol, according to the isoproterenol-induced myocardial infarction model. Upon analysis, the disease group indicated significantly elevated levels of myocardial infarction markers. But in the G. *pedunculata* pretreated groups, these levels were maintained at near-normal.

The dried pulp, when administered, also reduced cardiac hypertrophy indicators, oxidative stress and heart inflammation brought on by isoproterenol. Swarnali Bhattacharjee and Rajlakshmi Devi, both senior researchers, attribute these improvements to the excellent antioxidant and anti-inflammatory potential of the herb that helped protect the heart against isoproterenol-induced injury.

Furthermore, the chemical composition of the chloroform fraction revealed active phytocompounds like hydroxycitric acid, hydroxycitric acid lactone and

DO YOU KNOW ?

Myocardial infarction is commonly referred to as a heart attack. It is caused by a complete stoppage of blood flow to the muscular tissue of the heart, which is known as myocardium.

Hypertrophy – the enlargement of an organ or tissue.

parvifoliquionone. Compounds like GB-1a, 9-Hydroxycalabaxanthone, Chlorogenic acid, Garcinone A and Garcinol were also present. The presence of these compounds likely contributes to the therapeutic effects.

Traditionally forbidden for raw consumption in Assam, the dried slices are used for culinary purposes such as delicacies like the sour fish curry or prepared with other vegetables, such as fritters made with lentils. In an Assamese home, they are often soaked in water, with the liquid used as a home-made remedy for stomach-related issues.

Shri Krishnakumar C S

First women MLAs from Nagaland

"For me, a better democracy is a democracy where women do not only have the right to vote and to elect but to be elected."

— Michelle Bachelet

Salhoutuonuo Kruse

Hekani Jakhalu

The world had seen several women leaders who could rise to glory due to their efficiency and creativity. Indian culture values 'Narishakthi' and our government leaves no stone unturned for the empowerment of women.

Women's representation in legislatures has been very low in many of the Indian states. The people of Nagaland have created history recently by electing two women MLAs for the first time. Both of them belong to the National Democratic Progressive Party, an ally of the BJP.

Hekani Jakhalu, a lawyer and a social activist, got elected to the Dimapur – III seat. She is the founder of 'YouthNet', an organization which works for the empowerment of youth and women. Salhoutuonuo Kruse won from the Western Angami constituency. She served as the President of Angami Women's Organization from 2011 to 2014.

'Power sharing' is the spirit of democracy. Increased participation of women will make democracy more meaningful. It would help in addressing women's issues in an effective manner.

Shri Sampath D

CHANDRAYAAN-3
Key rocket engine tested

Chandrayaan-3 interplanetary mission has three major modules: the propulsion module, lander module and a rover.

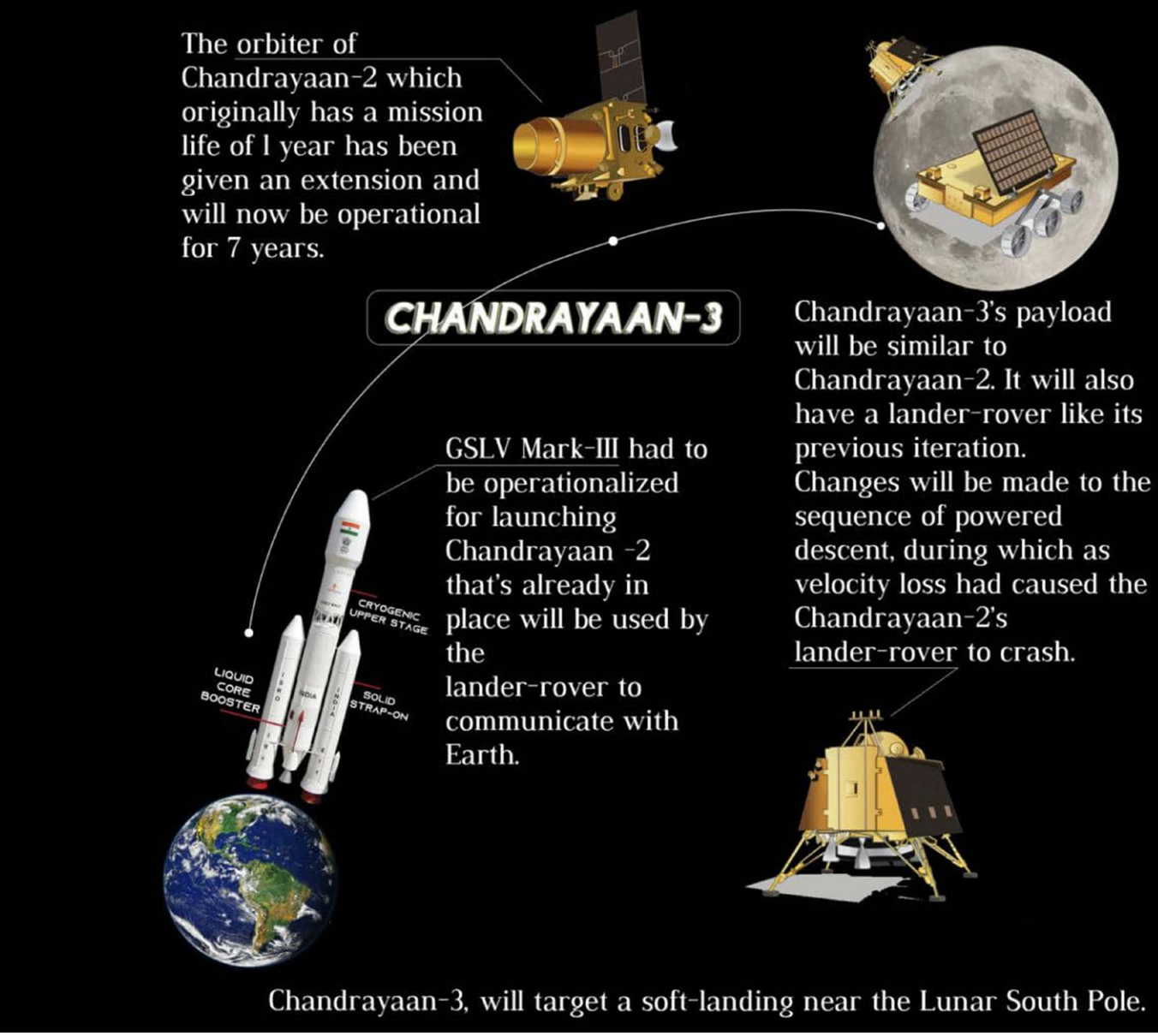
The Indian Space Research Organisation (ISRO) announced the success of the flight acceptance hot test of the CE-20 cryogenic engine that will power the cryogenic upper stage of the launch vehicle for the Chandrayaan-3 mission. The statement further added that "All the propulsion parameters during the test were found satisfactory and closely matched with predictions."

The hot test was carried out on 24th February, for a planned duration of 25 seconds at the High-Altitude Test Facility of the ISRO Propulsion Complex at Mahendragiri in Tamil Nadu.

The cryogenic engine will be further integrated with the propellant tanks, stage structures and associated fluid lines to realise the fully integrated flight cryogenic stage.

EMI-EMC (Electro - Magnetic Interference/ Electro - Magnetic Compatibility) test is conducted for satellite missions to ensure the functionality of the satellite subsystems in the space environment and their compatibility with the expected electromagnetic levels. Chandrayaan-3 lander successfully underwent EMI/EMC test at U R Rao Satellite Centre, Bengaluru, earlier this year.

Chandrayaan-3 interplanetary mission has three major modules: the propulsion module, lander module and a rover. The mission's complexity calls for establishing radiofrequency (RF) communication links between the modules.



According to ISRO, during the Chandrayaan-3 lander EMI/EC test, launcher compatibility, antenna polarisation of all RF systems, standalone auto compatibility tests for orbital and powered descent mission phases, and lander and rover compatibility tests for post landing mission phase were ensured.

Chandrayaan-3 is a follow-on mission to Chandrayaan-2 to demonstrate end-to-end capability in safe landing and roving on the lunar surface. ISRO plans to launch the mission in June. It will be launched by Launch Vehicle Mark 3 (LVM3) from the Satish Dhawan Space Centre in Sriharikota.

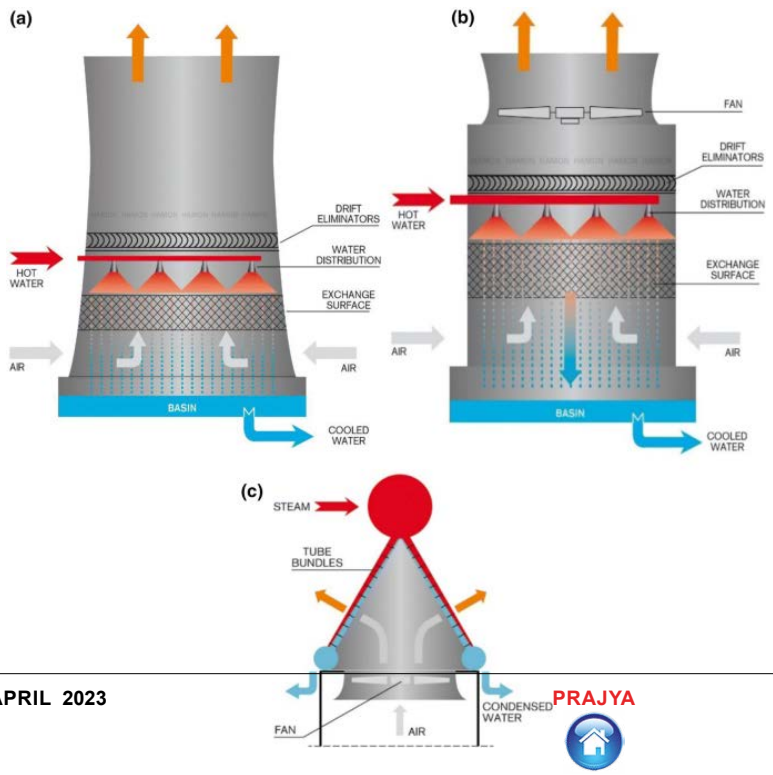
The propulsion module will carry the lander and rover configuration till 100 km lunar orbit. It has **Spectro-polarimetry of Habitable Planet Earth** (SHAPE) payload to study the spectral and polari metric measurements of Earth from the lunar orbit.

The Lander module is equipped to land softly at a designated location on the moon, while the Rover module carries out chemical analysis of the lunar surface during its mobility.

Kum Sunita D Behera

India's first Air-Cooled condenser installed

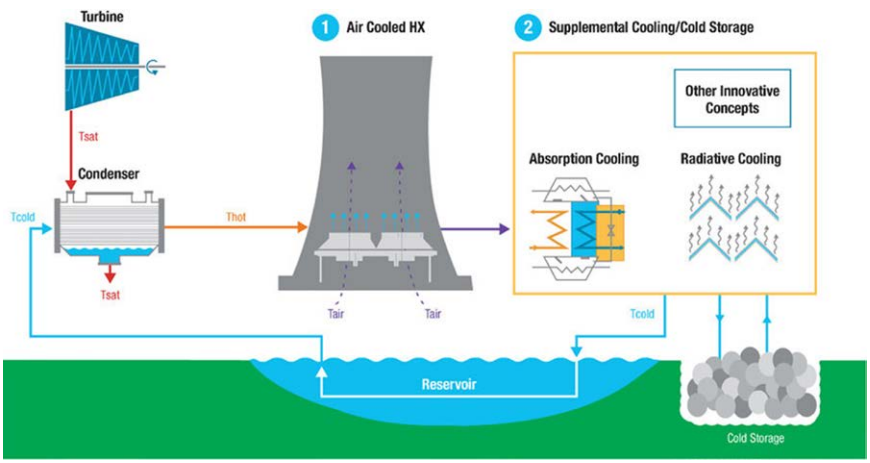
On 1st March, National Thermal Power Corporation Limited (NTPC) launched India's first air-cooled condenser operated supercritical power plant. Located at North Karanpura Coalfield in Jharkhand, this power plant is said to supply economical power to Jharkhand, Bihar, West Bengal and Odisha.



The North Karanpura plant will have a total capacity of 1980 MW and it has currently started the commercial operation of first unit of 660 MW.

Air-cooled condenser (ACC) is a method of direct dry cooling system where steam discharged from turbine exhaust enters a stream distribution manifold located at the top of the ACC structure.

The steam is then condensed inside fin tube heat exchangers with the help of the cool air drawn from outside the tube with the help of fans. The condensation is drained from the fin tube heat exchangers



Air cooled condensers are typically used for combined cycle, concentrated solar, coal and biomass thermal power plants which do not require a large volume of cooling water.

into a pipeline which then transfers it to a tank before being distributed to the boiler.

ACC are typically used for combined cycle, concentrated solar, coal and biomass thermal power plants which do not require a large volume of cooling water. These power plants can be easily built in regions where water may not be available or where it is scarce or expensive.

It requires almost one-third less water than traditional water-cooled condensers which would result in saving water of around 30.5 million cubic meters annually. This is enough to meet the needs of around 1.5 million people in the region annually.

This project is one of many several measures and initiatives undertaken by the NTPC in its efforts to proactively conserve water and address water sustainability issues. The company is also a signatory to the UN Global Compact's CEO Water Mandate.

Smt Ghana Saraswathy M

Bahu Bali

World's first bamboo crash barrier

Nitin Gadkari ✓ ...
@nitin_gadkari

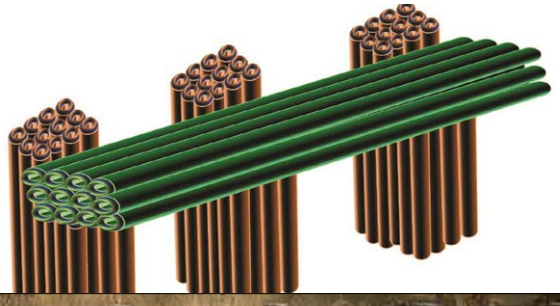
An extraordinary accomplishment towards achieving #AatmanirbharBharat has been made with the development of the world's first 200-meter-long Bamboo Crash Barrier, which has been installed on the Vani-Warora Highway.

Another amazing success in promoting Aatma Nirbhar Bharat has been done by the Ministry of Road Transport and Highways. Our Government has constructed World's first 200-meter-long Bamboo Crash Barrier on Maharashtra's Vani-Warora Highway. The route connects the state's districts of Chandrapur and Yavatmal.

The 'Bahu Bali' was rigorously tested before installation at different government-run institutes, including Indore's Pithampur-based National Automotive Test Tracks (NATRAX). It received a Class 1 rating at the Fire Rating Test at the Central Building Research Institute (CBRI) in Roorkee, Uttarakhand. The Indian Road Congress has also formally recognised the bamboo crash barrier.

This Bamboo Crash Barrier offers a perfect alternative to steel and addresses environmental concerns and their aftermath.

Furthermore, it is a rural and agriculture-friendly industry making it an even more significant milestone. The recycling value of the bamboo barrier is 50-70 % whereas that of steel barriers is only 30-50 %.



DO YOU KNOW ?

- **'Bahu Bali' - The bamboo species used in the making of this barrier is *Bambusa balcooa*, which has been treated with creosote oil and coated with recycled High-Density Poly Ethylene (HDPE).**
- **Indian Roads Congress (IRC) is the country's apex body of highway engineers, established in December 1934 with the goal of road development in India.**

Shri Sridhar P

Nano Liquid DAP Fertilizer approved

IFFCO
पूर्णतः सहकारी स्वामित्व
Wholly owned by Cooperatives

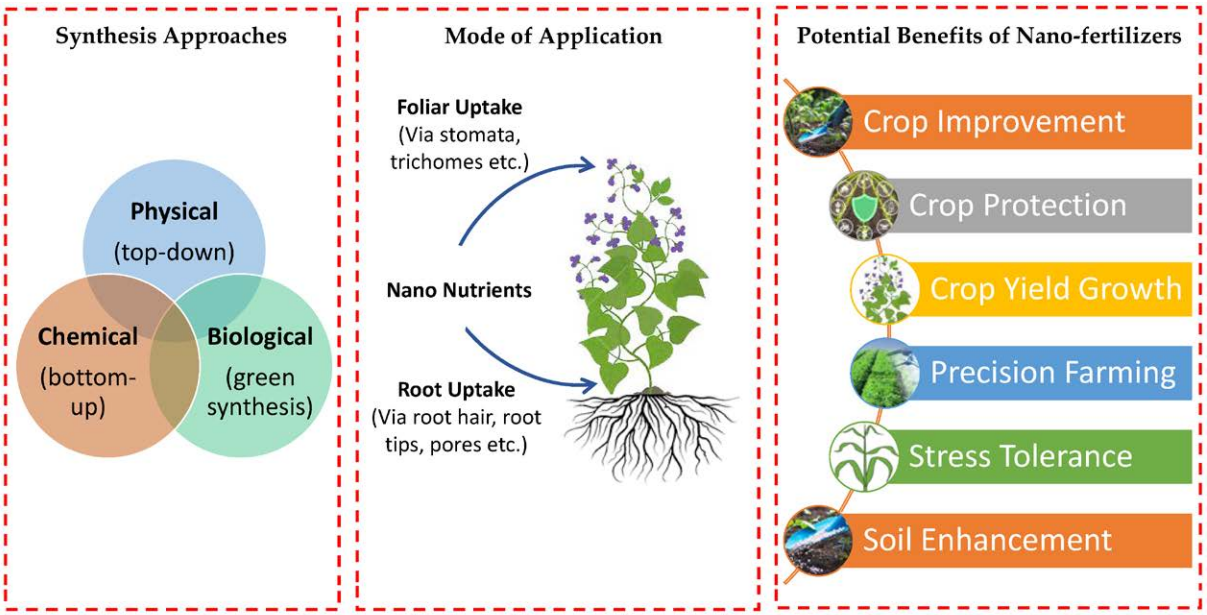
Fertilizer cooperative IFFCO which had introduced nano urea in 2021 announced that the Government of India has approved the launch of nano liquid DAP (di ammonium phosphate) fertilizer for the benefit of farmers, making the country self-reliant and conserve precious foreign exchange incurred due to fertilizer import.

What is Nano technology?

It is a branch of science and engineering, devoted to designing, producing devices and systems by manipulating atoms and molecules at nano scale. Quite interesting as it gets! It takes 10 hydrogen atoms arranged side by side to get one nano meter.

Platform technology Today the sweep and reach of nano technology is jaw dropping. Nano technology like internet technology or artificial intelligence has the potential to completely transform the current state of every major technology. It is materials technology at its magical best.

Ultra small wonder Nano technology which deals with how materials behave at atomic levels is fascinating. Materials behave very differently at nano scale level. **Carbon at nano scale is stronger than steel and six times lighter, aluminium is spontaneously combustible at this level.** When



India now produces over 300 million tonnes of food grains, over 100 million tonnes of fruits and vegetables annually and close to 170 million hectares of arable land is devoted to agriculture which is amongst the highest in the world.

scaled up, it means many different things like super-efficient solar panels, faster computing, better nutrient delivery to plants and many more.

Nano technology and Indian agriculture

India is a major player in the field of agriculture and is self -sufficient. India now produces over 300 million tonnes of food grains, over 100 million tonnes of fruits and vegetables annually and close to 170 million hectares of arable land is devoted to agriculture which is amongst the highest in the world, making India the third biggest importer of fertilizers. The use of nano liquid DAP can increase crop yield significantly, by making nutrient availability better and hence its offtake by plants.

Nano technology can repeat the spectacular success of drip irrigation. Further, nano liquid DAP is to be co-produced by IFFCO and Coromandel Fertilizers. Nano liquid DAP is to be priced at ₹650 per 500ml bottle which is half the price of a bag of DAP now available.

Nano technology and its adaptation by Indian agriculture is a momentous occasion which is sure to benefit farmers, increase yield, make India self- reliant in fertilizers and most importantly conserve precious foreign exchange.

Direct Benefit Transfer

DBT is the mechanism introduced to transfer Government of India scheme subsidies and cash benefits directly to the bank accounts of targeted beneficiaries.

The Scheme – Genesis and evolution

In the 1980s the Prime Minister Rajiv Gandhi lamented that out of every 1 rupee that is transferred as a benefit to the needy only 15 paise reaches the intended beneficiary. Many experts felt that it was not based on empirical data and was more of a guess. But certainly, it was reflective of the high operating costs, overheads and corruption.

A study in 2005 revealed that 58% of food grains do not reach the intended beneficiary and the worth of 1 rupee consumer subsidy is only 27 paise to the poor. From being such a high leak ecosystem India has moved a long way. The game changer was the Direct Benefit Transfer (DBT) rolled out on 1st January 2013. This was the result of the work done since 2011, by a task force headed by Nandan Nilekani.

DBT is the mechanism introduced to transfer Government of India scheme subsidies and cash benefits directly to the bank accounts of targeted beneficiaries. The execution of DBT was initially under the domain of the Planning Commission. It was then moved to the Department of Expenditure under the finance ministry and then to the Cabinet Secretariat in 2015. This meant that it will not be under any one ministry but will be under common central monitoring. This demonstrated the conviction and commitment of GOI towards the implementation of DBT.

In 2013 DBT covered 7 schemes while it scaled up to cover about 312 schemes under 54 ministries by 2022. Internationally such cash credit transfers are in vogue in many countries like Mexico, Kenya, Bangladesh, Brazil, South Africa, Jamaica and Turkey.

How does it work?

The DBT implementation involves beneficiary account validation and a payment and

reconciliation platform integrated with RBI, NPCI, public and private sector banks, regional rural and cooperative banks etc.

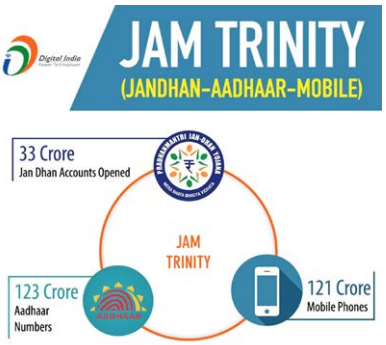
The JAM trinity as it is called – Jan Dhan Yojana, Aadhar and Mobile - has been a powerful tool that has facilitated the success of DBT. **With over 46 crore bank accounts, 1.3 billion Aadhar card holders and an equal number of mobile users it is not surprising that it has achieved stupendous success.**

The seeding of the bank

accounts to Aadhar and linking it to the mobile phone has helped eliminate a significant chunk of fake beneficiaries.

The process sequence for DBT is:

- Proof of eligibility and enrolment
- Application processing and beneficiary on-boarding



- Processing of benefit
- Cash withdrawal by the beneficiary

The benefits

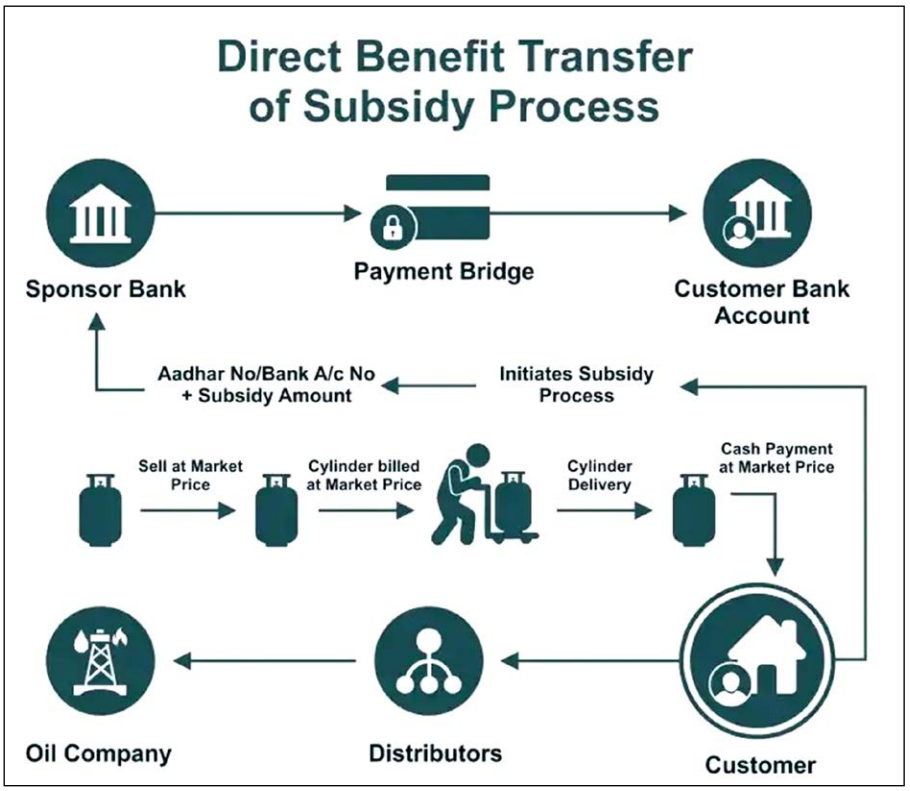
The main objectives of the DBT mechanism are:

- accurate targeting of the beneficiaries
- curbing pilferage and duplication
- faster communication and delivery of the benefits.

DBT has clearly transformed the social protection policy landscape for the better. What this has achieved is phenomenal.

- Deleting 3.99 crores of duplicate and fake ration cards between 2013 and 2020

The JAM trinity as it is called – Jan Dhan Yojana, Aadhar and Mobile- has been a powerful tool that has facilitated the success of DBT.



Lack of accessibility to enrolment points and lack of digital and financial literacy are two major issues plaguing the system currently.

Disruptions to the payments without notice and bank account and Aadhar related issues like spelling errors, pending KYC are two other issues that bother the system. Not so evolved rural infrastructure and rural banking infrastructure are other major issues that need to be resolved. These include network failures, authentication failures, travelling long distances to withdraw cash etc.

India has saved over USD 27 billion in key central government schemes thanks to the DBT mechanism. It is big money that will now be available for deployment in various developmental works for the people of the country.

resulted in savings to the tune of ₹1 lakh crores in the public distribution system.

- In MNREGA scheme, the ministry of Rural Development has saved about 10% on wages by deleting fake beneficiaries.
- Regarding LPG subsidy, deletion of 4.11 crores fake connections has resulted in a benefit of ₹72,000 crores.

DBT proved to be a boon during Covid. Ajay Seth, Secretary of the Department of Economic Affairs said that India has saved over USD 27 billion in key central government schemes thanks to the DBT mechanism. It is big money that will now be available for deployment in various developmental works for the people of the country.

The challenges

However, everything is not hunky-dory with the DBT mechanism. There are issues that need to be addressed on priority.

The way forward

A robust grievance redressal cell for all DBT schemes across tiers – State, District and Taluk should be created so that those excluded despite their eligibility, can get benefitted. There is an imminent need to improve the rural and peri-urban infrastructure in terms of connectivity, transportation etc.

The number of enrolment points should be increased to provide easy accessibility to the targeted beneficiaries. The Government should also spread greater awareness to the people about the various schemes and DBT.

One can rest assured that the government that has shown admirable commitment in implementing DBT will certainly take the corrective actions that are necessary. While PM Rajiv Gandhi lamented on the leakage in the system PM Modi may soon be able to tell that every paisa of subsidy reaches the intended beneficiary.

Shri Mrithyunjay GN

Megha-Tropiques-1
Space debris mitigation

This successful controlled re-entry is a big step forward in keeping our skies safe for the explorers of the future.

Satellites play a very important role in the functioning of our planet. They provide internet access to different parts of the globe, play a part in understanding and predicting weather and are integral for scientific research. There are currently around 2000 satellites orbiting Earth.

As satellites reach the end of their life-span, they are often moved to a slightly higher, graveyard orbit around the planet where they will not interfere with working satellites. This is to avoid any unnecessary collisions in space.

There are around 3000 dead satellites moving in a graveyard orbit around earth. Alongside these the sky around our planet is now home to around 34,000 pieces of space junk. The problem of space debris has become so impactful, that the launch of future missions to space must take efforts to avoid collisions with them.

One way of mitigating this issue is instead of moving non-functional to the graveyard orbit, they are made to re-enter the earth's atmosphere.

During this process, because of the speed of re-entry, the satellite burns up and whatever pieces are left are allowed to crash into the ocean to avoid endangering human lives. Controlled re-entry is perhaps the best solution to the problem of space debris.

It is this process that the scientists of ISRO engaged in on 8th March 2023, with the satellite Megha-Tropiques-1.

A joint satellite mission launched by India and France in October 2011 to study the water cycle and energy exchange in the tropics, the satellite far outperformed its original three-year mission parameters. It was decommissioned in April 2022 and over the last year, plans had been made for its controlled re-entry to reduce space debris.

The process involved accelerating the satellite once as it flew over India, towards the earth and a second burn just over Australia. This controlled acceleration towards the earth resulted in most of the satellite burning up in the atmosphere and in the rest of the remaining debris falling safely, many thousand miles off the coast of South America.

This successful controlled re-entry is a big step forward in keeping our skies safe for the explorers of the future.

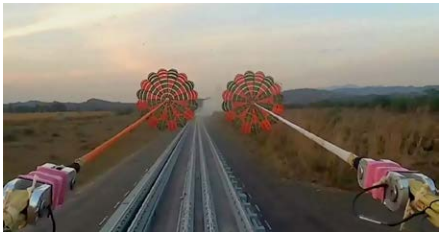
Kum Kavya R

GAGANYAAN

Deployment of pilot and ACS parachutes tested

The Indian Space Research Organisation (ISRO) has conducted tests simulating the clustered deployment of the parachutes as part of the preparation for the Gaganyaan human space flight mission. This test was conducted in March 2023 at the Terminal Ballistic Research Laboratory (TBRL) in Chandigarh.

Gaganyaan, meaning the celestial vehicle, is a project that is working towards the demonstration of human spaceflight capability. It will be demonstrated by launching a crew of 3 members to an orbit of 400 km for a 3 day mission and bringing them back safely to Earth, by landing in Indian sea waters. The first crewed mission was originally planned to be launched on ISRO's Launch Vehicle Mark 3 (LVM3) in December 2021, but this was delayed due to lockdown.



Prerequisites for the mission include development of many critical technologies including human rated launch vehicle for carrying crew safely to space, life support system to provide an earth like environment to crew in space, crew emergency escape provision and evolving crew management aspects for training, recovery and rehabilitation of crew.

Various precursor missions are planned for demonstrating the technology preparedness levels before carrying out the actual Human Space Flight mission. One such test is the 'Rail Track Rocket Sled' deployment test conducted in March.

There were two tests conducted. The first test simulated the clustered deployment of two pilot parachutes, where one was subjected to a minimum angle with respect to flow conditions while the second was subjected to a maximum angle with respect to flow. According to ISRO, "these pilot parachutes are used in the Gaganyaan mission to extract and deploy the main parachutes independently."

The second test simulated the clustered deployment of two Apex Cover Separation (ACS) parachutes under maximum dynamic pressure conditions. "The ACS parachutes are used in the Gaganyaan mission to separate the apex cover mounted on the Crew Module. Both pilot and ACS parachutes were deployed using a pyrotechnic mortar device," the statement read.

This parachute system has been developed by the joint effort of Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram and Aerial Delivery Research and Development Establishment (ADRDE), Agra.

Smt Gaayathiri G

World's highest Half-marathon

Ladakh has entered the Guinness Book by organising the world's highest half-marathon on a frozen lake. The Union Territory conducted its maiden 21-km running event in sub-zero temperature at 13,862 feet high on Pangong-Tso lake.

The 700-square km Pangong lake, spread across the Indian and China border, records a temperature of -30°C during winter, making the saltwater lake frozen with ice. The event started in Lukung and ended at Maan village. 75 people participated in the four-hour-long marathon.

Named as the 'Last Run' to remind the people about climate change and the need to save the Himalayas, the marathon was organised by the Adventure Sports Foundation of Ladakh (ASFL) in collaboration with Ladakh Autonomous Hill Development Council, Tourism Department and Leh district administration.

The marathon was also aimed at promoting sustainable winter tourism in border villages of eastern Ladakh to generate livelihood opportunities for residents, especially in winter which is part of 'vibrant village programme' announced by the Central Government.

The run was flagged off by Chief Executive Councillor, LAHDC (Leh) Tashi Gyalson. Five energy stations were set up along the route, consisting of energy drinks, medical teams and oxygen support along with mobile ambulances.

Participants underwent six-day acclimatisation - four days in Leh and two in Pangong - and were also subjected to a medical examination to ensure fitness. All medical centres along the route were complete with trained personnel and equipment to tackle any medical emergencies. The event saw active support from Indian Army and Indo Tibetan Border Police in terms of medical support and logistics.

Union Territory Disaster Response Force personnel and Ladakh mountain guide association personnel were deployed along the route to ensure safety of the runners. The route was decided after proper inspection and size of frozen layer of ice. Participants were allowed to run only after wearing safety equipment to avoid slipping on ice.

The marathon was also aimed at promoting sustainable winter tourism in border villages of eastern Ladakh to generate livelihood opportunities for residents.

Shri Nagarajan R

Doda's Tallest Iconic NATIONAL FLAG

The flag is visible from several kilometres away and is a symbol of the country's unity and strength.

In Jammu and Kashmir, Army installed the tallest 'Iconic National Flag' in the hilly Doda district on 9th March 2023. The tricolour which has been installed on a 100- feet-high pole, was unfurled by GOC Delta Force, Maj Gen Ajay Kumar along with Commander 9 sector RR Brig. Samir K Palande, Deputy Commissioner Doda Vishesh Paul Mahajan and SSP Abdul Qayoom. The flag measures 30 feet by 20 feet and is located at an altitude of 10,000 feet. The flag is visible from several kilometres away and is a symbol of the country's unity and strength.

During the ceremony, GOC said the flag is a tribute to the countless soldiers of the Chenab Region who have made the ultimate sacrifice while safeguarding the unity and integrity of the nation. On this occasion, he also honoured the next of kin of martyred soldiers. The imposing flag, the first of its kind in the Doda district is not only a proud moment for the Army, but also for all the residents of the hilly district.

Locals especially students and Veer Naris (war widows) who had gathered in large numbers to witness the historic event and expressed gratitude to the Army for making them part of the historical moment. Set amid the beautiful hilly Doda, the flag adds to the attraction of the location and an initiative of the Indian Army to instil pride in the Tricolour.

Doda district of Jammu Division was once a hotbed of terrorists. But the situation has altogether changed with people working closely with security agencies and Government in maintaining peace and ensuring the development of the Chenab region.

Smt Sandhya Nair

The world's longest railway platform

PM Modi inaugurated the world`s longest railway platform at Sri Siddhaarooda railway station in Hubballi, Karnataka in the presence of Union Minister Pralhad Joshi on 2nd March 2023. The Guinness Book of World Records recognized this as the longest railway platform. The 1,507-metre-long platform has been built at a cost of about ₹20.1 crores. This railway station has five platforms and eight tracks and facilitates the operation of 2 trains at a time.

This railway station is a prominent junction in Karnataka, and serves as a major hub of trade and commerce in the North Karnataka region. It is situated at the junction connecting railway lines towards Bengaluru, Hosapete and Vasco-Da-Gama/Belagavi. It is operated by South-Western Indian Railways.

DO YOU KNOW ?

Other long railway platforms in India

- Gorakhpur Railway Station, Uttar Pradesh – 1,366.33 m
- Kollam Junction, Kerala – 1,180.5 m
- Kharagpur Railway Platform, West Bengal – 1,072.5 m
- Bilaspur Railway Station, Chhattisgarh – 802 m
- Jhansi Junction Platform, Uttar Pradesh – 770 m
- Sonepur Railway Station, Bihar – 738 m
- Nabadwip Dham Platform, West Bengal – 720 m

Smt Shubha T R

Insurance scheme for Sericulturists

DO YOU KNOW ?

- **Sericulture is the cultivation silkworms to produce silk. Bivoltine in sericulture means producing two broods (generations of an organism) in a season.**
- **India, the 2nd largest producer of silk after China is the only country to produce all the five known commercial silks, namely, Mulberry, Tropical Tasar, Oak Tasar, Eri and Muga, of which Muga with its golden yellow glitter is unique to India.**
- **South India is the leading silk producer of the country and is famous for silk weaving enclaves like Kancheepuram, Dharmavaram, Arni etc.**

कृषक यत्न रक्षणम्

The market growth of silk is experiencing an impetus in India. The Indian sericulture market is expected to reach ₹1,032.8 billion by 2027. To promote sericulture and safeguard the interests of sericulturists, **Uttarakhand** – the major **Bivoltine** cocoon producing state has launched the country's first "**Resham Keet Bima"** insurance programme.

Over 1200 families in Uttarakhand are either directly or indirectly impacted by sericulture and 6000 stake holders produce nearly 300 metric tonnes of silk fibroin (a protein which is the chief constituent in silk) annually.

In the first phase of this pilot project, 200 sericulturists from five blocks of the four districts – Dehradun, Haridwar, Udham Singh Nagar and Nainital have been insured from the ill effects of climate change, scarcity of water and other hazards.

This scheme will be run under **Saral Krishi Beema** and has been taken up by the **Agricultural Insurance Company of India.**

Col Shashidhar M V (Retd)

US & UK compete to co-develop engines for Indian Fighter Aircraft

The JV with UK is likely to be the biggest ever capability transfer in history with the engine being co-created as per Indian specifications and exports left to GOI's discretion.

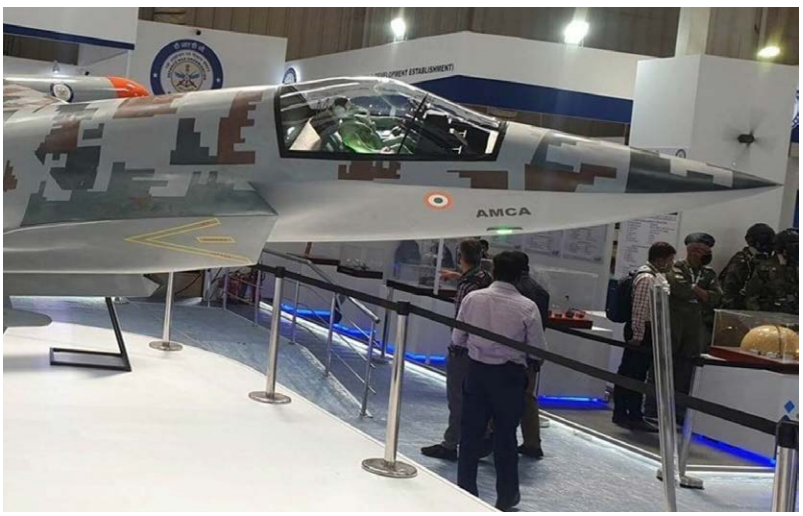
Development of aero engines for combat aircraft in India was resulting in enormous economic loss over the years. Only a handful of countries like the US, Russia, France and UK have mastered the high-end technologies for building advanced combat aero engines.

Three overseas aero engine makers were identified - GE of the USA, Britain's Rolls Royce and the French SAFRAN as partners to develop an engine that provides at least 110 kilonewton of thrust to be used for future proposed projects of Advanced Medium Combat Aircraft (AMCA) and a twin-engine deck-based fighter both crucial for self-reliance.

USA and UK have evinced keen interest in collaborating with GOI by offering to co-develop a brand-new engine with full intellectual property rights (IPR) credited to India under a government-to-government umbrella. The JV with UK is likely to be the biggest ever capability transfer in history with the engine being co-created as per Indian specifications and exports left to GOI's discretion.

USA is also in the process of leveraging its successful partnership for the jet engine used in LCA Tejas (powered by the GE-F404 engine with an 85kN thrust). The US turn around as a competitor is to retain its lead in powering India's indigenous fighter jet programme, a position which they do not wish to cede to European engine makers. American engines have now been selected for an Mk2 version of the LCA Tejas and the initial batch of AMCA. In addition, they are also pitching for an array of military equipment to India, including fighter jets. The US offer

Some features of the future 6th-generation stealth fighter jet "Tempest" (Picture source: BAe Systems)



to manufacture the GE-414 engine is based on the fact that they have been chosen for Mk2 version of the LCA Tejas (110kn thrust engine) as also for the inaugural batch of AMCA. However, no However, no decision has been arrived at on the transfer of technology (ToT).

Three decades back DRDO was originally tasked with developing the Kaveri engine for Tejas. But after repeated failures the project was shelved. For India a JV with USA or UK including ToT and IPR will provide significant impetus towards the country's self-reliance policy and thus enable us to be able to export JV-based equipment to other nations (even if considered hostile by own JV partner).

With the AMCA's development catching pace, the GOI may soon have to finalize a winner between the two countries.

Kum Anu Narayan

JV to indigenously develop niche naval propulsion technologies

The goal of this agreement is to establish a local supply chain ecosystem in India for the controllable pitch propellers and shafting systems required by the Indian Navy.

Propulsor is a ducted propeller which can be swivelled to give forward, upward or downward flight to an airship.

Rolls Royce Marine North America has inked a Memorandum of Understanding (MOU) with Kalyani Strategic Systems Limited (KSSL), a Pune-based, wholly-owned subsidiary of Bharat Forge to develop naval propulsion technologies for the Indian Navy.

The pact includes a partnership for licensed manufacturing, design and development, pre-sales and sales support, installation, testing, commissioning and aftermarket support and services of the propulsion systems. The goal of this agreement is to establish a local supply chain ecosystem in India for the controllable pitch propellers and shafting systems required by the Indian Navy. This is an opportunity for KSSL to become an in-country provider for propulsor sales within the Indian market and will further strengthen the company's defense ecosystem.

"We at Bharat Forge Ltd., are taking significant strides to indigenize critical systems and subsystems for the Armed Forces. This strategic collaboration with Rolls Royce, a legacy player in the naval ecosystem having a strong portfolio of technologically advanced products and offerings, is aimed at indigenously developing niche naval propulsion technologies and products for the Indian Navy," Baba Kalyani, Chairman and Managing Director of Bharat Forge stated.

Rolls-Royce President for India and South Asia, Kishore Jayaraman, expressed his commitment to supporting the vision of India's naval modernisation by offering advanced technology to the Indian armed forces. He added that the partnership with KSSL/Bharat Forge will build on their history of making in India for India and the world.

Col Shashidhar M V (Retd)

Made In India ANTI-DRONE system

DRDO has begun work on weaponizing the indigenously developed Rustom-I Medium Altitude Long Endurance (MALE) UAV along with a large number of private players.

The drone attack on the Jammu Air Force station on the night of 26/27 June 2021 was a rude wake-up call for India to enhance its anti-drone capabilities for unmanned warfare. Thus began a series of efforts to enable Indian companies to make what is called Counter Unmanned Aircraft System (CUAS).

Military Drones

In 1990's DRDO developed the Nishant Unmanned Aerial Vehicle (UAV) for reconnaissance and surveillance. The project fell midway after three of the four systems it built crashed.

India ended up importing a wide range of Israeli drones, including the medium-altitude long-endurance Heron I, the Searcher MK II and the Harop loitering munition. Today drones have been deployed along the Line of Actual Control (LAC) in Eastern Ladakh, J&K and in the Punjab border. We do not have missile firing drones such as the Predator in our inventory today.

DRDO has begun work on weaponizing the indigenously developed Rustom-I Medium Altitude Long Endurance (MALE) UAV along with a large number of private players. Armed drone variants like PALM 400 that won recent wars in Azerbaijan and Armenia (2020) followed by the Russia-Ukraine War will soon be tested for aerial targeting system.

PALM 400 is a joint venture between Israeli firm UVision Air Ltd and Hyderabad-based Aditya Precitech Private Ltd.

Swarm Drones

Our Army very recently announced induction

of swarm drones equipped with cutting-edge technology that can identify targets using artificial intelligence-driven software. Several drones controlled from the same station can be programmed using an algorithm to carry out various tasks including surveillance.

This year's Republic Day parade and the Independence Day event had the military anti-drone system in use.

Military Anti-Drone System

The Indian Navy signed a contract with Bharat Electronics Limited (BEL) for India's domestic Naval Anti Drone System (NADS) as also the IAF which has placed an order for 10 anti-drone systems fitted with laser-directed energy weapons to shoot down rogue drones.

This year's Republic Day parade and the Independence Day event had the military anti-drone system in use. Our Armed Forces have ordered Indian-made anti-drone systems worth over ₹300 crore; more contracts are on the anvil.

'Him Drone-a-thon' Programme

The Indian Army in collaboration with the Drone Federation of India launched the 'Him Drone-a-thon' programme in August 2022 aimed at providing

focused opportunities to the Indian drone ecosystem and to develop path-breaking drone capabilities for meeting requirements of frontline troops. The programme will be conducted in stages.

The Chinese Clout

Prior to 2011, just three countries had armed drones — US, UK and Israel; but now China has fast emerged as the leading global arms supplier in UAVs leading its foray into multiple countries, including Pakistan. Beijing has sold 50 armed drones to Pakistan as per Chinese media which, if true, will pose a nightmare for Indian ground formations in high-altitude areas as we do not have the ability to respond to the new-age stand-off weapons. Wing Long-II is one such popular drone employed successfully.

Made-in-India anti-drone system to deliver the knock-out punch

An array of anti-drone jammers were deployed recently in the Jammu and Punjab regions and their performance was found to be an effective deterrent against the Chinese made drones delivered to Pakistan.

Anti-drone jammers disrupt the communication (GPS-signal) between the controller and the drone, while the spoofer hijacks the communication link with the controller which loses the drone resulting in it crashing to the ground once the jammer blocks the signal. The anti-drone system has a maximum range of 10 km.

Various jihadi groups hand in glove with the Pakistan Army are using drones to bring in contraband, drugs, arms, ammunition and even improvised explosive devices to the separatists in the Jammu and Punjab regions. These are then used by separatists to target civilians (particularly migrant workers) to spread panic and fear in J&K.

DRDO has created an Anti-Drone system aimed at drone-detection, interception, and defeat technology at 3 km with BEL.

Conclusion

Indian armed drones of the future will also be able to operate over extended ranges as the Indian military inducts more dedicated military communication satellites. The employment of armed drones for precision strikes will make it easier for the Indian military to neutralize targets of opportunity in scenarios where sending in special forces would be too risky or complicated.

Both armed drones and anti-drone systems are both a response to the growing Chinese and Pakistani nexus.

The employment of armed drones for precision strikes will make it easier for the Indian military to neutralize targets of opportunity in scenarios where sending in special forces would be too risky or complicated.

Kum Vanshika Arya

Bicentennial celebrations of Maharishi Dayananda Saraswati (Part-II)

(This translated article continued from the previous issue captures the core message of PM Modi's Hindi speech delivered on the occasion)

Various institutions inspired by Swami Dayananda work for poor children, for their future, serving them with passion and this is our culture, our tradition.

Swami Dayananda did not create just one path in his life, he created many institutions and systems. He carried revolutionary ideas during his life time, lived it, inspired people too. He linked every idea with the system, institutionalized and gave birth to institutions. These organizations have been carrying out large-scale positive work in different fields for decades.

Maharishi himself had established the Paropakaarini Sabha. Even today these institutions are carrying forward the Vedic tradition through publications and Gurukuls. Be it Kurukshetra Gurukul, Swami Shraddhanand Trust or Maharishi Dayananda Trust – these institutions have created many units dedicated to the nation. Various institutions inspired by Swami Dayananda work for poor children, for their future, serving them with passion and this is our culture, our tradition.

I remember now, when we see the scenes of Turkey's earthquake on TV, we get restless, I remember when Gujarat earthquake happened in 2001, it was the worst earthquake of the last century. At that time I had seen the role of Jeevan Prabhat Trust's Social volunteers' relief work inspired by Maharishi's ideals. The seed planted by Swami is giving shade to the entire humanity today in the form of a huge banyan tree.

In the Azadi ka Amrit Mahotsav, today the country is witnessing reforms which were the priority of Swami Dayananda - policies and efforts to remove social discrimination, service to the poor etc. Serving the backward and deprived is the first yajya for the country today; taking this mantra, a house for every poor, respect for them and healthcare facility for all is our priority. Today, without any restriction, the daughters of the country are accelerating nation

Along with modern education, Swami Dayananda had also advocated the education system moulded in Indian environment through gurukuls.

building in every role - from defence, security to start ups. Now our daughters are being deployed in Siachen; and fighter plane Rafale is also flown by them. Our government also removed the ban on the admission of daughters in Sainik schools.

Along with modern education, Swami Dayananda had also advocated the education system moulded in Indian environment through gurukuls. Through the New Education Policy, the country has also strengthened its foundation. Swami Dayananda had given us another mantra to live life. He had told in very simple words – Who is mature after all? Who would you call mature? Maharishi said that the person who accepts the most work and contributes the most is mature. This life mantra gives solutions to many challenges.

In the context of environment, in a century when such words like global warming, climate change were not even born, Maharishi revealed that our Vedas considered to be the most ancient texts, have many suktas dedicated to nature and environment. Swami deeply understood the knowledge of the Vedas and explained their essence in his lifetime. He was a disciple of the Vedas and a saint of the path of knowledge. That is why his realization was far ahead of his time.

Today when the world is talking about sustainable development, the path shown by Maharishi puts the ancient life philosophy of India in front of the world and presents a solution. Environmentally speaking, India is playing the role of a torchbearer for the world today. Based on this vision of harmony with nature, we have started Global Mission "LIFE" which means "Life Style for Environment". It is a matter of pride for us that in this era the countries of the world have entrusted the responsibility of the G20 presidency to India. We are pushing for environment as a special theme for the G20. Arya Samaj can play an important role in these important campaigns of the country. You can easily take up the responsibility of connecting the masses with our ancient philosophy with modern perspective and duties. A comprehensive campaign related

We also get to learn a lot from the personality of Swami Dayananda. He lit the flame of patriotism within many freedom fighters.

to natural farming has to be taken to every village – theme favoured by Maharishi. Natural farming, cow-based farming should be taken again to every village.

I would like that an *aahuti* should also be made for this resolution in the Yajya of Arya Samaj. To give millets a global identity we have called millets "Shri Anna". This year the United Nations is celebrating the International Year of Millets. As people following yajya culture, we give the best as offerings (*aahuti*) in yajya. In our *yajya*, millets or Shri Anna have an important role because we use that which is best. That's why along with *yajya*, we should make the newer generation include millets in their diet.

We also get to learn a lot from the personality of Swami Dayananda. He lit the flame of patriotism within many freedom fighters. It is said that an English officer came to meet him and asked him to pray for the perpetuity of British rule in India. Making eye contact , Swami's fearless answer was "independence is my soul and voice of India, this is dear to me, I can never pray for foreign empire." Countless great men like Lokmanya Tilak, Netaji Subhash Chandra Bose, Veer Savarkar, Lala Lajpat Rai, Lala Hardayal, Shyamji Krishna Verma, Chandra Shekhar Azad, Ram Prasad Bismil, lakhs and lakhs of freedom fighters and revolutionaries were inspired by Maharishi. Mahatma Hansraj, Swami Shraddhanand - the founder of Gurukul Kangri, Bhai Parmanand, Swami Sahajanand Saraswati, many such god-like personalities were inspired by Swami Dayananda Saraswati.

Arya Samaj has the legacy of Maharishi Dayananda. You have inherited that ability and therefore the country has a lot of expectations from all of you. Arya Samaj has expectations from each and every Arya Veer. I have faith that Arya Samaj will continue to organize these *yajyas* for the nation and the society, and will continue to spread the light of the *yajya* for humanity. Next year, the 150th year of the establishment of Arya Samaj will begin. Both these occasions are important and now Acharya ji has talked about Swami Shraddhanand's 100th death anniversary. That is, in a way, Triveni. Metaphorically speaking, Maharishi Dayananda gave nectar for us after drinking poison himself. He was the light of knowledge and we should also become the light of this knowledge. The ideals and values for which he lived gives continuous inspiration and strength.

Scan to listen to PM's speech at 200th Jayanti Celebration of Maharishi Dayananda Saraswati

https://youtu.be/vZygAq2a1Yg
with ENGLISH Subtitles

https://youtu.be/wdw85Xtw0QU
with TAMIL Subtitles

Smt Vanaja Shankar

Financial Planning: BUDGET 2023 AND THE NEW TAX REGIME

People were saving money every year in PPF, insurance and other schemes, just to avoid taxes.

Grandpa, Shravan and Gita were playing badminton.

Grandpa called out, "That was a good game. Come let's do some stretches."

They started following grandpa in the stretching exercises.

Mr. Gupta and his nephew Raj walked into the garden, waved to them and sat on a bench nearby.

Raj greeted them with enthusiasm.

"Uncle, thanks for your guidance in choosing tax planning investments this year. I wanted your guidance for the coming financial year 2023-2024. This year, I hear that there is no rebate for tax saving investments under the new tax regime. I feel lost."

Shravan: "Grandpa, what is this new tax regime? Do we have to pay more taxes now because there is no tax saving option?

Raj spoke. "Yes uncle, I would also like to understand this new tax regime. The HR team in our office has informed us that we would be following the new tax regime by default."

Grandpa smiled. "There's a lot of debate about the provisions of the new tax regime. We can surely discuss and understand how best we can manage our tax planning."

Grandpa explained.

The following are the key features of the new tax regime.

- Standard deduction of ₹50,000.
- Full tax rebate for those earning up to ₹7 lakhs per year.
- Lower surcharge of 25% on super rich taxpayers earning more than ₹5 crores annually.
- The basic exemption limit has also been raised to ₹3 lakhs (from 2.5 lakhs).
- There is no tax rebate for investments in tax saving instruments.

Raj : " Uncle, whether we liked it or not, we were saving money every year in PPF, insurance and other schemes, just to avoid taxes. I had claimed tax rebate of ₹2 lakhs last year – for investment of ₹50,000 in LIC premium, ₹1 lakh in PPF and an additional ₹50,000 in NPS. I had

two benefits. I saved two lakhs, I also benefitted by tax reduction. Why does the government take away the tax rebate?

Grandpa replied. "The government wants to move away from directing people to invest their money in tax saving instruments and give people the freedom to choose where they want to save.

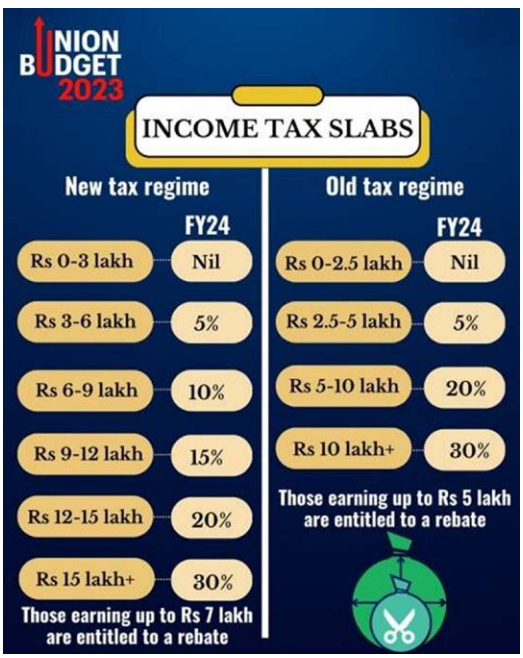
There are two options:

- Follow the new tax regime. You can then choose from a large number of investment schemes to save money depending on your needs. You don't have to buy insurance just for tax saving.
- You can opt to follow the old tax regime. You can then invest in the identified tax saving instruments to claim tax rebate.

Now, the government is running both the schemes and is giving you the option to stay with the new scheme or choose to go back to the old scheme."

Now, the government is running both the schemes and is giving you the option to stay with the new scheme or choose to go back to the old scheme.

"Why will anyone want to choose the new scheme?" Raj asked.



Grandpa continued. **"Let us do a comparison of the old and new tax regime."**

Grandpa smiled. "Think of people who earn only ₹7 lakhs per year. They might not be in a position to save up to ₹2 lakhs in tax saving instruments in order to claim rebates. They will immensely benefit in the new tax regime because income up to ₹7 lakhs is eligible for full tax rebate. There is an argument that the tax rebates only favor the wealthier individuals with higher disposable income.

Also think of people who earn around ₹9 lakhs in a year, and do not want to invest in tax saving instruments, have not taken any home loan or cannot claim any rebate. They would be better off under the new tax regime because the tax rate is lower compared to the old regime."

Raj mused. "I am already paying insurance premium every year that is eligible for rebate and I can set aside some amount for PPF and claim rebate. I have also taken a home loan and have been claiming tax rebate on the interest payments."

Grandpa nodded. "You have to calculate the different exemptions that you can avail under old tax regime, compare with the benefits offered by new tax regime and decide which is beneficial. Raj, there are online income tax calculators available. You can calculate your taxes under both the regimes by keying in your income, proposed investment under Section 80C, your home loan interest details etc."

Grandpa continued. "I think if your income is higher than ₹12 lakhs per year, and you can claim rebates to the maximum, you would find the old regime beneficial. Do the calculation quickly, and give your preference to the employers at the beginning of the financial year 2023-2024. Otherwise your tax will be calculated under new tax regime, and your employers will start deducting tax. "

Raj asked. "Oh, I can't change my preference during the year?"

Grandpa answered. "No. You have to continue with the new tax regime if you have not changed your preference in the beginning,

Mahila Samman Savings Certificate 2023	
Eligible period	1st April 2023 to 31st March 2025
Who can invest?	Women or girls
Minimum investment	₹1,000
Maximum investment	₹ 2,00,000
Interest rate	7.50%
Compounding frequency	Quarterly
Effective rate	7.71%
Tenure of the investment	2 Yrs
How many times you can invest	As many times as you wish subject to the maximum limit of ₹ 2 lakh.
Premature withdrawal	40% after a year
Premature closure	Eligible with certain restrictions
Tax benefits	There are no tax benefits while investing and at maturity.
Where to open?	At post office or at authorized banks

You need to take responsibility for financial planning, saving and investment according to your needs and not for getting tax rebates.

and your employers will deduct tax every month. However, at the time of filing returns, you can opt for the old tax regime and claim tax refund."

Raj nodded. "Thanks uncle. I have lot of clarity now. I think I will choose the old tax regime."

Grandpa continued. "We must be prepared that in the coming years, gradually, the government might move to the new tax regime which will make tax filing simple and easy for everyone. You then need to take responsibility for financial planning, saving and investment according to your needs and not for getting tax rebates."

Consider this latest provision:

- Tax exemption removed in insurance policies with premium over ₹5 lakh.

This discourages people from going in for huge traditional insurance policies that promise high returns. Instead, you would benefit from taking term insurance where the premium is lower while life coverage is high.

Mr. Gupta: "Isn't there some benefit for senior citizens in this budget?"

Grandpa: "Yes. The maximum amount that you can invest in senior citizen savings scheme has been increased from ₹15 lakhs to ₹30 lakhs. This will help us senior citizens get more returns on our investments.

Here are some other important provisions of Budget 2023 applicable for individual tax payers and investors.

- Tax exemption on leave encashment on retirement of non-government salaried employees hiked from ₹3 lakhs to ₹25 lakhs.
- Monthly Income Scheme limit in post office schemes doubled to ₹9 lakh for single accounts and ₹15 lakh for joint accounts
- One-time new saving scheme **Mahila Samman Saving Certificate** for women to be made available for 2 years up to March 2025. It will offer deposit facility of up to ₹2 lakh in the name of women or girls for tenure of 2 years at fixed interest rate of 7.5 % with partial withdrawal option.

Raj nodded. "Thanks uncle. I look forward to meeting you again. Next time, I would like to learn about investment options like mutual funds and shares."

Kum Deepasri

Corporate Governance in India

In many countries including the USA and UK, there have been several cases of mismanagement and fraud relating to the operation of a company, in the twentieth century.

An important evolving area of law is corporate governance, which is connected to the governing of a company by the persons responsible. While there is no single law or statute for corporate governance, its framework consists of the Companies Act and the Regulations of the Ministry of Corporate Affairs (MCA) and the Securities and Exchange Board of India (SEBI), apart from specific regulations pertaining to different sectors.

In many countries including the USA and UK, there have been several cases of mismanagement and fraud relating to the operation of a company, in the twentieth century. This highlighted the need for giving importance to good corporate governance, apart from just legal and business compliance. The same trend can be observed in the early twenty first century in India.

Ownership and management of a company

The owners of a company are the shareholders who hold shares of the company. However, since they may be many in number and not experts in management, they appoint a set of people specially to take care of the affairs of the company and manage it on a daily basis. These persons are called Directors and Key Managerial Personnel (including Chartered Accountant, Company Secretary, etc.), who are professionals in their fields and take over the management on behalf of the owners. Thus, there is a difference between ownership and management in case of companies.

Objectives of corporate governance

The corporate governance framework focuses on certain aspects:

- Accountability of the Board of Directors and management of the company towards the shareholders.
- Protection of the minority shareholders who hold a small quantity of shares, from oppression by the majority.
- Adequate reporting and disclosures to shareholders and to the government.

Corporate social responsibility is operating a business in a manner which meets or excels the ethical, legal, commercial and public expectations that a society has from the business.

- Corporate social responsibility, which will be discussed in detail below.

Today, it has been recognised that a business must not only fulfil its business motives and legal compliances, but must also ensure fairness, accountability, transparency and responsibility in its operations for it to be a success. This ensures the satisfaction of the various stakeholders including shareholders, consumers, debtors, lenders, government, suppliers etc.

Corporate social responsibility

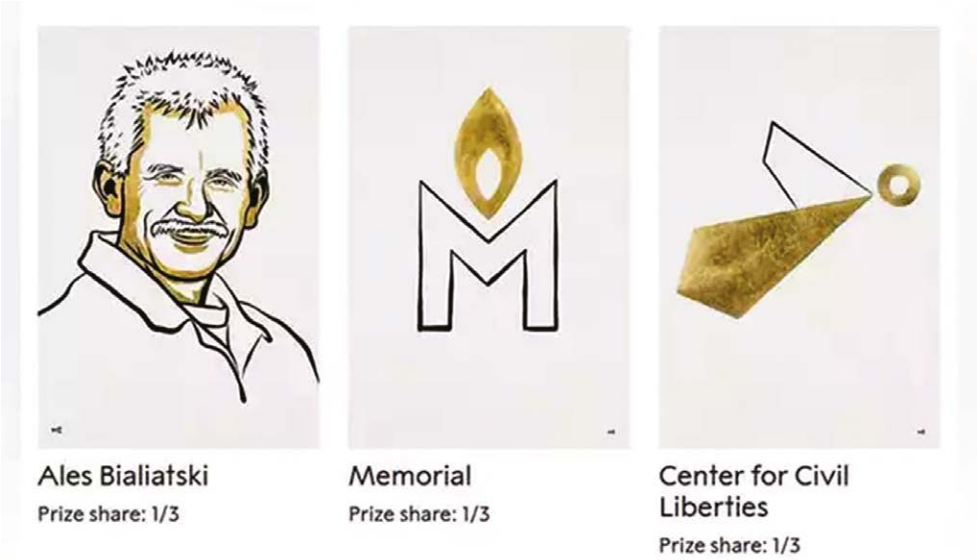
One emerging subset of corporate governance is corporate social responsibility, which has focus on the social and environmental responsibility which companies have towards the society. In the Indian context, *"Corporate social responsibility is operating a business in a manner which meets or excels the ethical, legal, commercial and public expectations that a society has from the business."*

The Companies Act, 2013 lays down provisions regarding the CSR activities, wherein every company having net worth of ₹500 crore or more, or turnover of ₹1000 crore or more or a net profit of ₹5 crore or more during any financial year shall constitute a Corporate Social Responsibility Committee. This CSR Committee ensures that the company undertakes certain activities for the betterment of the environment and society around the company.

The crux of the matter is that companies have the potential to contribute to resolving of environmental and social challenges and it is necessary that they use this power well. This can be done effectively through proper CSR policies.

Turnover is the amount of business that a company does in a particular period.

Shri Sridhar P



NOBEL PEACE PRIZE 2022

The Norwegian Prize committee awarded The Nobel Peace prize for the year 2022 to **Ales Bialiatski** of Belarus, the Russian human rights organization **Memorial** and Ukrainian human rights organization **Centre for civil liberties.** It has been awarded to one individual and 2 organizations who have been involved in advocating the cause of human rights.

The 2022 Nobel laureates represent civil societies in their home countries, promoting the right to criticize abuse of power by the ruling elites and protecting fundamental rights. They have made outstanding contributions to document war crimes, human rights abuses in their countries. They have effectively demonstrated the significance of civil society for peace, harmony and democracy.

Ales Bialiatski was instrumental in the initiation of a rudimentary but functional democracy in Belarus in 1980.He founded the organisation "Viasna" in 1996 in response to a constitutional amendment that gave dictatorial powers to the President. Viasna gave support to jailed demonstrators and their family. Over the years Viasna evolved into a broad based human rights organisation that documented abuse of power by authorities and use of torture against political opponents.

The human rights organisation "Memorial" was established in 1987, in the former Soviet Union by human rights activists. Memorial is based on the premise that confronting past crimes is essential to prevent future ones. Memorial documented human rights atrocities from the Stalinist era and serves as a dipstick for assessing human rights violations. During the Chechen war, Memorial collected and verified information on war crimes on the civilian population.

The Centre for civil liberties was founded in Kyiv in 2007. It advocated human rights awareness and establishment of a democracy in Ukraine. To get this organised the Centre for civil liberties became affiliated to International Criminal Court.

By awarding the Nobel peace prize for 2022 to Ales Bialiatski, Memorial and Centre for civil liberties, it wishes to honour these champions of human rights who have advocated democracy, in the face of targeted action against such groups and suffocating brutal regimes. The Nobel laureates have revitalized and honoured Alfred Nobel's vision of peace and fraternity between neighbouring countries.

Smt Archana Sundar

CURIOSITY CORNER

Guess the change makers

1. He runs Parijat Academy, a non-profit school for the underprivileged.

2. Rural Bihar is grateful to a Doctor couple who returned home after 11 years in US.

3. Through her NGO **Udhavi Karangal** she has educated over 150 children from tribal and marginalized communities.

4. The founder and managing trustee of **Shanti Avedna Sadan,** India's first hospice that provides free palliative care for terminally ill cancer patients.

5. Daily wager from Odisha turned barren land into thriving forest with 3000 trees in just 2 years.

6. Two friends launched **Khudey,** a sustainable children's fashion brand that is empowering both children and ragpicker women of Kolkata's Dhapa slum.

7. From Harvard University to Chandigarh to start **Khelshala** to provide an all-round education to underprivileged kids.

8. She is leading the **'Hargila Army'** of women in Assam to protect the endangered adjutant stork or **Hargilas.**

9. 'Snake Man' of Bihar fights superstition to rescue 3000 snakes and 152 animals.

10. Harvard invited this school dropout from Barmer for empowering 30,000 women.

11. A geologist left behind fame and a historic discovery in Canada to transform a UP village, to offer education to all.

12. Air quality monitors and solar roofs: The officer who transformed Ahmedabad railway station.

Answers on page 66

Smt Ramamani N

BAL PURASKAR AWARDS

In this edition, we will see the awardees of Pradhan Mantri Rashtriya Bal Puraskar -2023 under the category Sports.

They are Hanaya Nisar, Kolagatla Alana Meenakshi and Shauryajit Ranjitkumar Khaire. They belong to Jammu and Kashmir, Andhra Pradesh and Gujarat respectively.

1. Hanaya Nisar – Martial Arts Champion

Hanaya Nisar, a resident of the Kokernag area of Anantnag, Kashmir has been awarded as she represented India and won the Gold Medal in the 3rd World SQAY Martial Arts Championship held in Chingju, South Korea in October 2018 at the age of 12.

Sqay is a South Asian martial art created by the Kashmiris. Hanaya recently won a gold medal in the 7th SQAY South Asian Championship in Kathmandu, Nepal. She is the brand ambassador of

Sqay is a South Asian martial art created by the Kashmiris.

Hanaya Nisar
Martial Arts Champion

'*Beti Bachao Beti Padhao*' for the Anantnag district.

2. Kolagatla Alana Meenakshi – Chess Prodigy

The eleven -year- old chess champion Kolagatla Alana Meenakshi from Visakhapatnam, Andhra Pradesh, ranked world

Alana started playing chess at the age of 6. She played international chess within 10 months of professional coaching.

Kolagatla Alana Meenakshi
Chess Prodigy

number one in the U-12 girls' category by FIDE (International Chess Federation). She has been consistently winning the top three world ranking in her category. Alana started playing chess at the age of 6. She played international chess within 10 months of professional coaching. She won gold for India in the Asian Youth Chess Championship in the rapid format in the year 2019. In a report, her mother says that her discipline and practice have helped Alana in attaining her dream.

Shauryajit Ranjitkumar Khaire
Mallakhamb player

3. Shauryajit Ranjitkumar Khaire- Mallakhamb player

Mallakhamb is a traditional Indian sport in which a gymnast performs aerial yoga. The 10-year-old boy amazed the fans with his performance at the 36th National Games at Ahmedabad. Khaire has won two bronze medals at the National Championships.

The sport was introduced by his father to him at a very young age. Initially, he found it difficult. However, he is enjoying the sport after continuous practice for 6 years.

Smt Ramamani N

Vadivel Gopal and Masi Sadaiyan

The Irulas use techniques that are a part of the indigenous knowledge of their tribe.

The duo, Vadivel Gopal and Masi Sadaiyan have been conferred with the Padma Shri award for Social Work.

The two expert snake catchers started the same at the age of 16 and have been practising for around 30 years. They use techniques that are a part of the indigenous knowledge of the Irula tribe to which they belong.

The Irulas are an ethnic tribal group inhabiting the states of Tamilnadu, Kerala and Karnataka. The Irula tribes play a dominant role in the healthcare ecosystem in India. Vadivel and Masi Sadaiyan live in a small village in Chengalpattu near Chennai. They learnt the techniques from their forefathers.

Achievements

- Specialists in catching dangerous and venomous snakes.

- Around 10,000 snakes have been caught by them individually mostly from paddy fields.
- The venom is extracted by them; antivenom is prepared and used across the globe.
- Indigenous techniques they use to catch snakes are unique to the Irulas.
- Romulus Whitaker, an American-Indian and a wildlife conservationist called them to the United States for catching snakes.
- The Florida government expected them to catch a minimum of 10 snakes when they were there. However, they were amazed to see the Indian heroes catch more than 20 snakes in less than a month.
- Helped curb devastation caused by Burmese pythons by catching them in Florida in 2017.
- Also trained people in America to catch snakes.
- They have also travelled to Thailand for catching snakes.

The age-old snake-catching and venom extracting technique of Indian tribes have been appreciated globally.

New India's women power

In 1988, Surekha Yadav became India's first female train driver and was awarded for her achievements at State and National levels.

Nisha: Hi, Lisha. I have something interesting to share with you.

Lisha: I too have one, Nisha.

Let me start first. It is about the confidence of the new India's women power.

Whom are you talking about?

The **NARI SHAKTI SUREKHA YADAV, THE FIRST WOMAN LOCO PILOT**. Born to farmers, Sonabai and Late Ramchandra Bhosale, in the Satara district of Maharashtra, Surekha is the oldest of five children. She studied in Saint Paul Convent High School and was an all-rounder in academics and sports. She also has a diploma in Electrical Engineering.

In 1988, she became India's first female train driver and was awarded for her achievements at State and National levels. Surekha added another feather in Central Railway's cap by becoming the first woman loco pilot in Asia to run Vande Bharat Express between

Solapur station and Chhatrapati Shivaji Maharaj Terminus (CSMT) in Mumbai on 13th March 2023. The train reached the CSMT five minutes before the scheduled arrival time after completing the 450 plus -km long journey. She was felicitated at platform number 8 at the CSMT.

Wow! Sounds inspiring. I too have a similar one to share with you. It is about the **Group Captain Shaliza Dhami the 1st woman to command frontline IAF combat unit.** Hailing from Ludhiana, Shaliza's parents were in government service. She decided very early on joining the Indian Air Force, especially after becoming a cadet of the NCC. Her husband, Vineet Joshi, is also a helicopter pilot in the IAF.

She took her first solo flight in 2003 in Hyderabad, on the HPT-32 Deepak, a basic trainer aircraft, and by 2017, she had clocked over 2,800 hours in the air. **The same year, she became the IAF's first woman flying instructor.** She has been commended twice by the Air Officer Commanding-in-Chief in the past.

As a helicopter pilot, she flew several search-and-rescue missions and also undertook flood relief operations. In the first command appointment for a woman officer in the Indian Air Force (IAF), Group Captain Shaliza has been selected to take over the command of a frontline combat unit in the Western sector. She took over the Chetak helicopter unit at the Hindon air base in Uttar Pradesh. She will be operating a light utility helicopter which can accommodate six passengers or a load of 500kg, and has a maximum speed of 220km/hour.

These women prove that when you are passionate about something, don't hesitate.

Yes, and also be bold because the world doesn't let shy women shine. With your capability, knowledge, efforts, you can achieve anything.

Smt Nagalakshmi R

BETEL LEAF

A simple but effective herb from ancient times

The ancient ayurvedic texts *Charaka Samhita* and *Sushruta Samhita* describe the enormous medicinal potential of betel leaves in detail.

Since ancient times, betel leaf has been significant in our culture. The value of betel leaf has been discussed in old Ayurvedic texts. For millennia, people have used betel leaf because of its healing abilities.

Many studies on betel leaf have revealed that the leaf extract, fractions and purified components have a variety of beneficial effects on health, including anti-diabetic, anti-inflammatory/immunomodulatory, anti-ulcer, hepato-protective, anti-infective and so on.Moreover, patents have been given for several biological properties connected to leaf extracts and purified chemicals, such as anti-inflammatory, anti-cancer and immunomodulatory properties. There is archaeological proof that areca nuts and betel leaves have been chewed together from very early times.

Although the use of betel leaf was widespread in ancient times, there isn't any proof that mouth cancer was more common then. Even in some experiments, betel leaf extract showed promise in terms of slowed tumour growth. **Oral cancer is caused only when tobacco is used along with betel leaf.**

The ancient ayurvedic texts ***Charaka Samhita*** and ***Sushruta Samhita*** describe the enormous medicinal potential of betel leaves in detail. They produce warmth in the body, set right pH imbalances

in the stomach and intestines to significantly enhance digestive health. Because they are light to digest in the body, they can be simply incorporated into the diet or ingested as pastes, powders or liquids to boost metabolism. In order to maintain tridoshic balance in the system, they aid in raising the ***Pitta doshas*** and balancing the ***Vata*** and ***Kapha*** elements.

For young children, placing warm betel leaf on chest, back, foot and in front of ears provides relief from cold and chest congestion.

Betel leaf

- ♣ Eases constipation
- ♣ Improves digestion
- ♣ Solves respiratory issues
- ♣ Helps in diabetic patients to maintain sugar levels
- ♣ Maintains oral health
- ♣ Relives joint pain
- ♣ Uplifts the mood which can help fight depression.

How to use betel leaf for cold and cough

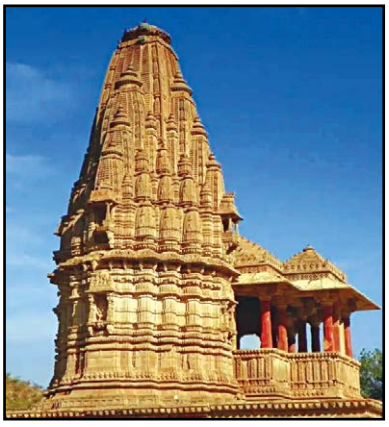
Crush a few betel leaves to extract the juice; then, take about 2 teaspoons of the juice, combine it with 1 teaspoon of honey and consume the concoction twice daily, around 30 minutes after meals. This will lessen productive cough.

- ♣ Also, it can be used with ajwain leaves. The ajwain leaves and betel leaves should first be rinsed two to three times before being set aside.
- ♣ Next, take a pestle and add rock salt, ajwain leaf, betel leaf and peppercorns.
- ♣ Crush them into a rough paste.
- ♣ Squeeze the leaves and get the extracts.
- ♣ Add honey and consume.

For young children, placing warm betel leaf on chest, back, foot and in front of ears provides relief from cold and chest congestion.

Smt Vaishnavi V

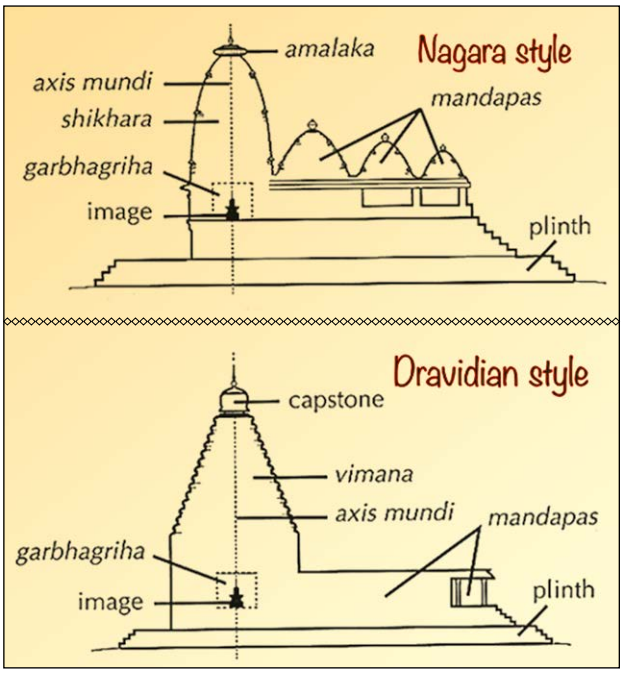
Pattadakal

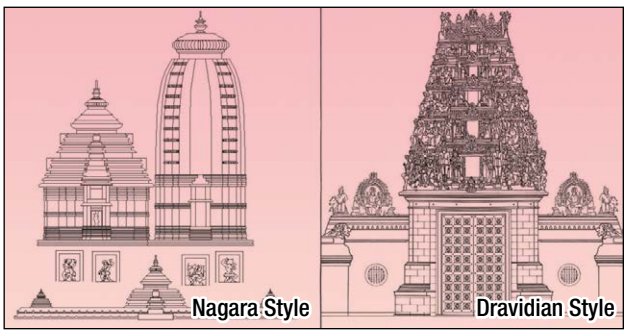


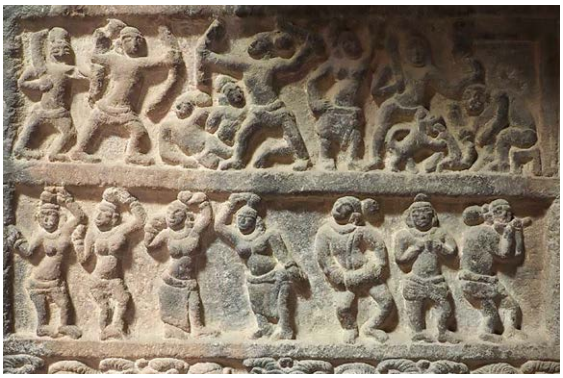
Located on the banks of the Malaprabha River near Badami in Karnataka, Pattadakal group of monuments is a UNESCO World Heritage Site. Built during the 7th and 8th centuries, Pattadakal meaning 'coronation stone' is a place where the kings were anointed to the throne. Pattadakal is known for its intricately chiseled Chalukyan architecture. The complex consisting of 10 major temples, smaller shrines and plinths shows a harmonious blend of both Dravidian and Nagara styles making it an outstanding feature. The 9 Hindu temples dedicated to Lord Shiva were constructed by Chalukya dynasty and the Jain sanctuary dedicated to the 23rd Tirthankar, Parsvanatha was constructed much later in the 9th century by the Rashtrakuta dynasty. The whole of the 13th century, the Malaprabha valley was plundered and raided by the armies of the Delhi Sultanate. This devastated the whole region leaving us with ruins today.

Temple architecture

The temple *vimana* comprises the *garbha griha* and *shikhara*. The *garbha griha* (sanctorum) opens to an *antarala* (vestibule) and houses the *murti* (enshrined image) on a *pitha* (pedestal). An expansive







pillared *mandapa* (hall) adjoins the *antarala*. On the top of *garbha griha* is *shikhara* (superstructure) containing the *amalaka* (a ribbed stone) with a *kalash* (pot with mango leaves and a coconut) at its crown.

Highlights of the complex

The **Virupaksha temple** and the **Mallikarjuna temple** resembling the magnificent Kailasanatha temple of Kanchipuram is an epitome of Chalukyan architecture with its beauty evident from the niche sanctum walls, filigree windows and the extensive depiction of abduction of Sita and Bhishma on his bed of arrows in Virupaksha temple and Mahisasuramardhini and Narasimha fighting Hiranyakashipu in Mallikarjuna temple.

The **Sangameshwara temple** built on a high plinth consists of five mouldings decorated with

animal and floral motifs. A row of wonderfully carved round-bodied figures is placed as if the whole load of the roof above is being held by them.

In the **Kadasiddheswara temple,** the figures of Shiva and Parvati grace the lintel of the door to the *garbha griha* with Brahma and Vishnu on either side.

The **Jambulingeshwara temple** has a minutely detailed frieze of swans running below the course of the wall.

The **Galaganatha temple** is luxuriously decorated with motifs, Nataraja carved on the lintel and stories from the ***Panchatantra***.

The *dwarapalakas* (door keepers) stand out in the **Chandrashekhara temple**.

The **Papanatha temple** houses a magnificent *garuda* on the lintel and narrative panels depicting episodes from Ramayana and other ancient texts.

The **Kasivisweswara temple** showcases the wonderfully developed style of *Nagara shikhara* rising in five stages and elaborate arches and detailed ceiling panels.

In the **Jain Narayana temple,** the mandapa walls contain images of Jina in various postures. The elephants on the doorway and a large figure of *makara* (crocodile) in florid detail are other unique elements.

ANSWERS of page 56 - 57

1. **Uttam Teron**
2. **Dr Chandril Chugh and Dr Nivedita Pandey**
3. **Alice Thomas**
4. **Dr Luis Jose De Souza**
5. **Sarojini Mohanta**
6. **Arpita Chakraborty and Anushree Malhotra**
7. **Satinder Bajwa**
8. **Purnima Devi**
9. **Hariom Chaubey**
10. **Ruma Devi**
11. **Dr S B Misra**
12. **Fedrick Pariath**

MARCH 10TH

INTERNATIONAL DAY OF WOMEN JUDGES

The Supreme Court will commemorate the first ever 'International Day of Women Judges'

Women judges increase the credibility of courts just by being present, giving a strong message that they are open and accessible to anyone seeking justice.

VINAYAK DAMODAR SAVARKAR

(28 May 1883 - 26 Feb 1966)

"One country, one God, one caste, one mind brothers all of us without difference, without doubt."

Humble tributes to the great nationalist, freedom fighter and social reformer Veer Savarkar.

He was a crusader against social evils like caste discrimination and untouchability. His sacrifices for the freedom of our motherland will always be remembered.