

Yadadri Thermal Power Plant: BHEL asked to commission two units by October

Hyderabad: Energy Secretary D Ronald Rose on Friday asked officials of the Bharat Heavy Electricals Limited (BHEL), which is executing the 5x800 megawatt Yadadri Thermal Power Station (YTPS) project being constructed in Dameracharla of Nalgonda by the Telangana State Power Generation Corporation Limited (TSGENCO), to commission two units of Stage I by October and the three units of Stage II by March, 2025.

BHEL Chairman and Managing Director KS Murthy along with senior officials of the company called on Rose and updated him about the status of the YTPS plant. The energy secretary urged the BHEL authorities to expedite the work and complete the project as per schedule. He asked them to increase manpower and equipment so that the project could be commissioned in time. The BHEL CMD assured that YTPS units would be commissioned as per schedule. Rose also reviewed the progress of remaining works at Bhadradi Thermal Power Station (BTPS) plant, construction of Flue Gas Desulfurization (FGD) Systems being constructed at BTPS & Kothagudem Thermal Power Station (KTPS)-VII Stage. T

he BHEL authorities agreed to complete the works as per the committed schedules. The authorities of BHEL have been blaming delayed payment of bills by Genco and suspension of the environmental clearance granted in the past for the delay in the commissioning of the



project. Genco had started the construction of YTPS in July 2017 and over 80 percent of the works have already been completed. According to Genco officials, the project was being constructed at a cost of

Rs.29,965.48 crore and work worth Rs.21,837.02 crore has already been completed. In fact, the union Ministry of Environment, Forests and Climate Change had given environmental clearance to YTPS in

June 2017, but later two NGOs – Conservation Action Trust (Mumbai) and Samatha (Visakhapatnam) – approached the National Green Tribunal (NGT) and a stay was put on commissioning the project.

Regus opens a new, flexible workspace in GMR Aerocity, Hyderabad



Hyderabad: Regus, one of the largest providers of flexible workspaces in the world, has opened a new workspace at GMR Business Park, the hub of new-age business, located in GMR Aerocity Hyderabad. The opening of this space comes on the heels of the company's expansion plans and its objective of bringing state-of-the-art facilities to prime business locations in the country.

The modern, sustainable workspace caters to a range of workstyles, with facilities such as business lounges and co-working spaces, as well as office spaces that can be rented for a day and meeting rooms available for even just an hour. Aman Kapoor, CEO – Airport Land Development, GMR Group, added, "Hyderabad Aero City has the advantage of location and has a distinct integrated

mixed-use multi-asset ecosystem across commercial offices, retail, aerospace and industrial Park, educational institutions, hospitality, healthcare, entertainment and rental accommodation." Harsh Lambah, Country Manager India and Vice President – Sales, IWG, added, "With the demand for modern workspaces growing continuously, the opening of this new office space further solidifies our footprint in Hyderabad while also adding financial and strategic value to businesses of every size." GMR Business Park, the premier office district in Hyderabad, sets the standard for modern, sustainable, and accessible business environments. It leases office spaces to large corporate campuses and new-age businesses, featuring well-planned open spaces and amenities such as a food court (Food Life), Yoddhas Gym, ICICI and HDFC banks, and an on-site ambulance. With both custom-designed and multi-tenanted offices, it provides a comprehensive ecosystem for business success.

'Understanding how and why people go mad has been a critical aspect of human society'

When did human civilisation actually begin? Did it begin with humans making artefacts, pots and weapons, or with the advent of agriculture and animal husbandry or with the creation of settlements, which later became city-states? The famous anthropologist Margaret Mead is believed to have said that human civilisation began with a healed femur, which had been discovered at a site containing ancient human remains. "Usually, in animals, if you break your leg bone, you are left to die," says Dr. Sanjeev Jain, Professor, Department of Psychiatry, NIMHANS at a recent talk in the city. The fact that the bone had healed indicates that someone had actually helped rehabilitate this person, he says, concluding that this was also, in some ways, the beginning of medicine. "Medical care has been the driving principle of all human civilisation," states the Bengaluru-based psychiatrist and teacher at the talk held at the Atta Galatta bookstore in Indiranagar.

Dr. Jain, author of the book *Mindscape and Landscape: An Illustrated History of NIMHANS*, went on to trace the larger history of mental healthcare before zeroing in on the genesis and evolution of Bengaluru's National Institute of Mental Health and Science, better known as NIMHANS. "Ever since we have written records of human cultural history to go back to, madness has always been recognised," he says. According to him, accounts of madness have cropped up in diverse texts, including the Ramayana, the Old Testament and ancient Greek myths. "The Greeks thought that madness was due to intoxications or passion—alcohol, love or opium," he says, adding that Ayurveda, too, contains information about it. "Understanding how and why people go mad has been a critical aspect of human society," he says. The idea of creating spaces to nurture the mentally ill emerged only in 800 C.E. with the advent of Islam, says Dr. Jain. "Many mosques started looking after the mentally ill, and the first mental hospital was set up in Baghdad," he says. This also meant that the idea of the asylum spread with Islam. "It went to Cairo, Libya and Spain," he says.

Islamic culture dictated that the mentally ill should be looked after in a place that closely resembled heaven, replete with running water, music, fruit trees, and flowers. So, this became the general design of asylums all over the Arab world, he adds. Over the next 400-500 years, the idea of having designated spaces for the mentally ill spread to Europe when it came in contact with Islamic cultures. "They started building these asylums," says Dr. Jain. The oldest running mental hospital is the Bethlem Royal Hospital, founded in 1247 C.E. in Bishopsgate, London, relocating multiple times over the centuries. "It started for 7-10 people in the inner part of London and gradually moved further and further away," he says, adding that spaces like this began being built all over Europe. Madness back then was seen as the work of God or the devil, stemming from the idea that human consciousness is supposed to be of divine origin, says Dr. Jain. This is perhaps why the responsibility of looking after the mentally ill often fell on religious institu-

tions like churches and mosques. "Between 1200 and 1300, the idea that the mentally ill needed to be looked after by the church or charity became popular." Then, as the Renaissance and, later, the Enlightenment altered people's ideas about religious beliefs, personal freedoms and governance in Europe and eventually North America, things began to change. "By 1500 or so, the so-called scientific Renaissance started. That changed our notion of the world," he says. The human being was no longer the centre of the universe; the sun did not revolve around the earth; laws of physics were very clear; microscopes helped us see inside a cell, and so on, he says. "This awareness changed the nature of healing from being the profession of priests to doctors." The reduced role of divine providence in the natural world fundamentally changed the way mental health was addressed, a change that was also influenced by other significant moments in history, including the Industrial Revolution and the Age of Exploration, which also led to colonisation. "It opened up a whole scope of human thinking," he says. As the way of looking at the human mind changed, the profession of psychiatry started changing too, albeit slowly, with the notion of a mental hospital becoming formalised in the early 18th century. Also, since this period coincided with the expansion of colonial endeavours, these radical ideas about how to treat mental health spread to European colonies, including India.

British hospitals Using illustrations from his book, Dr. Jain also discusses the series of events that led to the formation of NIMHANS. When the British defeated and killed Tipu Sultan in 1799 in the Fourth Anglo-Mysore War and then established their cantonment in Bengaluru a few years later, it influenced the city's medical infrastructure. "The cantonment moved from Srirangapatna to Bangalore for the simple reason that Bangalore was at 3000 ft high and had fewer mosquitoes," he says, with a laugh. The British began establishing their cantonment, constructing many churches, clubs, bungalows and shops in the area. They also built hospitals, with the first general hospital established being the Hospital for Peons, Paupers and Soldiers (today, Bowring Hospital). "The British decided that one thing that did not exist in India was medical services for the poor," says Dr. Jain, pointing out that there was no proper institutional facility back then. "The import of the British Hospital became a very defining moment for Indian society."

Dr. Charles Irving Smith, a doctor at this general hospital who was born in the Bengaluru cantonment, played a crucial role in establishing the Bangalore Lunatic Asylum in 1847. Smith, who had studied in England and returned to India as a doctor in 1831, was keenly invested in mental health and went on to found this asylum as a separate ward for the mentally ill inside the Hospital for Peons, Paupers and Soldiers in 1847. Dr. Jain, in his address, goes on to detail the evolution of this ward into the well-known NIMHANS. Some of the key highlights of this journey include the re-naming of the asylum to the Mysore Gov-



ernment Mental Hospital, its move to a new location in Lakkasandra, which is today the State Bank of Mysore, the impact of events like the Great Famine of 1876-1878 and the two World Wars. He also highlights the contributions of people such as Dr. M.V. Govindaswamy and Dr. Frank Xavier Noronha to the institute. NIMHANS was created in 1974 by amalgamating the Mysore Government Mental Hospital and the All India Institute of Mental Health, which was established by the Government of India in 1954. "All these changes have made NIMHANS what it is," he says, adding that the institute played a tremendous role in shaping Indian

psychiatry. Challenges ahead Today, NIMHANS has evolved into a cutting-edge institution, boasting a neuropathology museum and research centre, a blood bank, family wards, a central animal research centre, an electron microscope lab, a human brain bank, and so much more. "Anything biological to be done with the body or brain can be done at NIMHANS today," states Dr. Jain. The challenge, he believes, lies more in the psychological aspect of mental health that continues to be obscure. "Psychology in India is very difficult because of the linguistic and cultural diversity. A unified psychology is really difficult to emerge from the ground up."

Do you know? Honeybees do a 'waggle dance' to communicate with other bees!

One of the most intriguing aspects of honeybees behaviour is the "waggle dance"; a unique form of communication that helps bees convey information about the location of food sources to their hive mates.

What is waggle dance?

The waggle dance is a series of movements performed by forager bees to communicate the direction and distance of a food source (such as flowers with nectar and pollen) to other bees in the hive. This dance takes place inside the hive, usually on the vertical surface of the honeycomb. The dance consists of a series of figure-eight movements combined with a waggle run, where the bee waggles its body from side to side.

How does it work?

Direction: The direction of the waggle run relative to the vertical axis of the honeycomb indicates the direction of the food source relative to the sun. For example, if the bee waggles straight up the honeycomb, it means the food source is located in the same direction as the sun. **Distance:** The duration of the waggle phase of the dance indicates the distance to the food source. The longer the waggle run, the far-



ther away the food source is. Bees measure distance using the energy they expend during their flight to the source, factoring in elements like wind and terrain. **Quality:**

The vigour and enthusiasm of the dance can indicate the quality of the food source. More energetic dances suggest better or more abundant food sources. The waggle dance was first decoded by Austrian ethologist Karl von Frisch in the 1940s. His pioneering work earned him a Nobel Prize in Physiology or Medicine in 1973

Malwa Canal will be constructed at cost of Rs 2300 Crore: CM Punjab

Chandigarh (JAG MOHAN THAKEN), July 27: The decision of Punjab government to construct 150 kilometres long 'Malwa Canal' at cost of Rs 2300 in the state will help in irrigating around two lakh acres of land thereby ushering an era of unprecedented development and progress in the state. Punjab Chief Minister Bhagwant Singh Mann on Saturday said that state is on the threshold of creating a new history as for the first time in the history of state a new canal 'Malwa Canal' is being dug to cater to the irrigational needs of the southern Punjab.

The Chief Minister, while addressing the gathering after inspecting ongoing work of Malwa canal, said that it is on record that none of the previous governments of the state had paid heed towards this necessity of the state. He said that due to this gross negligence of the successive state governments the over exploitation of the groundwater took place resulting in maximum blocks turning into dark zones. CM Mann further said that this around 150-kilometre-long new canal will usher a new era of unprecedented progress and prosperity in the state especially in Malwa region. The Chief Minister further said that the state government will spend around Rs 2300 crore on this prestigious project that will cater to irrigational needs of nearly two lakh acres of fertile land of the state. Bhagwant Singh Mann said that he had conceived the project much before assuming the charge of Chief Minister of the state. He said that in reality this is his dream project which is aimed giving a major impetus to the overall development and progress of the state in general and that of Malwa region in particular.

Taking a jibe over the previous rulers, the Chief Minister said that those who had always sought votes on the name of panth had never bothered to take such step. He said that the Akali leaders were more interested in supplying water to their farms rather than executing such projects that could have transformed the destiny of the common man. Bhagwant Singh Mann said that due to such anti-people stances these leaders were outrightly rejected by the voters and a whopping mandate was given to the incumbent government. The Chief Minister quipped that Lok Sabha MP Harsimrat Kaur Badal was shedding crocodile tears over the issue of demanding Royalty for the waters of the state. He reminded the Lok Sabha MP that since 1970s her family was at the helms of affairs of the state for a majority period but they never raised this issue anywhere. Mann said that now when the people of state have sent them to political oblivion Badal family is raising these issues adding that the wise people of state know the real face of this family and they will never spare them for their sins.

The Malwa Canal, the ongoing work of which was checked by the Chief Minister during his visit in the district, is proposed to off take from Harike Headworks and runs along the left side of the Rajasthan Feeder Canal from its Headwork to near village Warring Khara partly in the existing land of Rajasthan government acquired for construction of Rajasthan Feeder. It will provide additional water resources to the left



side of the Rajasthan Feeder Canal, which cannot be supplied effectively by Sirhind Feeder Canal. The Proposed discharge of this 149.53-kilometre-long canal is 2000 cusecs and will be constructed at a cost of Rs 2300 crore. This move assumes significance as during the Kharrif season, due to high demand Ferozpur Feeder is not able to cater to the entire demand of Punjab state and as a result supply in Sirhind Feeder is affected. The situation becomes so severe that Punjab has to run its canals on rotation. There are 302 lift pumps oper-

ating in between RD 7100 to 430080 of SF, which irrigate the area on the left side of the Rajasthan Feeder which was originally irrigated by the Sirhind Canal system (Abohar Branch Upper and Bathinda branch) being fed from Ropar Head Works. However Instead of improving supply of water at tail portion of Sirhind Canal system, the then government took the decision to supply water to this area from Sirhind Feeder through Lift pumps. Thus, there is a shortage of water for the canal system of Abohar and Fazilka. As a long-

term measure to improve irrigation facility in the area, the present government has taken the decision to construct another canal namely Malwa Canal parallel to Twin Canals- Rajasthan Feeder and Sirhind Feeder.

Thus, more water will be available for Abohar Area from Sirhind Feeder. After construction of this canal the both the areas of Muktsar, Giddebaha, Bathinda, Ziraas well as areas of Abohar, Ferozpur and Fazilak will get their rightful share of water.

Strong security arrangements for cages

Rachakonda Commissioner Sudhir Babu directed the officials to make strict security arrangements on the occasion of Bonala festival and to carry out duties with the cooperation of the people to avoid any untoward incidents. In sensitive areas, officials are advised to be more vigilant and deploy efficient personnel. Devotees are advised to be careful during the arrangements of events like mass celebrations in which a large number of devotees participate. Officials have been directed to carry out checking of vehicle number plates and documents in all prominent temple premises. It is advised to carry out preliminary inspections by bomb inspection teams at necessary places. The officials were directed to keep a vigil on the old criminals who are inciting disturbances and to take action to ensure that they do not commit any crimes.



Rachakonda Police Commissioner Sudhir Babu

Fighting militants in the mountains of Jammu

It has been 45 days since 20-year-old Abishek Badkali's father, Amarjit Sharma, a chemist, was murdered at night in Mela village in Kathua district of Jammu division. His family and the residents of Mela are still in shock. They have near heard of brutal murders taking place in this region, located in the lush green Shivalik hills in the outer Himalayas. A charpoy lies at the entrance of the single-storey house of the family. This is where the family — Abishek, his mother, and sister — gather for some respite from the unbearably hot rooms inside. The backyards of the small cluster of houses in Mela village are dotted with the deciduous Khair trees, and Chir pines; the forest stretches out ahead. Venturing deep into them could be dangerous for many, but for militants, whose presence has been increasing in the region, the density provides cover and security. Abishek, a science graduate, says his father, 49, left the house at 10 p.m. for a walk on June 9. "I was relaxing on the terrace. When he didn't return, we called him on his phone, but he didn't answer. When we started searching for him on the narrow track leading to the forest, we saw him lying dead on the ground, with his face towards the surface. There was a deep, long cut on his neck," he says.

The residents of Mela are certain that militants killed their beloved "doctor sahib". "We all suspect that my father spotted the local guide of the militants. They may have killed him to ensure that the identity of the guide does not get revealed," says Abishek. After the dilution of Article 370 in Jammu and Kashmir (J&K) in 2019, which ended the special status of the erstwhile State, more and more militants have been entering Jammu, according to senior security officials. They say this is "a deliberate and desperate bid to destabilise the region after the abrogation of Article 370 integrated J&K into the mainstream." The government believed that militancy had ended in the Jammu region by 2005 after security forces had launched major operations. In 2020, however, 18 militants were killed in the area. In 2021, militants made the Pir Panjal valley, comprising Rajouri and Poonch in Jammu division, their new base and began attacking Army camps and convoys, especially in Dera Ki Gali and Bhata Dhurian. Now, militancy has spilled over into the Doda, Ramban, and Kishtwar districts in Chenab valley in Jammu division. Twelve security personnel, including 11 soldiers from the Army, were killed this year in the Jammu division. So were five militants. Fourteen militant attacks were reported in June and July alone this year — nearly one every four days. Security officials describe the Pir Panjal and the Chenab valleys as "Jammu's Tora Bora", the mountain ranges in Afghanistan where al-Qaeda survived for years. On June 11, two days after Amarjit Sharma's body was recovered, two militants surfaced in Saida village, just 10 kilometres away. They knocked on the shutters of a kirana shop that sells basic necessities, such as oil, salt, and spices.

"I was sleeping on the floor when I heard them knock," says 62-year-old Maniram Sharma, the owner. "I saw two boys in their 20s with guns. One sported a short beard. The other had shaven his moustache. They asked for water. Before

they came to me, I had heard a loud bang. I heard later that they had opened fire nearby. I noticed that they had a Lahori accent, which is used on the other side of Punjab (Pakistan)." According to locals, the militants had opened fire in the village. One unidentified militant died after a grenade exploded in his hand. Another, who ran towards the forest and later killed a jawan of the Central Reserve Police Force (CRPF), was killed in a 15-hour-long anti-militancy operation, carried out jointly by the J&K Police and the CRPF. The militants also opened fire on civilian houses. Omkar Dinanath, a civilian, was hit in the arm and carries a scar. The incident has also left a bullet mark on the wall of his house. Since the encounter, the residents of Saida return home early and are suspicious of outsiders. "People have grown fearful. We are poor. We have to tend fields and cattle to survive," says Shankar Chand, a resident of Saida. The police recovered knives from the militants at the encounter site. They have sent them to the forensic science laboratory to determine whether one of these was used to kill Amarjit Sharma. "Even at the peak of militancy in J&K (in the 1990s) and in Punjab (mid-1980s to the mid-1990s), we never encountered a gunman in Saida village. The government must find a political solution to end militancy," says Maniram.

Located around 20 km from the International Border (IB) between India and Pakistan, Saida village, much like many other villages in Kathua, is being used as a transit route by militants from Pakistan, say police officials. They describe how militants dig tunnels and enter the region. On July 5, a farmer stumbled on one such tunnel in Thangli village in the Hiranagar sector of Kathua, when the water from his farmland started draining only at one point, 500 metres away from the border. Security forces have started a major exercise on the IB to detect underground tunnels but admit that it "is humanly impossible to sanitise the entire region" on a daily basis. Kathua, a Hindu-majority district, is adjacent to Punjab. The police say the militants use the area to fan out into nearby districts such as Doda, which has become the new battleground. That militants are shifting their base is nothing new in Kashmir. In the last three decades, militant commanders have shifted their base from north Kashmir to central Kashmir and later to south Kashmir. However, security agents say they did not think that the militants would shift to districts where they have little local support. "Militants have revived old infiltration routes in Jammu region, especially using the IB, in Kathua and Samba. And also in Punjab. These routes were active during the Punjab militancy, which impacted Jammu too, and also during the peak of Kashmir militancy. All these routes had dried up by 2000 due to the efforts of security forces," says a senior police official, who recently attended a high-level inter-State meeting of top officials of the Army, Border Security Force, and police from J&K and Punjab, in Kathua.

A challenging terrain A Jammu-based Army officer says the highest militant footprint in Jammu region since 2005 has been recorded this year. "The terrain is being used by terrorists to their advantage. It is a challenging situation, but we are prepared



to defeat them," he says. Security agencies say this is "a deliberate move to achieve certain strategic goals including raising the cost of the conflict by forcing troop de-induction (the withdrawal of troops from conflict areas) and re-induction (redeployment of troops where trouble resurfaces) processes, subverting troop thinning exercises, and shifting focus from the Ladakh front". The Army has re-inducted more than 700 soldiers this month. It has stepped up patrolling in the Pir Panjal and Chenab valleys. It also uses drones to patrol the dense forests. An official says a tip-off about the presence of militants from the upper reaches of the Doda mountain region takes the Army anywhere between six hours to a few days to reach the spot. The mountain slopes are sparsely populated and dotted with caves, which the militants use for shelter. The forest area in Jammu is eight times the size of Delhi. Militants who were dominating the Pir Panjal valley, a mix of coniferous and deciduous forests, between 2020 and 2023 are shifting towards higher peaks and the forests of the Chenab valley, says a senior police official.

"The upper reaches in the Pir Panjal and Chenab valleys are far away from the roads. It takes the Army days to patrol these pockets by foot and return to their bases," the Army officer says. In Doda, the mountains are 1,200-1,500 ft high. The militants have been spotted in the upper reaches of the Bhalessa, Chattergala, and Dessa forests. "This arc has provided strategic depth to militants," says a senior police official. "They are operating from the upper ridges. The presence of nomads in the upper reaches in summer makes it easy for the militants to fetch food. They keep changing their locations. They get to know about the Army's movement because of their positions," says a senior police officer, who led anti-militancy operations in the Doda belt in the recent past.

Doda was a hub for militants in the 1990s. According to police data, 118 locals have shifted to Pakistan and Pakistan-Occupied Kashmir since the 1990s. The police have begun to re-open old cases against locals and seal the houses of suspected active militants. Such action has pushed many people who joined the mainstream back to the margin, say residents.

Change in modus operandi Jammu is witnessing a dynamic shift in militancy. According to Army officials, terrorists no longer engage the security forces in a stand-off fire, but lay an ambush with the

intention of killing them and fleeing from the spot. "They are highly trained in jungle warfare," says an Army officer. The arrest of two locals — Nissar Ahmad, 56, a resident of Rajouri's Gursai, in April 2023; and Hakam Din, 40, a resident of Rajouri's Bandhbrahi, in June this year — gave officials an idea about the modus operandi of the militants. Ahmad allegedly hosted a group of them, who later carried out an attack in Dangri that left seven civilians dead in January 2023. Din allegedly sheltered a group of militants who were responsible for the attack in Reasi in June, which left nine pilgrims dead and more than 33 people injured. Ahmad, the father of two schoolgoing children, has also been accused of ferrying weapons for the militants. He had militant links in the 1990s, but stayed silent all these years, the police say. According to the police, militants do not rely on locals for shelter for a long period of time; they remain on the move. There is growing evidence that the militants use mobile apps like Alpine, which trekkers use, to cover steep slopes of mountains, without accessing the Internet. Din did not have any association with militants earlier, but hosted the Reasi attackers. He admitted that he informed the militants about the movement of the pilgrims' bus, say the police. In fact, he stayed in the area where the attack took place, in Teryath village near Shiv Khori area, to provide a cue to the attackers about the movement of the bus, say the police. "Din's role went beyond providing shelter. His ideological inclination too is under investigation," says another senior police officer. Both Din and Ahmad belong to the Gujjar community. A police officer says the support network for the militants could increase because of various factors, such as increasing polarisation between Hindus and Muslims. The Gujjars feel alienated after a new reservation policy included the Paharis, who, they believe, are a linguistic group and well-off. Growing unemployment could also push more Gujjars into the support network, he says. The Rajouri-Poonch belt is home to around 11 lakh Gujjars and Bakerwals. Hundreds of them have been rounded up for questioning in the past three years, especially around areas where militants attacked security forces. Army officials say they have set up special mobile schools, and medical patrols for Gujjars, Bakerwals, and even their livestock, "to reach out to the population". "In the past, locals would mostly say Urdu and Punjabi-speaking militants passed by or stayed with them.

Surprising 'dark oxygen' discovery could ensnare deep-sea mining | Explained

An unknown process is producing oxygen deep in the world's oceans, where it is too dark for photosynthesis, scientists reported on July 22 in the journal *Nature Geoscience*. The finding has important implications because oxygen helps support life and the discovery implies the existence of previously unknown ecosystems. Many governments are also bound to take notice since one explanation for the oxygen is that polymetallic nodules are transporting electric charges that split water molecules around them, releasing oxygen. Polymetallic nodules are lumps of iron, manganese hydroxides, and rock partially submerged in many parts of the ocean floor. If their concentration exceeds 10 kg per sq. m, mining them is considered to be economically feasible — and many countries are planning to do so as a new resource.

On July 22, Reuters reported an unnamed "top government scientist" saying India is planning to "apply for licences to explore for deep-sea minerals in the Pacific Ocean". India's Ministry of Earth Sciences is also currently building a submersible vehicle that will look for and mine similar resources in the Indian Ocean as part of its 'Deep Ocean Mission'. The oxygen discovery raises questions about how deep-sea mining to extract polymetallic nodules will affect marine ecosystems. The scientists behind the study, from Germany, the U.K., and the U.S., were studying the Clarion-Clipperton Zone, a part of the ocean floor off Mexico's west coast. Covering an area larger than India, the Zone is considered to have the world's highest concentration of polymetallic nodules, including 6 billion tonnes of manganese and more than 200 million tonnes each of copper and nickel.

When the scientists were conducting experiments at a depth of 4 km, they noticed the oxygen concentration in some places rapidly increased instead of decreasing. They conducted follow-up studies in 2020 and 2021. In each case, they released a device from the surface that would land on the ocean floor, where it would isolate a small volume of the floor along with some sea water and measure the oxygen levels. This underwater region is called the abyssal zone. It receives too little sunlight for photosynthesis to be feasible. Instead, life-forms here get oxygen from water carried in by a global circulation called the 'Great Conveyor Belt'. Still, the amount of oxygen is low and without any local production, the device should have measured the oxygen levels dropping as small animals consumed it. But the scientists found the opposite: it increased, sometimes tripling in just two days. They double-checked the finding by recreating the conditions on the ocean floor in their lab, and found the oxygen levels to increase up to a point before dropping.

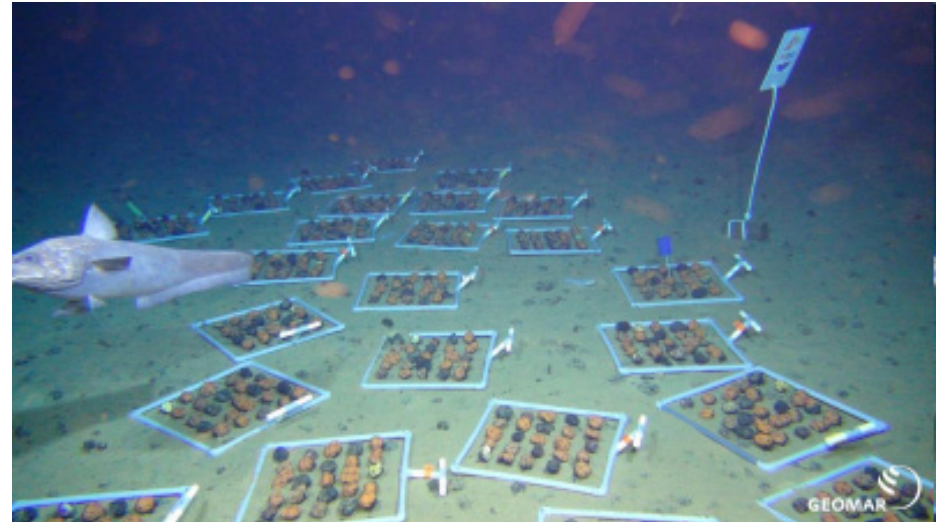
What is the source of the oxygen?

When they measured the physical characteristics of the nodules, they found their surfaces to have a voltage of up to 0.95 V. Splitting one water molecule requires 1.5 V, but the researchers have suspected the voltage could build up if many nodules are close together, like the cells of

a battery. Andrew Sweetman, an ecologist with the Scottish Association for Marine Science in the U.K. and a coauthor of the study, told *Nature*, "We have another source of oxygen on the planet, other than photosynthesis." His team is calling it 'dark oxygen'. Oxygen sources are valuable because they allow life to survive. But as the lab experiment indicated, the nodules could only produce oxygen as long as they could muster a sufficient voltage. The nodules' own energy source is also not clear.

What is deep-sea mining?

Given the quantity of metals polymetallic nodules on the ocean floor hold, deep-sea mining is expected to be a major marine resource extraction activity in the coming decades. The International Seabed Authority has established 15-year contracts with at least 22 contractors — including the Government of India — to look for polymetallic nodules, polymetallic sulphides, and cobalt-rich ferromanganese crusts in the deep seabed. China alone is expected to mine 17% of the Clarion-Clipperton Zone. The new finding raises the possibility of such mining damaging ecosystems that require 'dark oxygen' to survive. Experts have found deep-sea mining itself could be harmful to the marine environment, 'dark oxygen' or not. In 1989-1996, scientists from Germany conducted the Disturbance and Recolonisation (DISCOL) Experiment in the Peru Basin as the world's "first large-scale impact assessment" to assess the "environmental impacts originating from the mining of polymetallic nodules". They built a device that disturbed the sea floor like a deep-sea mining exer-



cise might have and collected data about how the disturbances changed local oceanographic and sedimentological profiles, among other things. A 2019 study in the journal *Scientific Reports* reported that "the effects of simulated mining impacts induced during the DISCOL [Experiment] were still evident in the megabenthos of the Peru Basin after 26 years."

How will deep-sea mining be affected? The same study also reported "significantly lower heterogeneity diversity in disturbed areas" and added that "if the results of this experiment ... can be extrapolated to the Clarion-Clipperton Zone, the impacts of polymetallic nodule mining there may be greater than expected, and could potentially lead to an irreversible loss of some ecosystem functions". In November

2023, *Nature* reported based on a paper published then that deep-sea mining "for minerals could harm deep-sea jellyfish, according to the first study of mining impacts on animals living in the water column." Scientists also know less about ecosystems in the abyssal zone than they do about many of those aboveground, which means the models scientists use to predict their fate and their role in global climate processes could be unreliable. With these and other issues in mind, on July 20, three major European insurance companies said they would exclude deep-sea mining from their underwriting portfolios. 'Dark oxygen' adds to these challenges. If deep-sea mining doesn't find sustainable ways to respond to them, it may be rendered altogether infeasible.

WazirX crypto exchange hack and its bounty programme: what it means to India's crypto investors?

On July 18, Indian cryptocurrency exchange WazirX was hit by a cyberattack that led to a loss of digital assets worth more than \$230 million from one of its wallets. The exchange responded by pausing normal trading activities and reported the incident to the Indian authorities and other crypto exchanges. The company also launched two bounty programmes aimed at ethical hackers who can help the exchange track, freeze and recover the stolen funds. WazirX said there was a cyberattack against a multi-signature wallet it managed through a digital asset custody service known as Liminal. Multi-signature wallets have a built-in security feature that requires several parties to sign off on transactions.

"The impact of the over \$230M cyberattack is on the digital assets of our customers," said WazirX in a blog post, adding that INR funds were not affected. The company strongly denied that WazirX itself was breached, and brushed aside rumours that it was duped by a phishing attack. The exchange also noted that it was "certain" that its hardware keys were not compromised, adding that an external forensic team would be engaged to further investigate the matter. But Liminal, after

completing investigations at its end, said "It is evident that the genesis of this hack stems from three compromised devices at WazirX's end." Meanwhile, WazirX founder and CEO Nischal Shetty said that the attack was only possible if there had been four points of failure in the digital signing process.

Who is behind the hack?

WazirX has not yet revealed the suspected parties or perpetrators responsible for the hack. However, news reports have emerged that North Korean hackers were responsible for the incident. On-chain analysis and other information indicate "that this hack was perpetrated by hackers affiliated with North Korea," said blockchain analytics platform Elliptic. In response to The Hindu's queries to WazirX about the North Korean hackers, the crypto exchange WazirX directed us to its blog and said it was working with law enforcement officials to see if any known threat group might be behind the attack. "This incident has affected the Ethereum multisig wallet, which consists of ETH and ERC20 tokens. Other blockchain funds are unaffected," said WazirX in its official blog, specifying that approximately 45% (as per preliminary workings) of crypto assets were affected

by the attack. The company has largely shifted the blame to the process of securing multisig Ethereum wallets, and claimed the vulnerability was not unique to WazirX.

How important is WazirX in the crypto sector?

WazirX calls itself India's largest cryptocurrency exchange by volume. As of June 10, it reported total holdings of ₹4,203.88 Crores, or USDT 503.64 Million. Tether [USDT] is a stablecoin, or a cryptocurrency that is pegged to the value of the U.S. Dollar but is not an official U.S. currency. When The Hindu tried to access WazirX's public and real-time proof of reserves after the cyberattack, we were welcomed by the page was under maintenance notice. WazirX has received both positive and negative press in India. The Directorate of Enforcement froze the exchange's assets in 2022, lambasting its operating procedures and loose Know-Your-Customer (KYC) and Anti-Money Laundering (AML) norms.

"By encouraging obscurity and having lax AML norms, it has actively assisted around 16 accused fintech companies in laundering the proceeds of crime using the crypto route.

The 15k crore grant for Andhra's Amaravati should hinge on functionality, not grandiosity

Finance minister Nirmala Sitharaman announced the allocation of ₹15,000 crore to rebuild Amaravati, Andhra Pradesh's capital city, in her budget speech on Tuesday. The announcement was more than a shot in the arm for chief minister N Chandrababu Naidu whose fourth term has so far been characterised by a cash-strapped exchequer. Naidu's words on social media, thanking the FM summarised the dire need for the confidence-injecting capital grant. "This support from the Centre will go a long way towards rebuilding Andhra Pradesh. I congratulate you on the presentation of this progressive and confidence-boosting budget." Andhra Pradesh government data released at the end of the previous fiscal revealed some worrying numbers about the state's financial condition. Public debt rose from 31.02% of the Gross State Domestic Product (GSDP) in 2019-20 to 33.32% in 2023-24, indicating a steep decline in the past five years. Former bureaucrats and economists believe the Union government's generous dole to the state for the capital city will enable Naidu to deliver on the promises made in the manifesto.

Although Sitharaman declared that the fund allocation would be fulfilled through multilateral agencies, it remains to be seen if the massive allotment comes as a grant or interest-free loan to the state. While the Union government's announcement didn't surprise many, the quantum of capital and immediacy comes after Naidu met with the entire top brass of the Bharatiya Janata Party (BJP) in the last few weeks, seeking patronage for Andhra. The announcement of the grant for the historic city Amaravati, which was once the capital of the 2nd-century BCE Satavahana dynasty, also puts to rest former CM Jagan Mohan Reddy's proposal to name Visakhapatnam, Kurnool, and Amaravati as three capitals for the state.

Andhra and Bihar topped all other states to receive the maximum grants, possibly in lieu of the special status that Nitish Kumar and Chandrababu Naidu — both allies of the National Democratic Alliance (NDA) — have been pressuring the government for. However, just two days before the budget, Pankaj Chaudhary, minister of state for finance, said in his written reply to a member of Nitish's Janata Dal (United) that no such status would be granted. As part of her budget, Sitharaman also allotted over ₹3 lakh crore for women-specific schemes, and Andhra is expected to be a huge beneficiary of this scheme given that Naidu had pioneered the self-help group movement in the former Andhra Pradesh state. The Union government will also fund the massive Polavaram irrigation project. Andhra Pradesh's real-time governance minister Nara Lokesh also thanked the Centre. Lokesh said in a post on X in Telugu: "Thanks to the central government which has announced that it will provide full support for the completion of the projects of Amaravati, the capital of Andhra Pradesh, and Polavaram, Jeevanadi." Use funds judiciously: Experts IYR Krishna Rao, the state's first chief secretary after the state was bifurcated in 2014 said: "A capital city has multiple infrastructure requirements



and the previous grant of ₹2,000 plus crore was insufficient. While the fund inflow was expected, Naidu's fiscal problems with continue. He not only requires capital grants but also revenue grants. The state has already overleveraged itself in terms of borrowings but is also struggling to meet budgeted expenditure. "The former bureaucrat expressed the state's ability to create sufficient in the next 2-3 years stating that capital creation was a long gestation project. Similar sentiments were echoed by Karuna Gopal, urban planner and president of the Foundation for Futuristic Cities. As one of the lead designers of the 100 smart cities in India, Gopal emphasised that the capital city should cater to the following basic needs of every household — potable drinking water, sanitation, waste management, and access to urban transportation. "The funds should be used towards functionality and not grandiosity. Andhra has lost 10 years already waiting for a capital. So, what is needed now is an artful solution with technology aiding ease of living. The master planning has to be done with care and funds must be used judiciously" she said. Commenting on the Polavaram project, economist Papa Rao said the NDA government in the state should take precautions to ensure the multi-irrigation project does not turn out like the Kalshwaram lift-irrigation project in Telangana. The Central Water Commission should be involved right from the beginning to avoid any mishap later on, Rao said. "The project has been pending for nearly five decades. It would have been a lifeline for both the Telugu states if this project had been taken up earlier. However, with the Centre proposing to fund it entirely, it could free up some funds for welfare initiatives for the nine backward districts in the state." Deepika Amirapu is a freelance journalist based in Hyderabad. Each week, Southern Lights examines the big story from one of the five states of South

India. Catch every big hit, every wicket with Crickit, a one stop destination for Live

Scores, Match Stats, Infographics & much more. Explore now!

Meta unveils biggest Llama 3 AI model, touting language and math gains closing in on OpenAI

Meta Platforms released the biggest version of its mostly free Llama 3 artificial intelligence models on Tuesday, boasting multilingual skills and general performance metrics that nip at the heels of paid models from rivals like OpenAI. The new Llama 3 model can converse in eight languages, write higher-quality computer code and solve more complex math problems than previous versions, the Facebook parent company said in blog posts and a research paper announcing the release.

With 405 billion parameters, or variables that the algorithm takes into account to generate responses to user queries, it eclipses the previous version released last year, though is still smaller than leading models offered by competitors. OpenAI's GPT-4 model, by contrast, is reported to have one trillion parameters and Amazon is preparing a model with 2 trillion parameters. (Unravel the complexities of our digital world on The Interface podcast, where business leaders and scientists share insights that shape tomorrow's innovation. The Interface is also available on YouTube, Apple Podcasts and Spotify.)

Promoting Llama 3 across multiple channels, Chief Executive Mark Zuckerberg said he expected future Llama models would overtake proprietary competitors by next year. The Meta AI chatbot powered by those models was on track to become the most popular AI assistant by the end of this year, with hundreds of millions of people using it already, he said. The release comes as tech companies are rac-

ing to show that their growing portfolios of resource-hungry large language models can deliver significant enough gains in known problem areas like advanced reasoning to justify the gargantuan sums that have been invested in them. Meta's own top AI scientist has said he believes such models will hit up against limits on reasoning and that other types of AI systems will be needed to produce breakthroughs. In addition to its flagship 405 billion-parameter model, Meta is also releasing updated versions of its lighter-weight 8-billion and 70-billion parameter Llama 3 models initially introduced in the spring, the company said. All three new models are multilingual and can handle larger user requests via an expanded "context window," which Meta's head of generative AI, Ahmad Al-Dahle, said would improve the experience of generating computer code in particular. "That was the number one feedback we got from the community," Al-Dahle told Reuters in an interview, noting that bigger context windows give the models something akin to a longer memory that aids in processing multi-step requests. Separately, Al-Dahle said his team had been able to improve the Llama 3 model's performance on tasks such as solving math problems by using AI to generate some of the data on which they were trained. Meta releases its Llama models largely free-of-charge for use by developers, a strategy Zuckerberg says will pay off in the form of innovative products, less dependence on would-be competitors and greater engagement on the company's core social networks.

The science of tirzepatide, touted as a game-changing weight loss drug

The national drug regulation body, Central Drugs Standard Control Organisation (CDSCO), has reportedly authorised the use of the drug, tirzepatide, for treatment of diabetes. The use of tirzepatide for chronic weight management is still under review. The drug is being sold by the pharma company Eli Lilly under the brand names Mounjaro (for diabetes) and Zepbound (for obesity).

What causes obesity and diabetes?

When we eat, we are stocking up on glucose, a molecule that is fundamental for our cells to function. Glucose is so crucial that our bodies evolved a mechanism to store it when food is available in plenty. The excess stock is stored in the form of lipid droplets that can be converted back to glucose at times when food is scarce. This is where the hormone insulin comes into play, explained Anil Gaikwad, a pharmacologist at Central Drug Research Institute, Lucknow. "Insulin secretion is a signal to cells to mop up excess glucose from the bloodstream. As long as the normal feeding and fasting cycles are maintained, our cells are functionally responsive to insulin." The trouble is when cells develop insulin resistance. With the Industrial Revolution, cheap quality food became easy to access. This, coupled with our sedentary lifestyles, has resulted in an imbalance between our energy intake and usage. This is likely why there is an obesity epidemic in the world — according to the World Obesity Federation Atlas, 11% of Indian adults will be obese by 2035. In such conditions, there is an oversupply of glucose in the bloodstream and the body is forced to maintain high levels of insulin to control the situation. Beyond a point, cells become desensitised to the insulin, a scenario known as insulin resistance. "With insulin resistance, there is an increased pressure on the beta cells of the pancreas to produce more insulin. This vicious cycle exhausts the beta cells, eventually leading to its death," said Gaikwad. This is the process that underlies the transition of a person from being insulin-resistant to prediabetic. "When approximately 40% of the beta cells are exhausted and unable to produce the required quantity of insulin, a person is declared diabetic," he added.

How can the new drugs help

The active component of the two Eli Lilly drugs Mounjaro and Zepbound is called tirzepatide. Tirzepatide is delivered subcutaneously via an injection given weekly. It works by acting as a 'dual agonist'. This means that it can mimic two naturally occurring molecules: gastric inhibitory polypeptide (GIP) and glucagon-like peptide-1 (GLP-1). "GIP and GLP-1 are peptides that are released following ingestion of fats and/or carbohydrates. They stimulate the release of insulin, and help increase insulin sensitivity in adipose and skeletal tissue," said RNV Krishna Deepak, a computational structural biologist at Azim Premji University, Bengaluru. Being an agonist of these two peptides, tirzepatide can activate the same pathways as them.

Deepak added that GIP and GLP-1 (and therefore tirzepatide, their synthetic analogue), also have other physiological effects including slowing gastric emptying

and promoting satiety. "The patient feels fuller for longer and in turn eats less, resulting in weight loss," he says. This is how tirzepatide helps those with insulin resistance, a group that includes obese and diabetic individuals.

What sets tirzepatide apart? Tirzepatide is not the only drug to use this strategy to combat diabetes and obesity. Semaglutide, marketed by the company Novo Nordisk, is also a GLP-1 agonist. This drug is already available in India for diabetes management. Like tirzepatide, semaglutide is also effective for weight loss, but in a higher dose (known by its brand name Ozempic). However, its usage for obesity has not yet been approved in India. The edge that tirzepatide has over semaglutide is its property as a dual agonist; not only does it activate the GLP-1 receptor, it also activates the GIP receptor. Interestingly, there may already be a newer drug that goes one step further than tirzepatide in the offing. Called retatrutide, this works as a 'triple agonist', meaning it targets a third receptor, GCGR, besides the GIP and GLP-1 receptors. Studies show that retatrutide may be a better alternative to semaglutide and tirzepatide, but it has some way to go before being approved by a regulatory authority.

Is tirzepatide a silver bullet?

No. "Tirzepatide has received marketing authorisation for type-2 diabetes mellitus in India as an adjunct to diet and exer-



cise to improve glycemic control in adults with type-2 diabetes," clarified a spokesperson for Eli Lilly. "Diet, exercise and lifestyle modification are the cornerstone of type-2 diabetes management and any active drug indicated for type-2 diabetes is an add-on to diet and lifestyle." So far, the most common side effects of taking tirzepatide seem to be nausea and vomiting. It is also important to know that the medications once launched are unlikely to be affordable to most Indians. When asked about affordability, the spokesperson commented: "We believe tirzepatide will be competitively and appro-

priately priced based on the efficacy of the medicine and overall lower risk-benefit ratio as observed in phase 3 clinical trials." While they declined to mention any specifics, a Business Insider report has said that it is likely to be priced at ₹20,000 for each weekly dose. Nandita Jayaraj is the co-author of Lab Hopping:

A Journey to Find India's Women in Science, which explores the gender gap in Indian science. The views expressed are personal. Catch every big hit, every wicket with Cricket, a one stop destination for Live Scores, Match Stats, Infographics & much more. Explore now!

Prince Harry sent 'congratulate note' to Kate Middleton to convey how happy he was to....

Prince Harry had connected with his estranged sister-in-law, Kate Middleton, following the Princess of Wales' appearance at Wimbledon Tennis Championships on July 14 amid her ongoing cancer treatment, as per a new report. The Duke, who was previously known for his strong bond with Kate, has been in the limelight over straining ties with the Royal family since he stepped down of the Royal duties and moved to the US with Meghan Markle. Kate, 42, received a standing ovation at the yearly grand slam as she appeared in the ground four months after making her cancer diagnosis public. Harry sends congratulate note to Kate Middleton. According to Heat Magazine, the Duke of Sussex reached out to Meghan and congratulated her on attending the tournament. "Harry was watching Wimbledon and was thrilled to see Kate looking so radiant," a source told the magazine.

Harry sent a "congratulate" note to Kate to tell her "how happy he was to see her out." "He's just so grateful that she's on the mend and able to get back to her duties after taking time off — as is Meghan," the source added. Royal fans were delighted when Kate arrived at the All England Lawn Tennis Club, with daughter Princess Charlotte and sister Pippa Middleton. The Princess of Wales "showed



Prince Harry had connected with his estranged sister-in-law, Kate Middleton, following her appearance at Wimbledon Tennis Championships on July 14.'

a lot of courage and character, as she knew that the world was watching," stated renowned royal chronicler Robert Jobson. Meanwhile, the Palace insider confirmed his remarks, informing the outlet that she most certainly received "sustenance" from her outing. Kate says 'Great to be back' at Wimbledon. Following her Wimbledon outing, Kate shared her happiness at re-

turning to SW19 on X. Great to be back at @Wimbledon! There's nothing quite like The Championships," she wrote. It is being reported that the Waleses will spend the balmy summer at Anmer Hall, which is situated on the Sandringham estate in Norfolk, England. Later on, Kate and William and their three kids will meet the King and Queen Camilla at Balmoral Castle.

Union Budget 2024-25 — no signs of learning



Just before Nirmala Sitharaman presented her seventh consecutive Budget as Union Finance Minister of a coalition led by the Bharatiya Janata Party (BJP), which managed to gain power for the third time on an underwhelming mandate, signals from the government seemed to suggest what its thrust may be. The Economic Survey 2023-24 made clear that while India's industrialists and business elite were "swimming in excess profits", the priority of the government was not to tax away that excess for developmental purposes, but to ease the burden of regulation on business and goad the private sector into generating productive jobs out of "enlightened self-interest". Business must lead the march to Viksit Bharat 2047, and the job of the government is to persuade the private sector not to shy away from leadership. Outside government, speculation was rife on two matters. The first concerned the possible response of the National Democratic Alliance (NDA) to the signal from the parliamentary elections that the strategy of sidestepping core economic problems — varying from rural distress and widespread unemployment to inflation, especially food price inflation — could prove costly. The second related to the scale and the structure of the pay-off to allies, the Telugu Desam Party (TDP) and the Janata Dal (United), or the JD(U), from Andhra Pradesh and Bihar, respectively, who are crucial to keep the post-election coalition government led by the minority NDA in power. Initiatives and their slotting in the speech did not disappoint by sidestepping these issues, though the beneficiaries of the schemes meant to address them are likely to be disappointed by their scale and

efficacy. Embarrassed perhaps by the hordes applying for the few half-decent jobs available, Part A of the Budget speech spent much time on the means to increase employment, especially for the educated unemployed. Multiple initiatives were announced, which broadly fell in two buckets. One contained schemes that amounted to providing employment subsidies, either directly or indirectly to employers. The scheme to provide ₹15,000 in three instalments to all new employees with salary up to ₹1 lakh a month appears to be directed to those employed in the formal sector. But it is more than likely that the availability of this benefit would influence the compensation package offered by companies attempting to internalise that subsidy. Another set of subsidies, such as the ₹3,000 a month contribution for two years to be made by the government against provident fund subscriptions, accrues directly to employers. A second bucket consists of schemes, varying from subsidised internships and interest subvention for educational loans, which attempt to 'skill' workers largely at state expense, in ways that are expected to make them more employable. The assumption is that it is not inadequate and inappropriate growth, but a skill set mismatch between what job aspirants have to offer and industry needs, that is responsible for unemployment. Combine this with direct tax concessions for foreign firms and indirect tax adjustments to favour domestic manufacturing, and the picture that emerges is that the unemployment problem is sought to be tackled by persuading private capital with transfers to hire the unemployed in "productive" jobs. The underlying percep-

tion, which misses why high growth does not deliver more jobs is that business wants to hire but finds the available labour force too expensive or unsuited, skill-wise. This mismatch between the problem at hand and what the Budget offers is even more stark when it comes to agriculture. While peasants unable to make both ends meet because crop production is economically unviable have been demanding procurement at a legally guaranteed minimum support price, the Budget promises to implement a long-term programme to raise productivity and production. Farmers who have been on the streets for years now are unlikely to be impressed. What the key allies have got is the disappointment is likely to be greater among the NDA's allies. The JD(U) in Bihar has been promised a combination of sundry transport, power, education, sports and religious tourism infrastructure as an implicit quid pro quo for political support, which is a far cry from the large sums that it was expected to receive if granted the special status it demands, but has been denied. The TDP has been offered support to build its new capital at Amravati, on which Chief Minister N. Chandrababu Naidu has staked his prestige and fortunes. But what is shocking is that these promises have not been backed up by significant financial support from the Centre, with much or almost all of the spending to be financed with borrowing, especially from the multilateral development banks (MDBs), facilitated by the Centre. Why the MDBs should listen to the NDA leaders is not clear. But even if they do so, this would only increase the debt burden of these States. Moreover, given the restrictions that have been placed on borrowing

by the States, it is unclear how debt for these purposes could be "additional" to what the State may have in any case chosen to incur. Preoccupied with propaganda aimed at concealing the little that has been done in these politically-sensitive areas, the government in its first year in power has chosen to completely ignore the welfare schemes it made much of in the run-up to the election. Thus, total expenditure for the National Social Assistance Programme covering pensions and disability benefits, which stood at ₹9,652 crore in 2023-24 as per the revised estimates, has been allocated exactly the same amount in the Budget for 2024-25. That is the fate of the National Rural Employment Guarantee Programme, as well, where the allocation for 2024-25 is exactly the same as the revised estimate for expenditure in 2023-24. Despite the extension of the free foodgrain allocation under the National Food Security Act, the food subsidy is budgeted to fall from ₹2,12,332 crore (RE 23-24) to ₹2,05,250 crore (BE 24-25). It is only in the case of the Pradhan Mantri Awas Yojana (PMAY) that there is evidence of backing grandiose statements in the Budget with some increase in allocation. The 'secret source' of funds so, is there any larger ambition reflected in the Budget? There are two elements that stand out. One is the obsession with fiscal consolidation, with the fiscal deficit expected to come down from 4.9% of GDP in 2023-24 to 4.5% this year, and a promise of staying on that path subsequently. The other is the claim now made every year that the BJP-led government is taking capital expenditure to new heights, especially on infrastructure. Capital expenditure that rose from ₹7,40,025 crore in 2022-23 to ₹9,48,506 crore .