



CURRENT AFFAIRS FOR UPSC

20th to 26th October 2024



INTERNATIONAL

PEACEKEEPERS UNDER ATTACK

“We are staying”, asserted the UN Interim Force in Lebanon (UNIFIL) on October 13, in the wake of the Israeli attack on the force’s premises in southern Lebanon. UNIFIL is the global body’s peacekeeping force patrolling southern Lebanon. Currently, the group has come under direct fire from the Israeli Defence Forces (IDF), which continues to expand its war against Hezbollah in Lebanon.

Established in 1978 by the UN’s Security Council, UNIFIL was tasked with ensuring the withdrawal of Israeli troops from southern Lebanon after Tel Aviv invaded Beirut to push back the Palestine Liberation Organization (PLO). UNIFIL is also tasked with maintaining peace and security in the region and assisting the Lebanese government to regain authority in the area. The 9,532-strong troops monitor movement across the UN-mapped ‘Blue line’ spanning the 120 km border between Israel and Lebanon.

Drawing troops from 34 nations, Indonesia is UNIFIL’s biggest contributor supplying 1,215 personnel, followed by Italy (963), India (876), Nepal (858) and Ghana (857). Operating across 29 locations between the Litani River in the north and the Blue line in the south, UNIFIL has suffered 334 fatalities as of date. With a \$500-million budget funded annually by the UN General Assembly, UNIFIL’s relevance is only growing as confrontations escalate.

In 1982, Israel invaded Lebanon again, leading to the PLO’s exit from the country. As the occupation prolonged, Hezbollah rose as a resistance force. Israel continued its occupation of parts of Southern Lebanon, which saw multiple clashes between Hezbollah and the IDF throughout the 1980s and 1990s.

In 2000, Israel unilaterally withdrew troops from Lebanon, which led to UNIFIL troops being reconfigured and redeployed in the south. In 2006, Hezbollah conducted a cross-border raid in Israeli border towns, leading to a ground invasion by the IDF into Lebanon. The 34-day conflict ended after a UN-brokered ceasefire and with it, UNIFIL’s mandate was expanded to monitor cessation of hostilities, support the Lebanese Army as Israeli troops withdrew, ensure humanitarian aid access, return of displaced persons, keep UNIFIL’s operational area free of troops, weapons and assets other than its own and Lebanon’s. The peacekeeping force was also tasked with assisting the Lebanese Army in securing and controlling its borders. This has not been possible as southern Lebanon is currently under Hezbollah’s control.

Escalation in Lebanon

The IDF dramatically escalated the war against Hezbollah in September, with the killing of its chief, Hassan Nasrallah, and several other top level commanders.

Caught between the IDF and Hezbollah, UNIFIL first came under fire on October 10, when the IDF fired at three positions of UNIFIL including its main base in Naqoura. A week earlier, UNIFIL had written to the IDF objecting to Israeli military vehicles and troops positioning themselves ‘in the immediate proximity’ to UN positions, ‘endangering the safety of UNIFIL personnel’.

On October 13, two IDF Merkava tanks destroyed the main gate and forcibly entered a UNIFIL position, injuring five peacekeepers, damaging the premises and disrupting mission movements.



The two tanks left after two hours and firing several rounds, emitting smoke and affecting civilian peacekeepers inside the UNIFIL building.

As UNIFIL accused the IDF of 'deliberate breach and targetting peacekeepers', Israeli Prime Minister Benjamin Netanyahu urged UNIFIL to 'temporarily get out of harm's way', as its presence was acting as a 'human shield' for Hezbollah.

UNIFIL's spokesperson Andrea Tenenti reminded him that the mission was in Lebanon under a Security Council mandate and it involved parties' obligation to ensure the safety of its troops. Backing UNIFIL, UN Secretary-General Antonio Guterres said, "The UN flag continues to fly".

India, one of the contributing countries of UNIFIL, stated it takes safety of UN peacekeepers 'very seriously' and called for action to maintain troops' safety, but stopped short of condemning the IDF. The Ministry of External Affairs has confirmed that no Indian troops have been deployed at the Blue Line.

SOUTH KOREA WARNS IT MAY SUPPLY ARMS TO UKRAINE AMID REPORTS OF NORTH KOREAN TROOPS IN RUSSIA

South Korea has issued a stern warning, suggesting it may provide weapons to Ukraine, in response to reports that North Korea has allegedly sent troops to support Russia in its ongoing conflict. This move is aimed at pressuring Russia to avoid involving North Korean forces in its war against Ukraine.

South Korean officials have condemned the alleged deployment of North Korean troops as a "grave security threat" to both South Korea and the international community, describing North Korea as a "criminal group" that forces its youth to serve as mercenaries in Russia's unjustifiable war, as reported by Associated Press.

The situation remains tense, with both Russia and North Korea denying the allegations. Ukrainian President Volodymyr Zelenskyy has claimed that 10,000 North Korean troops are being prepared to join Russian forces .

South Korea's concern is that Russia may reward North Korea with advanced weapons technology, enhancing its nuclear and missile capabilities, and directly threatening South Korea's security.

In response, South Korea's foreign ministry called the Russian ambassador to discuss the matter, and Vice Foreign Minister Kim Hong-kyun stated that South Korea will respond jointly with the international community to address this threat .

The council agreed to implement phased countermeasures, linking the level of their response to the progression of Russian-North Korean military cooperation. These measures could include diplomatic, economic, and military options, with the possibility of South Korea sending both defensive and offensive weapons to Ukraine.

A senior South Korean presidential official, speaking on condition of anonymity, explained that North Korea may seek advanced Russian technology to perfect its nuclear missile systems. The official also expressed concern that Russia's assistance in modernising North Korea's outdated conventional weapons and acquiring space-based surveillance systems would pose a serious security threat to South Korea.



Since Russia's invasion of Ukraine in 2022, South Korea has supported US-led sanctions against Moscow and provided humanitarian and financial aid to Kyiv. However, it has refrained from supplying arms, in line with its policy of not providing weapons to countries actively involved in conflicts.

Last week, South Korea's intelligence agency confirmed that North Korea had dispatched 1,500 special forces to Russia in October. Ukrainian President Volodymyr Zelenskyy also stated that intelligence indicated 10,000 North Korean soldiers were preparing to join Russian forces in Ukraine.

Increased North Korea-Russia cooperation

North Korea and Russia have significantly boosted their military cooperation in recent years. In June, the two countries signed a major defence agreement, pledging mutual military assistance if either were attacked. South Korea had previously said it would consider sending arms to Ukraine, and reiterated that stance on Tuesday.

South Korea's spy agency also reported that North Korea had shipped more than 13,000 containers of artillery, missiles, and other conventional weapons to Russia since August 2023 to replenish its depleting stockpiles.

Both North Korea and Russia have denied the troop deployment and the arms transfer allegations. At a UN Security Council meeting on Monday, Russia's UN Ambassador, Vassily Nebenzia, dismissed the South Korean accusations, as well as Western claims about Iran and China supplying arms to Russia.

He accused the West of "scaremongering with Iranian, Chinese, and Korean bogeymen," describing the allegations as increasingly absurd.

A North Korean diplomat also dismissed the reports of troop deployment, calling them "groundless, stereotype rumours" aimed at tarnishing North Korea's image and undermining its legitimate cooperation with Russia.

Additionally, Kim Yo Jong, the powerful sister of North Korean leader Kim Jong Un, labelled the governments of South Korea and Ukraine "lunatics" for making what she termed "reckless remarks against nuclear weapons states."

While the US and NATO have not confirmed the North Korean troop deployment, US Deputy Ambassador to the UN, Robert Wood, warned that if the reports were accurate, it would mark "a dangerous and highly concerning development." He added that the US is "consulting with our allies and partners" regarding the situation.



NATION

COMPLICIT

The U.S. Department of Justice's second indictment against an Indian intelligence and paramilitary officer, in the alleged plot to kill American-Khalistani activist Gurpatwant Singh Pannun, indicates another serious turn in the case that has cast a long shadow over India-U.S. ties. The indictment against Vikash Yadav was released publicly along with an arrest warrant and his listing on the FBI's database of "most wanted" — the first time that an Indian official has been so marked out. The developments come just after a high-level Indian security delegation investigating the matter travelled to the U.S., and the U.S. State Department expressed "satisfaction" with India's cooperation. There is cause for concern now: the second indictment that supersedes the one against jailed businessman Nikhil Gupta, repeats linkages to the Canadian case of the 2023 killing of Canadian-Khalistani activist Hardeep Nijjar. It seems no coincidence that the indictment is timed with the Canadian expulsion of Indian diplomats, sparking a diplomatic storm and also statements by the "Five Eyes" urging India to cooperate in the investigation with Canada. That these statements reek of a double standard, given that these countries have a record on transnational killings, must not stop India from upholding the law. But this surely raises questions about whether these allies are reliable as India's closest strategic partners.

New Delhi must not delude itself and must proceed on the assumption that the cases in the U.S. and Canada are being linked by their investigating agencies. The stark difference in the Modi government's outraged denial of the Canadian charges while providing a sympathetic ear for the American charges may prove untenable as the trial in the U.S. progresses. It is in India's interest to clarify whether it believes Mr. Yadav was a "rogue" agent or was carrying out orders from senior officials, when he allegedly promised "2-3" contract killings a month against targeted members of the diaspora. While the External Affairs Ministry has since confirmed that he "no longer works for the government", the indictment claims that he was employed by India's Cabinet Secretariat, under which the R&AW is run. Whether the truth lies in incompetence or complicity, the image of the government's intelligence and national security operations is dimmed. If the government proceeds to prosecute him or turn him over to U.S. agencies, it must also consider the impact on the morale of other operatives essaying future operations. Above all, the government must be more transparent about its policy on transnational killings. If it does not allow such operations, and it should not, then it is time for a more detailed investigation into its internal processes as well as a more realistic evaluation of its diplomatic relations.

CANADIAN EDUCATION VISAS USED TO SEND PEOPLE 'ILLEGALLY' TO THE U.S., SAY INDIAN AGENCIES

Barely metres from the U.S. border, four members of a family from Gujarat froze to death in the Manitoba province of Canada on January 19, 2022, while attempting to cross over to the other side on foot. The deaths triggered investigations by the Indian agencies that have unveiled the modus operandi of education visas being used to first facilitate the travel of individuals to Canada and then to the U.S. using illegal means.

Soon after the chilling details of the tragedy came to light, Gujarat's Crime Branch registered a case, arrested Bhavesh Ashokbhai Patel, Dashrath Pratap Chaudhary, and Yogesh Chunilal Patel, and filed a chargesheet in May 2023. Their overseas links were also investigated in coordination with other law enforcement agencies, including the Enforcement Directorate.

3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR



As it turned out, Mr. Yogesh Patel had allegedly incorporated a limited liability partnership firm in September 2018 along with another person. It provided overseas education consultation. Along with his associates, the accused facilitated visas for people to be sent to Canada ostensibly for getting enrolled in the colleges there for higher studies. However, they never joined those colleges.

The facade of visas for education purposes had been created by the human traffickers to ultimately send people to the U.S. via the Canadian border. They charged about ₹60 lakh per head for activating the entire network that had links in the U.S. as well for receiving the trafficked victims, said a probe agency official.

QUAD GROUP OF COUNTRIES TAKE PART IN BACK-TO-BACK NAVAL WAR GAMES

The Quad group of countries — India, Australia, Japan, and the U.S. — have held back-to-back naval war games, deepening interoperability and honing, in particular, their anti-submarine warfare skills.

“Exercise Malabar” by the four countries concluded on Friday off the coast of Visakhapatnam. Earlier, they were part of the multilateral “Exercise Kakadu” hosted by the Royal Australian Navy from September 9 to 20.

The Indian Navy termed “Exercise Malabar”, held from October 8 to 18, as the “most comprehensive” of all editions so far. The harbour phase was held in Visakhapatnam, followed by the sea phase in the Bay of Bengal.

“Exercise Malabar”, which began in 1992 as a bilateral naval drill between India and the U.S., has evolved into a key multilateral event aimed at “enhancing interoperability, fostering mutual understanding, and addressing shared maritime challenges in the Indian Ocean and Indo-Pacific region,” it noted.

Anti-submarine warfare and undersea domain awareness have emerged as major focus areas among the Quad partners as all of them have concerns over the rapid expansion of the Chinese Navy and its increasing forays into the Indian Ocean Region.

Units participated in complex and advanced exercises in the domains of surface, sub-surface, and air warfare. Major exercises included surface weapon firings, anti-air shoots, air defence exercises, anti-submarine warfare exercises, extensive operations of ship-borne helicopters, the Navy said.

Exercise Kakadu

Exercise Kakadu brought together nearly 3,000 personnel from 30 nations, ships from 10 countries, and aircraft from five nations, all converging in the north Australian exercise area, underscoring Canberra’s commitment to “regional maritime security and international partnerships”.

BUILDING BLOCKS

Russia’s hosting of the 16th BRICS Summit in Kazan had several messages, watched closely by particularly the western countries. This was the biggest such conference in Russia since the Ukraine war began in 2022. With leaders of nine countries (and Saudi Arabia’s Foreign Minister) arriving as BRICS and BRICS partner countries, and about 30 leaders of the Global South attending a special BRICS outreach conference, Russian President Vladimir Putin dispelled any notion that



Russia had been “isolated” due to Ukraine. The summit agenda and the Kazan Declaration sent a concerted message on strengthening economic bonds within the group that together represents a third of global GDP, in a signal that unilateral sanctions against members — Russia and Iran, for instance — are not acceptable to all. Among the agreements, the push for an interbank cooperation mechanism, a grain exchange, a cross-border payment system and insurance company, and growth of the BRICS New Development Bank, indicate the intent to seek alternatives to the prevailing international governance structures. The induction of members, Iran, Egypt, Ethiopia, the UAE and Saudi Arabia, is another sign that the counter-balancing arrangement of emerging economies that BRICS was envisaged as, cannot be mocked. While many BRICS countries have strong ties with the U.S. and Europe, it is clear that they feel that the present institutions of global governance are skewed unfairly towards the “old guard” of the West.

Prime Minister Narendra Modi’s statement at the closed plenary sought to allay some concerns about this challenge, describing BRICS as an inclusive, “not a divisive organisation but one that works in the interest of humanity”. Given that India is the only member of BRICS that is also a part of U.S.-led arrangements (the Quad and the Indo-Pacific Economic Framework), this is a necessary balance. His oft-repeated phrases, that India supports “dialogue and diplomacy, not war”, and that there are “no solutions on the battlefield”, were a necessary reminder that all members do not completely align on geopolitics. It was significant in this context that India backed the strong paragraphs in the Declaration on Israel in Gaza and support for the state of Palestine. Apart from the substance of the summit, the BRICS grouping also affords its members a stage to discuss thorny bilateral issues, given differences between members, including Iran-UAE and Egypt-Ethiopia. The détones between India and China over Doklam, and agreement on resolving the four-year LAC standoff, were both held in meetings between Mr. Modi and Chinese President Xi Jinping on the side-lines of BRICS summits.

Key Takeaways:

- **The key points from the Kazan declaration**, opens new tab issued by the BRICS group after a summit in Russia are as following

—**On Ukraine:** “We emphasize that all states should act consistently with the Purposes and Principles of the UN Charter in their entirety and interrelation. We note with appreciation relevant proposals of mediation and good offices, aimed at a peaceful resolution of the conflict through dialogue and diplomacy.”

—**ON THE MIDDLE EAST:** “We reiterate our grave concern at the deterioration of the situation and humanitarian crisis in the Occupied Palestinian Territory, in particular the unprecedented escalation of violence in the Gaza Strip and in West Bank as a result of the Israeli military offensive, which led to mass killing and injury of civilians, forced displacement and widespread destruction of civilian infrastructure.”

“We express alarm over the situation in Southern Lebanon. We condemn the loss of civilian lives and the immense damage to civilian infrastructure resulting from attacks by Israel in residential areas in Lebanon and call for immediate cessation of military acts.”

— **ON WESTERN SANCTIONS:** “We are deeply concerned about the disruptive effect of unlawful unilateral coercive measures, including illegal sanctions, on the world economy, international trade, and the achievement of the sustainable development goals.”



— **ON THE INTERNATIONAL FINANCIAL SYSTEM REFORM:** “We underscore the need to reform the current international financial architecture to meet the global financial challenges including global economic governance to make the international financial architecture more inclusive and just.”

— **ON BRICS GRAIN EXCHANGE:** “We welcome the initiative of the Russian side to establish a grain (commodities) trading platform within BRICS (the BRICS Grain Exchange) and to subsequently develop it including expanding it to other agricultural sectors.”

—**ON BRICS CROSS-BORDER PAYMENT SYSTEM:** “We recognise the widespread benefits of faster, low cost, more efficient, transparent, safe and inclusive cross-border payment instruments built upon the principle of minimizing trade barriers and non-discriminatory access. We welcome the use of local currencies in financial transactions between BRICS countries and their trading partners.”

—**ON BIG CATS:** “While appreciating the efforts of our countries to preserve rare species and noting the high vulnerability of big cats, we take note of the Republic of India’s initiative to create an International Big Cats Alliance and encourage BRICS countries to work together to make further contributions to the conservation of big cats.”

Do You Know:

- According to **Rajan Kumar** who teaches at the School of International Studies, Jawaharlal Nehru University and also the author of *Locating BRICS in the Global Order: Perspectives from the Global South*, the 16th BRICS Summit sent a clear message that the non-Western countries want to engage with Russia. Non-Western states still find Russia attractive due to its strategic importance and as a supplier of weapons and energy. Since it invaded Ukraine, the West began to treat Russia as an outcast. Putin cannot travel to many countries because the International Criminal Court issued an arrest warrant against him. He skipped the last BRICS summit in South Africa and will likely miss the G20 Summit in Brazil this year. Under these circumstances, hosting a Summit carries symbolic and substantive meaning for Putin’s regime. He will showcase it as proof that Russia is respected globally and that he is making an effort to reshape the world order.

- Western experts often dismiss BRICS as too diverse to be coherent. BRICS is indeed an unusually varied and heterogeneous association. Its members do not share territory, culture and political systems. This grouping includes democracies, authoritarian regimes and even monarchies. Further, its economies are also not comparable. Nonetheless, BRICS has managed to keep its differences under wraps and work on areas of convergence. It holds an annual Summit, has created successful institutions, and a large number of non-Western states covet its membership.

- BRICS has become an influential bloc in global politics. The West fears the emergence of a rival to the G7 with the potential to disrupt the functioning of the G20. BRICS remains an economic grouping but has not shied away from propagating its politics. It has consistently raised the issue of discrimination and hierarchy in the international system. Its members hold a lingering grudge of being unrepresented or underrepresented in institutions such as the UNSC, IMF and World Bank.

Do You Know:

- BRICS stands for Brazil, Russia, India, China and South Africa, the original five members who were large, non-Western economies. On January 1 this year, BRICS admitted four new members:



Egypt, Ethiopia, Iran and the United Arab Emirates. The organisation now represents almost half the world's population and almost one quarter of the world's economy.

- The acronym BRIC was first used in 2001 by Goldman Sachs in their Global Economics Paper, 'The World Needs Better Economic BRICs'. The paper projected that Brazil, Russia, India, and China would be among the world's largest economies in the next 50 years or so.
- As a formal grouping, BRIC started after the meeting of the leaders of Russia, India and China in St. Petersburg on the margins of the G8 Outreach Summit in 2006. The grouping was formalised during the first meeting of BRIC Foreign Ministers on the margins of the UNGA in New York in 2006.
- The first BRIC Summit was held in Yekaterinburg, Russia, in 2009. It was decided to include South Africa at the BRIC Foreign Ministers' meeting in New York in 2010, and accordingly, South Africa attended the 3rd BRICS Summit in Sanya, China, in 2011.
- BRICS does not have a secretariat, it depends on the participation of members and the presidency. A cornerstone of the group's decision making has been its consensus-based approach towards agenda, plan of action and membership.

IN MEGA TOURISM EVENT, SAUDI ARABIA CELEBRATES INDIAN DIVERSITY, PLURALISM

Saudi Arabia conducted a fortnight-long celebration of Indian culture as part of the annual Riyadh Season festivity here. The Indian segment of the Riyadh Season, a mega tourism event, was conceived as a branch of the Global Harmony Initiative of the Saudi government.

The celebration of India's diversity and pluralism was marked by musical evenings, outdoor culinary events, and visits by Indian performers and sportspersons. The rare celebration was led from the Indian side by Suhel Ajaz Khan, the Indian ambassador to Saudi Arabia who described the event as an "unforgettable experience". The festival organised at the Suwaidi Park was attended by large number of visitors. Saudi Arabia at present hosts around 2.4 million Indian workers. The Indian community in Saudi Arabia has grown over the years and is now second after Bangladesh which has the largest number of foreign workers in Saudi Arabia with nearly 2.7 million.

The Indian cultural festival came to an end on Sunday when cricketer Sreesanth was the star invitee of the Saudi government. The underlying theme of this year's Riyadh Season was the pace of social and cultural changes that are sweeping Saudi Arabia's tradition-bound society.

The change in the Saudi society was reflected during the event with the widespread participation of Saudi women in various parts of the festivity.

SCHOLZ VISIT: PM MODI HAILS GERMANY CALL TO INCREASE VISAS FOR SKILLED INDIANS

Scholz, who arrived late on Thursday night, is on a three-day visit to India.

- Modi highlighted the growing cooperation between India and Germany in the defence and security sectors, citing it as a symbol of their "deep mutual trust".
- Modi defined India-Germany ties as a transformational partnership of two capable and strong democracies and not a transactional relationship.



- After the talks, eight documents were signed — mutual legal assistance treaty on criminal matters, agreement on the exchange and mutual protection of classified information, Indo-German green hydrogen roadmap, roadmap on innovation and technology, and declarations on employment and labour, R&D on advanced materials, green urban mobility and skill development.
- Modi said they agreed that the global forums established in the 20th century were inadequate to address the challenges of the 21st century. “There is a need for reforms in multilateral institutions, including the UN Security Council,” he said.
- He also welcomed the ‘Focus on India’ strategy announced by Germany.

Do You Know:

- Addressing reporters alongside visiting German Chancellor Olaf Scholz on Friday, Prime Minister Narendra Modi announced that Germany has decided to raise the annual visa quota for skilled Indian professionals from 20,000 to 90,000.
- While this fourfold increase will enhance economic and professional ties between the two countries, the move is also designed to make up for labour shortage that Germany might be facing owing to an ageing population.
- In 2014, around 27% of the German population was 60 and above, a number that is expected to touch 35% by 2030, as per statistics. The increased quota will come in handy in labour-intensive sectors such as nurses and elderly care, childcare, truck drivers and middle-level jobs in the engineering and IT sectors.
- Talking of the migration and mobility agreement that India and Germany signed in 2022, Baerbock said they have recorded a 25% increase in the number of students and professionals coming to Germany, and the potential is even higher.
- There is also an increased realisation in Germany to not repeat the mistakes during the previous large-scale migration to the country — in the 1960s and ’70s. Heil said. “We tried to hire a workforce, but we got human beings,” he said, adding that for those immigrating now, they offer “health insurance, universities without fees and a lot of respect”.

KARTARPUR CORRIDOR: INDIA, PAKISTAN RENEW PACT FOR ANOTHER FIVE YEARS

Less than a week after External Affairs Minister S Jaishankar visited Islamabad and met Pakistan Prime Minister Shehbaz Sharif and Deputy Prime Minister Mohammad Ishaq Dar, India and Pakistan on Tuesday agreed to renew their pact on the Kartarpur Sahib Corridor for another five years. The pact was due to lapse on October 24.

The 4 km-long Kartarpur Corridor provides visa-free access to Indian Sikh pilgrims to visit Gurdwara Darbar Sahib, the final resting place of Sikhism founder Guru Nanak Dev. While the Corridor was opened in November 2019, movement was suspended in March 2020 after the pandemic struck. It was reopened later.

The development comes days after Jaishankar went to Pakistan on October 15-16 to attend the Shanghai Cooperation Organisation (SCO) meeting of Council of Heads of Government — the first visit by an Indian Foreign Minister after Sushma Swaraj went to Islamabad for the Heart of Asia meeting in December 2015.



- According to MEA website, it has been agreed between India and Pakistan through diplomatic channels to extend the validity of the Agreement on Sri Kartarpur Sahib Corridor for a further period of five years.

The Agreement, signed on 24 October 2019 to facilitate the visit of pilgrims from India to Gurdwara Darbar Sahib Kartarpur, Narowal, Pakistan through the Kartarpur Sahib Corridor, was valid for a period of five years. Extension of the validity of this Agreement will ensure uninterrupted operation of the Corridor for use by the pilgrims from India to visit the holy Gurdwara in Pakistan.

Do You Know:

- According to the Prof J S Grewal, eminent historian and former Vice-Chancellor of Guru Nanak Dev University,

—Kartarpur marks the most significant and constructive phase in the life of Guru Nanak Dev. —It was here on the banks of the river Ravi that he laid the foundations of a new faith in a commune he set up. Guru Nanak came to the town between 1520 and 1522, after he had travelled widely across continents.

—He had spent the formative years of his life at Talwandi, a town founded by a rich landlord named Rai Bhoi, about 90 km west of Lahore in Pakistan, where he was born in 1469. The Rai's great grandson, Rai Bular Bhatti, renamed it 'Nankana Sahib' in the honour of Guru Nanak. Today it is the capital of Nankana Sahib district.

—The next 10 years of Guru Nanak's life were spent at Sultanpur Lodhi, where he gained enlightenment. He finally came to Kartarpur rich with experiences gained from his interactions with rulers, common people, clergymen, and thinkers.

—The janam sakhis on Guru Nanak's life say he was offered this piece of land by a 'karori' (administrator of a pargana) who was initially against him, but subsequently became his disciple. Guru Nanak called it Kartarpur, and started living here with his parents, wife Mata Sulakhni, and two sons, Sri Chand and Lakshmi Chand, thus demonstrating that he preferred the life of a householder to that of an ascetic.

—At Kartarpur, Guru Nanak practised what he preached—"naam japo, kirrt karo, wand chhako (worship, work, and share)" — as the path to liberation. He and his followers cultivated the land at Kartarpur, and also reared cattle. As per the janam sakhis, Guru Nanak used to bring his cattle to graze at the well of Ranjita Randhawa, a landlord at Pakhoke Randhawa, now called Dera Baba Nanak from where the Kartarpur Corridor starts, a few kilometres from Kartarpur.

—Nanak believed in the importance of singing the praises of God as a way to gain liberation. He set up a 'dharamsal' (a place where dharma or merit is earned) at Kartarpur, where he and his followers would sing his compositions in the morning and evening.

—Besides 'kirtan' (praise of God), Nanak also introduced his followers to 'katha', exposition of his composition or other issues. It was at Kartarpur that Nanak started the concept of 'langar', a community meal prepared in a community kitchen where everyone would sit on the floor and eat together regardless of their social background.



The distinctive feature of Sikh identity — Service before Self — was formulated by Guru Nanak at Kartarpur. Nanak preached that every human being, regardless of his family, caste, creed or gender, can attain liberation by following the three principles of work, worship and sharing. His programme was of universal liberation and redemption. “It was at Kartarpur that Nanak gave the three Gs — Gurdwara, the Granth, and the Guru himself — that underpin the Sikh faith,” says Prof Grewal.

- Baba Sukhdeep Singh Bedi, who claims to be the 17th generation descendant of Guru Nanak Dev, says that when the Guru passed away, both Hindus and Muslims wanted his remains. According to the janam sakhis, when they removed the white sheet, they found only ‘phool’ (flowers), that they divided amongst themselves.
- Historians say the flowers are a metaphor for remains. Bedi says they divided the white sheet and flowers into two. While the Muslims buried these under a mazaar, the Hindus put these in an urn and buried it alongside. Gurudwara Darbar Sahib came up on this place and the locals still pray at the mazaar there.
- A few years later, when the place got flooded, Guru Nanak’s son Sri Chand dug up the urn and brought it to Pakhoke Randhawa (Dera Baba Nanak) where a gurdwara was built on it. The well that Nanak used to frequent is also in the compound of this gurudwara.

WHAT DOES THE NEW ‘LADY JUSTICE’ STATUE SIGNIFY?

The story so far:

Last week, the Chief Justice of India unveiled the ‘new lady justice’ statue in the Supreme Court premises that replaced the ‘original lady justice’. The new statue is clothed in a saree, has shed the blindfold and holds scales on one hand and the Indian Constitution on the other.

What is the background?

It is believed that the origin of the modern-day ‘lady justice’ is Justitia, the goddess of Justice in Roman mythology. ‘Lady justice’ is depicted with a blindfold, scales, and a sword. The blindfold was added during the Renaissance period (14th century) probably as a satire on the corrupt state of legal systems with judicial institutions turning a blind eye. It was only during the enlightenment period (17th-18th century) that it was reinterpreted as representing impartiality. It signifies that justice should be administered without bias regardless of wealth, power and social status. The scales represent balance. It emphasises that courts must weigh both sides of an argument before delivering a judgment. Finally, the sword symbolises the power and authority of the law, signifying that the law can both protect and punish.

Why the change?

When the British established their control over India, they introduced their legal system. The hierarchy of courts from lower courts to the Supreme Court is a relic of the British system. It was during British rule that the ‘lady justice’ became a prominent symbol in India and was placed outside courtrooms.

The new statue is an attempt at decoloniality, with an aim to shed colonial symbols. The saree replacing the western attire brings the statue closer to Indian tradition. The removal of the blindfold and having eyes open is significant in the Indian context. It conveys that the law is not



blind and it 'sees' everyone equally. More importantly our social diversity, the discrimination faced by underprivileged sections, constitutional provisions and laws made for their upliftment require a nuanced approach of 'viewing' every case appropriately and delivering justice. The sword being replaced with the Constitution symbolises the supremacy of the Constitution and its value in our jurisprudence. The preserving of the scales goes on to show that the courts will continue weighing evidence impartially and hearing both sides before delivering its final judgment.

What urgent actions are needed?

The Supreme Court last week dismissed a Public Interest Litigation which sought a time frame of three years for disposal of over five crore cases pending in all courts of the country. The Supreme Court held that while the demand was desirable, it is practically impossible considering the flood of litigation faced by the justice delivery system. However, 'justice delayed is justice denied' and there are some urgent actions needed in this regard with respect to the institution that delivers justice.

Firstly, the revised Memorandum of Procedure that deals with appointment of judges by the collegium has not been finalised for the past eight years. This needs to be finalised by the government and judiciary without any further delay to bring transparency and accountability to the process of appointment.

Secondly, the representation of backward classes, scheduled castes, schedule tribes, and religious minorities is less than 25% in the higher judiciary and women constitute less than 15%. The appointments to higher judiciary should reflect the social diversity of our country. Third, the High Courts invariably operate at only 60-70% strength thereby contributing to the huge pendency of over 60 lakh cases at present. The government needs to appoint collegium recommendations for High Courts without dragging its feet. The vacancies in lower courts, where 4.4 crore cases are pending, should also be filled by the States without backlog. Finally, cases dealing with the constitutional validity of amendments/laws and individual liberty should be heard on a priority basis by the higher judiciary. These measures would ensure that the new symbol is not just symbolic but reflects the actions taken for the delivery of fair and prompt justice.

SECULARISM IS A CORE PART OF THE CONSTITUTION: SC

The Supreme Court on Monday underlined that **secularism** is a "core feature" of the Constitution which has been held to be a part of the basic structure.

For Your Information-

- "There are a number of judgments of this court which hold that Secularism was always part of the basic structure of the Constitution. If one looks right to equality and word fraternity used in the Constitution as well as the rights under Part III, there is a clear indication that secularism has been held as the core feature of the Constitution," Justice Sanjiv Khanna, presiding over a two-judge bench, remarked orally.
- Justice Khanna said that "as far as secularism is concerned, when the Constitution was adopted and discussion was going on, we only had the French model. The way we have evolved, it is something different. The rights we have given....we have balanced it out". He added that the word socialist need not be understood in the western sense. "If you go by western concept, it has a different connotation but we have not followed that," he said adding, "we are very happy with

3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR



changes which have taken place...the economic growth which has taken place..." He said it can also mean that there should be equality of opportunity and that the wealth of the country should be distributed equally.

Do You Know-

- The words "socialist" and "secular" from the preamble of the Indian Constitution. The two terms were inserted into the preamble as part of the 42nd Amendment of the Constitution in 1976 during the Emergency imposed by then Prime Minister Indira Gandhi.
- When the Indian Constitution was being drafted, the ideals behind the preamble were first laid down in the Objectives Resolution, adopted by the Constituent Assembly in 1947. These ideals emerged out of the numerous debates that took place during the drafting of the Constitution.
- During the debates in the Constituent Assembly, members such as K T Shah and Brajeshwar Prasad had raised the demand to add these words to the preamble. However, Dr B R Ambedkar argued: "What should be the policy of the State, how the Society should be organised in its social and economic side are matters which must be decided by the people themselves according to time and circumstances. It cannot be laid down in the Constitution itself because that is destroying democracy altogether."

IN A FIRST, WIKIPEDIA TAKES DOWN ARTICLE GLOBALLY AFTER DELHI HC ORDER

Wikipedia has taken down an article titled "Asian News International vs. Wikimedia Foundation", the entry on the ANI news agency's defamation lawsuit against the online encyclopedia's parent foundation. This is the first instance of an English Wikipedia article being taken down by the foundation in the encyclopedia's history.

The takedown follows an order by the Delhi High Court in which Chief Justice Manmohan and Justice Tushar Rao Gedela ruled that the Wikipedia page describing criticism of the lawsuit "amounts to interference in Court proceedings" and violated the "sub judice principle".

A Wikimedia spokesperson declined to comment. Takedown or alteration requests have been complied with only in fewer than half-a-dozen instances in Wikipedia's history, after requests from Germany, France and Ukraine, as per transparency reports published by the foundation since 2012.

It is unclear whether in these instances individual pages were completely removed or only specific pieces of content were lifted. The Division Bench of the court said the characterisation of a previous ruling in the case as a threat to the "flow of information and knowledge" was prejudicial to the proceedings. This line was edited out of the article in its most recent state.

The Contempt of Courts Act, 1971 does not prohibit the coverage of court proceedings. However, it only provides for exemption for criticism of a court order after a case has "been heard and finally decided".

The Wikipedia page on ANI remains available, and much of the information on the page dedicated to the court case is available as a section in this article.

The news agency is suing the foundation for a description that currently says that the agency "has been accused of spreading pro-government propaganda, anti-opposition disinformation,



engaging in partisan campaigning for the BJP, and using a vast network of fake news websites to push disinformation”.

“I think nothing can be worse for a news agency than to be called a puppet of an intelligence agency, stooge of the government,” Justice Manmohan said on Monday. “If that is true, the credibility goes.”

ANI is seeking the page’s editing, and ₹2 crore in damages.

DATA LEAK: HC DIRECTS TELEGRAM TO PULL DOWN CONTENTIOUS DATA ON RECEIPT OF STAR HEALTH’S E-MAILS

The Madras High Court on Friday made a minor modification to an order passed by it on September 24 restraining Telegram Messenger from allowing its platform to be used by unethical hackers to share or sell sensitive customer data allegedly stolen from the computer systems of Chennai-based Star Health and Allied Insurance Company Limited.

Justice K. Kumaresh Babu made the modification after advocate Thriyambak J. Kannan, representing Telegram FZ LLC, told the court it would be difficult for the messaging service provider to prevent the posting of the data on its platform, but the contentious data could be blocked as and when it was brought to the notice of his client by Star Health Insurance.

Senior counsel Krishna Ravindran, representing Star Health Insurance, agreed that his client would send e-mails to Telegram whenever they came across instances of the sensitive data being shared on its platform and Mr. Kannan gave an undertaking that the messages concerned would be removed or blocked immediately on receipt of e-mails from the insurance company.

‘Furnish IP addresses’

The judge made it clear that Telegram Messenger must also furnish the IP addresses from which such contentious data gets shared on its platform since the insurance company had filed the civil suit against unknown hackers too who get identified by the name of Xenzen and so on. He adjourned the further hearing on the civil suit, filed against sharing of customer data on public platforms, by two weeks.

MUSLIM MEN CAN REGISTER MORE THAN ONE MARRIAGE: HC

The Bombay High Court, in a recent order, ruled that a Muslim man can register more than one marriage under the Maharashtra Regulation of Marriage Bureaus and Registration of Marriages Act, 1998.

A Division Bench of Justice B.P. Colabawalla and Justice Somasekhar Sundareshan said the Muslim law permits multiple marriages. The case is related to a man who approached the deputy marriage registration office of the Thane Municipal Corporation in February 2023 to register his marriage with a woman from Algeria, but the application was rejected. This is the petitioner’s third marriage.

The authorities refused to register the marriage on the grounds of unavailability of necessary documents. They further said that under the Act, the definition of marriage contemplates only a single marriage and not multiple unions.



The Bench observed, “As far as the argument that only one marriage can be registered under the provisions of the Maharashtra Regulation of Marriage Bureaus and Registration of Marriages Act, 1998 is concerned, we find that the same is wholly misconceived.”

It ordered the authority concerned to conduct a hearing for the couple and pass a reasoned order within 10 days of the conclusion of hearing, either granting or denying the marriage registration. If denied, the matter will be referred to the Registrar General under the Act for further review.

SOCIAL ILL AND LEGAL RESPONSE

Audrey Dmello and **Flavia Agnes** writes-On October 18, a Supreme Court Bench comprising Chief Justice D Y Chandrachud and Justices J B Pardiwala and Manoj Misra delivered an extensive judgment **highlighting the alarming scale of child marriages in India** despite the enactment of the Prohibition of Child Marriage Act (PCMA) 18 years ago. Even though it took the Bench seven years, the verdict has elaborate guidelines for the effective implementation of PCMA.

- The recent Supreme Court Bench extensive judgment highlighting the alarming scale of child marriages in India:

—Stating that marriages fixed in the minority of a child have the effect of violating their “free choice” and “childhood”, the Supreme Court on Friday asked Parliament to consider banning child betrothals by amending the Prohibition of Child Marriage Act (PCMA), 2006.

—A three-judge bench presided by Chief Justice of India D Y Chandrachud said “international law such as the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) stipulates against betrothals of minors”.

— “Marriages fixed in the minority of a child also have the effect of violating their rights to free choice, autonomy, agency and childhood. It takes away from them their choice of partner and life paths before they mature and form the ability to assert their agency,” said the bench, also comprising Justices J B Pardiwala and Manoj Misra.

— “Parliament may consider outlawing child betrothals which can be used to evade penalty under PCMA. While a betrothed child may be a child in need of care and protection under the Juvenile Justice Act, the practice requires targeted remedies for its elimination,” it said.

—Under PCMA, which considers child marriage a criminal offence, girls below the age of 18 and boys under 21 are deemed to be children. The court also dealt with the interface between personal laws and prohibition of child marriage under the PCMA.

—On child marriages, the court said it “adversely affected” both sexes. “Girls who are married off early are not only denied their childhood but are also forced into social isolation...Boys who are married early are forced to take up more responsibilities and are pressured to play the role of a provider to the family, earlier in life,” it said.

—The court noted that since the enactment of PCMA, “the prevalence of child marriages in India has halved... from 47% to 27% in 2015-16 and 23.3% in 2019-2021” but that despite the Centre’s efforts, there remains a gap in implementing specific, targeted measures focused solely on the prevention of child marriage.



Do You Know:

- Child marriage is an offence punishable with rigorous imprisonment — which may extend up to two years — or with a fine of up to Rs 1 lakh, or both, on whoever performs, conducts, directs or abets child marriage. Offences under the Act are cognisable and non-bailable. The marriage is voidable except in certain cases. The PCMA of 2006 replaced the Child Marriage Restraint Act of 1929. Before this, we had the Age of Consent Act, of 1891.
- India has one in three of the world's child brides. Of the country's 223 million child brides, 102 million were married before turning 15. In 2006, child marriages in India made up 47 per cent of all marriages — almost half of all girls in India were married before the age of 18, as per the National Family Health Survey. The prevalence has halved since the enactment of the PCMA. In some states, however, it still exceeds 40 per cent, with the highest rates found in West Bengal, Bihar and Tripura (UNICEF report). The problem is worse in rural India as compared to urban areas, with 56 and 29 per cent prevalence respectively.
- Poverty is the dominant cause of child marriages. Families see it as a way to cope with growing economic hardship. Often, younger siblings are married along with the elder ones to save expenses. Displacement breaks down social networks and protection systems, making young girls even more vulnerable.

EXPERTS EXPLAIN: THE RIGHT TO DIE WITH DIGNITY — SC RULINGS AND WHAT THE LAW SAYS IN INDIA

At the end of last month, the Ministry of Health and Family Welfare released draft Guidelines for the Withdrawal of Life Support in Terminally Ill Patients to operationalise the Supreme Court's 2018 and 2023 orders on the right to die with dignity for all Indians.

- There is no dedicated legislation in India on withholding/ withdrawing life-sustaining treatment. But the Supreme Court's judgment, and now the draft guidelines published by the Ministry, make it clear that withholding/ withdrawing life-sustaining treatment is legal in India under a defined framework.
- The guidelines provide a pathway for state governments and hospitals to put in place key mechanisms required by the Supreme Court's order. These include:
 - Setting up of Primary and Secondary Medical Boards at the level of the hospital, which will determine when further medical treatment may not be beneficial to a terminally ill patient;
 - Nomination of doctors by the district Chief Medical Officer or equivalent to hospital-level Secondary Medical Boards, which will confirm or reject the opinion of the Primary Medical Boards.
- Withholding or withdrawing life-sustaining treatment refers to discontinuing life-sustaining medical interventions such as ventilators and feeding tubes, etc., when these no longer help the condition of the patient or prolong their suffering.
- Life-sustaining treatments are medical treatments that artificially replace bodily functions essential to the life of the person. These interventions are withheld or withdrawn with the intention of providing comfort care, allowing the underlying illness to take its course, while providing symptomatic relief.



- The right to refuse medical treatment has always existed in common law, even if it results in death. Following the Supreme Court's decision in Common Cause vs Union of India (2018), it is also recognised as a fundamental right under Article 21 (Right to life and personal liberty) of the Indian Constitution.
- **The** withholding or withdrawal of life-sustaining treatment takes place either through informed refusal by a patient with decision-making capacity or through an advance medical directive (or a 'living will', which is a document that specifies what actions should be taken if the person is unable to make their own medical decisions in the future)
- For a person without decision-making capacity who does not have a living will (details below), the decision to withhold or withdraw treatment can be considered when the treating physician determines that there is no reasonable medical probability of recovery from a terminal or end-stage condition, or vegetative state — and that any further medical intervention or course of treatment would only artificially prolong the process of dying.
- The withholding or withdrawal of life-sustaining treatment also includes 'do-not-attempt-resuscitation' orders. The order is issued by the treating physician, who is well versed with the medical condition of the patient, in consultation with the patient or their family or surrogate decision-maker.
- It is crucial to note that when a do-not-attempt-resuscitation order is in place, every effort should be made to continue treating the underlying condition of the patient. The order is limited to not initiating resuscitation efforts.
- Withholding or withdrawing life-sustaining treatment does not mean that the doctor is abandoning the patient. It is about recognising when medical interventions are no longer beneficial, and will only lead to the prolongation of suffering. Withholding or withdrawal will lead to palliative care aimed at managing pain and suffering to ensure that the patient is made as comfortable as possible.
- To enforce the right to die with dignity, the Supreme Court in its 2018 judgment also laid down the framework for making advance medical directives or living wills. However, the process was complex, and the court simplified it in its 2023 judgment.

Do You Know:

- Euthanasia, which comes from the Greek words meaning "a good death", refers to the practice under which an individual intentionally ends their life. Euthanasia falls under the category of assisted dying.
- Euthanasia can be categorised as active or passive. Passive euthanasia is far more common and usually entails withholding lifesaving interventions with the consent of the patient or someone on their behalf. Active euthanasia is legal in only a handful of countries and necessitates deliberately using substances or forces to end the life of another person.
- The Supreme Court allowed passive euthanasia while recognising the living wills of terminally ill patients who could go into a permanent vegetative state, and issued guidelines regulating this procedure.



ON SECTION 6A OF THE CITIZENSHIP ACT

The story so far:

In a landmark ruling, a Constitution Bench of the Supreme Court on October 18 upheld the constitutional validity of Section 6A of the Citizenship Act, 1955 (1955 Act) which laid out an exclusive regime for migrants in Assam from erstwhile East Pakistan (present Bangladesh) to obtain Indian citizenship as long as they entered India before March 25, 1971. The decision was rendered by a 4:1 majority. Justice Surya Kant authored the lead majority opinion on behalf of himself, CJI D.Y. Chandrachud, Justices M. M. Sundresh, and Manoj Misra, while Justice Pardiwala delivered the lone dissenting opinion.

What does Section 6A stipulate?

Section 6A originates from the “Assam Accord”, a political settlement signed on August 15, 1985, between the Rajiv Gandhi-led Congress government and Assam’s student groups, following a six-year-long agitation against the influx of undocumented migrants from Bangladesh into Assam. It established a framework for granting or denying Indian citizenship to migrants in Assam based on a cut-off date — March 25, 1971. The date marked the onset of the genocide in East Pakistan, leading to the Bangladesh Liberation War and the eventual creation of Bangladesh. The conflict drove millions of Bengalis to flee East Pakistan and seek refuge in Assam, which shares a 263-km border with Bangladesh. Accordingly, all those who entered the State after March 25, 1971, would be treated as foreigners and deported in accordance with law.

The provision also conferred Indian citizenship upon migrants of “Indian origin” who entered Assam before January 1, 1966, and had been “ordinarily resident” in the State since then. Meanwhile, those who arrived between January 1, 1966, and March 24, 1971, were granted the full rights of Indian citizens, except for voting rights, which were withheld for a decade.

Why was it challenged?

The petitioners, including the NGO Assam Public Works and the Assam Sanmilita Mahasangha, contended that setting a different cut-off date for citizenship in Assam is discriminatory and violates the right to equality enshrined in Article 14 of the Constitution. Concerns were also raised about the provision’s inconsistency with Articles 6 and 7, which regulate citizenship pertaining to Partition-era migration for the rest of the country. Article 6 grants citizenship to individuals who migrated to India from Pakistan before July 19, 1948, provided they have resided in the country since then. Meanwhile, Article 7 denies citizenship to those who moved to Pakistan after March 1, 1947, while allowing it for those who returned to India under a permit for resettlement or permanent return.

They also claimed the provision resulted in a “perceptible change in the demographic pattern of the State,” thereby violating the cultural and linguistic rights of the “indigenous” population of Assam, as guaranteed under Article 29. This, they argued, constituted both “external aggression” and “internal disturbance” under Article 355 of the Constitution, thereby imposing an obligation upon the Union government to protect the State.

What did the majority rule?

Both Justices Kant and Chandrachud upheld the differentiated treatment of Assam under Section 6A, citing the region’s unique historical and political considerations. They reasoned that the



provision does not violate the equality clause under Article 14, as it represents Parliament's careful balancing act between its humanitarian approach toward Bangladeshi immigrants and the significant strain their mass exodus has imposed on Assam's economic and cultural resources.

The majority also opined that Section 6A is not inconsistent with the citizenship provisions in Articles 6 and 7 of the Constitution. The Chief Justice pointed out that while these Articles establish a cut-off date for conferring citizenship at the commencement of the Constitution— January 26, 1950 — Section 6A specifically addresses individuals not covered by these two provisions. Justice Kant concurred, asserting that Section 6A aligns with the constitutional philosophy of Articles 6 and 7, as it is rooted in the “same underlying policy of granting citizenship to the people of Indian origin migrating from Pakistan due to political disturbances in a foreign territory”. Both judges also concluded that Article 11 of the Constitution grants Parliament substantial flexibility in formulating laws related to citizenship, including the authority to establish conditions for granting citizenship that may differ from those outlined in Articles 6 and 7.

Adopting a multicultural and pluralistic interpretation of Article 29, the judges further observed that Section 6A does not violate the cultural rights of the “indigenous” Assamese people. They reasoned that while the Article aims to “conserve” the culture of a specific group, it does not preclude the coexistence of other cultures. In fact, Justice Kant highlighted that such grievances may stem from the failure of authorities to implement the other leg of Section 6A — specifically, the deportation of individuals who migrated to Assam after the cut-off date. He accordingly urged the Chief Justice to constitute a Bench to monitor the identification, detection and deportation of illegal immigrants in the State in a time-bound manner.

Both the judges also noted that “external aggression” referred to military actions and did not cover within its ambit humanitarian migration driven by economic or other distress. Accordingly, they found no breach of the Union's duty under Article 355. The Chief Justice further cautioned that allowing the Union to exercise such “emergency powers” would be detrimental to federalism and could undermine the constitutional status of States.

Note:

The majority has rejected the notion that the provision is unconstitutional on the ground that it treats Assam differentially from the rest of the country. It has noted that the citizenship provisions in the Constitution referred to ‘citizenship at the commencement of the Constitution’ and Parliament was not deprived of the power to introduce provisions on citizenship for a different category of people from a different date. In his main opinion, speaking for himself and two other judges, Justice Surya Kant has acknowledged the petitioners’ “demographic anxiety”, but did not believe that the idea of fraternity in the Constitution was threatened by a mere change in demography. It is not a misplaced fear when he says accepting the argument that demographic change could lead to an erosion of the cultural rights of a section of society may open the floodgates for similar challenges to undermine inter-State migration in the guise of protecting indigenous culture.

Why did Justice Pardiwala dissent?

In a sharply reasoned dissent, Justice Pardiwala declared Section 6A unconstitutional, effective only from the date of the judgment. He reasoned that while the provision may have been justifiable at the time of its enactment, its failure to curb illegal migration in Assam had rendered it inconsistent with constitutional principles over time. He also noted that the lack of a sunset clause



on the application of Section 6A incentivises illegal immigration and exacerbates demographic imbalances in the region.

The judge further highlighted that Section 6A does not allow for self-declaration or voluntary identification as a foreigner thereby leaving the detection process entirely reliant on state intervention. He concluded that this marked a clear departure from the scheme of the Citizenship Act and Articles 6 and 7 of the Constitution, which allow citizenship to be acquired through registration.

“The manner in which the provision is worded, counter-serves the very purpose of its enactment, which is the speedy and effective identification of foreigners of the 1966-71 stream, their deletion from the electoral rolls, registration with the registering authority and conferring of regular citizenship”, the dissent noted.

What are the potential ramifications?

The March 25, 1971, cut-off date endorsed by the majority serves as the foundation for the contentious National Register of Citizens which was prepared in 2019 following the top court’s directives. Although the register is yet to be implemented, it has identified 19 lakh residents (5.77% of Assam’s population) as potential non-citizens. Moreover, the ruling bolsters the long-standing demand of Assamese organisations to repeal the controversial Citizenship Amendment Act, 2019 (CAA), which sets December 31, 2014, as the cut-off date for granting citizenship to non-Muslim migrants who illegally entered India from Bangladesh, Afghanistan, and Pakistan. Critics argue that by prescribing a different timeline, the CAA creates a loophole that exempts Bengali Hindus who migrated to Assam from Bangladesh after 1971 from the application of Section 6A.

NAFED POST GOES TO AGRICULTURE OFFICIAL, WEEK LATER TO COOPERATION

A week after Union Agriculture Minister Shivraj Singh Chouhan’s decision to assign additional charge of Managing Director, National Agricultural Cooperative Marketing Federation of India Ltd (NAFED), to an Agriculture Ministry official, the Appointments Committee of the Cabinet (ACC) entrusted charge of the post to an official of the Ministry of Cooperation.

For Your Information-

- Once the Union Cabinet is sworn in and ministerial portfolios are allocated, the next step would be the formation of the high-profile Cabinet committees. The Prime Minister sets up these committees with selected members of the Cabinet and assigns specific functions to these committees. The Prime Minister may change the numbers of committees, and modify the functions assigned to them.
- The membership of each committee varies from three to eight. Usually, only Cabinet ministers are members of these committees. However, it is not unheard of for non-Cabinet ministers to be members or special invitees to committees. If the Prime Minister himself is a member of any such committee, he acts as the head of that committee.
- The committees resolve issues and formulate proposals for the consideration of the Cabinet and take decisions on matters assigned to them. The Cabinet is empowered to review such decisions.
- There are eight Cabinet committees at present — the Appointments Committee of the Cabinet, Cabinet Committee on Economic Affairs, Cabinet Committee on Political Affairs, Cabinet



Committee on Investment and Growth, Cabinet Committee on Security, Cabinet Committee on Parliamentary Affairs, Cabinet Committee on Employment & Skill Development, and Cabinet Committee on Accommodation.

- With the Prime Minister helming it, the CCS has the ministers for Finance, Defence, Home Affairs and External Affairs as its members. It is responsible for debates, discussions and appointments of/ in the national security bodies. Major decisions with respect to the significant appointments, issues of national security, defence expenditure of India are taken by CCS.
- Besides dealing with defence related issues, the CCS also brainstorms on issues relating to law and order and internal security, and policy matters concerning foreign affairs on security-related issues. It also considers matters relating to atomic energy.

Do You Know-

- Established on October 2, 1958, the NAFED is registered under the Multi State Co-operative Societies Act. It comes under the Ministry of Agriculture and the Agriculture Minister answers NAFED-related queries in Parliament.
- The Board of NAFED is responsible for appointing its MD, it approves the official appointed by the government to the post.

EXPRESS VIEW ON TMC MP KALYAN BANERJEE'S ACTIONS: CRUDE AND IMPROPER

A four-term Member of Parliament — a lawyer and among the most senior leaders of his party — should not require lessons in either civics or civility. On Tuesday, Kalyan Banerjee of the Trinamool Congress was suspended for a day from the Joint Committee of Parliament on the Waqf (Amendment) Bill.

The disciplinary action against him came after he smashed a glass bottle during the JCP meeting, reportedly during a heated exchange with former Calcutta High Court judge and BJP MP Abhijit Ganguly. Committee Chair Jagdambika Pal has alleged that Banerjee was attempting to throw the bottle at him — the TMC leader ended up injuring himself. Parliament — including its committees — is a place for dissent, debate and even vociferous argument.

It is not — and must not become — an avenue for abuse and violence. Banerjee, unfortunately, seems not to realise this. And at a time when the Opposition is trying to gain ground, and at times, the moral high ground — after a decade in relative political wilderness — his actions are a terrible letdown.

A representative to the Lok Sabha carries the privileges and expectations of the people who voted for him. Unfortunately, the incident this week is not the first time Banerjee has pushed the boundaries of propriety. Last year, when 147 MPs had been suspended and the Opposition was besieged, the TMC MP's crude mimicry of Vice President Jagdeep Dhankhar drew unwarranted attention. In fact, throughout Dhankhar's tumultuous tenure as Governor of West Bengal, Banerjee constantly avoided the high ground — he called Dhankhar a "bloodsucker" and filed cases against him.

Earlier this year, during the Lok Sabha campaign, he referred pejoratively to CPM candidate Dipsita Dhar's complexion, and in 2009, he made off-colour and unsubstantiated remarks about then West Bengal CM's personal habits.



Banerjee's conduct at the parliamentary committee meet, then, is no aberration. Given his position and seniority in the TMC, it can also be seen as part of what ails the party. Into its third term in office in West Bengal, and as the fourth-largest party in the Lok Sabha, the TMC is no longer just a party of protest and the street. While its origins were "anti-establishment" in an era of Left dominance, it is now part of the power structure. Its leaders, with their words and actions, cannot be so immature as to resort to abuse and violence.

Banerjee's behaviour is not just politically counterproductive. It also shows an unconscionable disregard for the processes of Parliament and the people he represents.

GOVERNOR VS GOVT.

After a fleeting moment of camaraderie, political hostilities between Tamil Nadu Governor R.N. Ravi and Chief Minister M.K. Stalin are on the rise again, this time triggered by a distorted rendition of the State anthem at a Prasar Bharati event. The Tamil Thai Vazhthu, rendered as an invocation song at official functions since 1970, was declared the State anthem in December 2021. This followed a judge holding that there was no statutory or executive order requiring attendees to stand when the song is played, after a seer remained seated during its rendition. At the event that was attended by the Governor, a verse in this 55-second anthem hailing the 'Dravidian land' was conspicuously omitted. Though it was described as inadvertent, no attempt was made to rectify it on stage. Most political parties were disapproving of the omission. Mr. Stalin asked whether if Mr. Ravi was being a "Governor" or an "Aryan" and sought to know whether the Governor, "who suffers from Dravidian allergy", would propose the deletion of the term "Dravida" from the national anthem.

The Governor took umbrage at this and described the "Aryan" reference as "racist". Such interpretation actually goes against the Governor's theory that the concept of Aryans and Dravidians was mainly a geographical, "rather than racial", division; he had expressed his belief that the British had made it "racial" to suit their needs. Mr. Ravi argued that the imputations against him lowered the dignity of the high constitutional office of the Chief Minister. True, it was far-fetched to link him directly to the singers' omission of a verse. However, Mr. Ravi has consistently linked the 'Dravidian' concept to an "expired ideology" that has created an ecosystem that fosters "separatist sentiment", and does not "relish the idea of 'One India'". He has also maintained that the State's two-language policy resulted in linguistic apartheid. At the Prasar Bharati event, he had alleged that a lot of toxicity has been infused in the minds of the people of Tamil Nadu in the last 50 years. Such views engender the impression that he was against references to anything Dravidian. Even so, it was improper for Mr. Stalin to have waded into the controversy by directly blaming Mr. Ravi. But the larger issue is that governance becomes the casualty in tussles between the Governor and the Government. Given his penchant for political activism and his antagonism to the government's policies, it is time Mr. Ravi is replaced. Equations between him and the Chief Minister are beyond redemption. The situation is unhealthy for the State and imperils democratic institutions.

ALLOW FOR DELIBERATION

When decisions are taken for constituents in a province without their explicit consent or their deliberation, there could be a blowback even if the constituents initially welcomed the changes with hope. Such is the case with the abrogation of Jammu and Kashmir's special status and its bifurcation into two Union Territories (UT), which includes the erstwhile constituent of Ladakh.



While the discontent in the Kashmir Valley with both decisions is well documented, a Lokniti survey points to four-tenths of Jammu residents opposing the abrogation of special status and a larger majority seeking restoration of statehood. When Ladakh was hived off into a UT from the then unified State, the government justified this as reflecting a demand from residents of Ladakh — Leh in particular — who were concerned about the predominance of the Kashmir Valley and Jammu in its erstwhile legislature. Yet, five years on, the protests in Ladakh with the demand for statehood or the province's inclusion in the Sixth Schedule of the Constitution — which has provisions regarding administration of tribal areas in some North-Eastern States — confirm the unpopularity of the decisions made by the Bharatiya Janata Party-led government. While Ladakh is host to two Autonomous Hill Councils in Leh and Kargil, the absence of an empowered legislature in the UT, which has meant little say for local governance in comparison to a larger writ for New Delhi, has given rise to these protests. The agitations, the one led by social activist Sonam Wangchuk in particular, with echoes in New Delhi, raise the question whether the Union government could have avoided the Machiavellian route of one-upmanship seen in 2019, which led to the current situation.

A larger question relates to how Ladakh has been viewed by New Delhi ever since 2019. Following Chinese incursions across the Line of Actual Control and recurring tensions in the region, Ladakh has largely been seen through a security lens. Local concerns related to livelihoods, environmental issues such as water scarcity, waste management and pollution and civic issues such as access to land for pastoral communities remain relatively unaddressed in the administrative scheme. The absence of a legislature in the newly formed UT is a key reason why residents seem agitated about the lack of deliberation or avenues to register their concerns. It goes without saying that the Union Government must find a way to meet the legitimate demands of Ladakh and grant it statehood. More importantly, the discontent also highlights the importance of preserving India's polished system of "asymmetric federalism" that has purposefully addressed grievances.

EXPRESS VIEW ON J&K TERROR ATTACK: A FRAGILE PEACE

The terror attack on Sunday, barely five days after Jammu and Kashmir's first elected government in nine years assumed office, is a reminder of the fragility of the peace in the region. Seven employees of a construction company, six of them migrants, were gunned down when they had gathered for dinner. The signals sent by the perpetrators of the inhuman act should not be lost on the governments in New Delhi and Srinagar. The Z-Morh tunnel project at Sonamarg on the Srinagar-Leh highway, which the victims were engaged in, is part of a larger initiative to create all-weather and all-year connectivity between J&K's capital and Ladakh. Its strategic and economic significance cannot be overstated. The road project is significant for both security and tourism. Militants had so far kept away from major infrastructure projects in the Valley. The new direction in their activity is worrying. It should also be a matter of grave concern that the attack took place in an area that has seen very little terrorist activity in the past three decades.

The strengthening of a counter-terrorism grid in the Valley and stringent security clampdown has led to a significant reduction in militant activity in the last five years. But terrorist activity has also followed an unmistakable pattern of late. Insurgents have not been averse to shifting to areas where their imprint had almost faded in the past two decades. The attack on a bus carrying pilgrims in Reasi in June was a terrible jolt after the stirrings of hope and optimism that followed a high voter turnout in the Lok Sabha elections. The gruesome ambush from a forested area also indicated a new modus operandi. Sunday's attack similarly indicates that the terror system has been at work, even as J&K begins a new chapter in its tryst with democracy. Like in the Reasi



attack, the militants seem to have exploited a difficult terrain to strike at the workers' camp. And, the Sonamarg killings aren't too different from the Reasi ambush in their timing — the June attack took place the day Prime Minister Narendra Modi and his new council of ministers were being sworn in.

At the SCO summit last week, Pakistan Prime Minister Shehbaz Sharif desisted from his recent tendency to rake up the Kashmir issue at every international meet. India's External Affairs Minister S Jaishankar, too, was measured in asking Islamabad to reflect on how its encouragement of terrorism had hurt neighbourly ties. However, the Sonamarg attack, barely two days after the signs of a thaw in the relations between the two countries, seems to be another demonstration of Pakistan's intransigence on the use of terrorism as an element of its foreign policy. The killings are a reminder that the Centre, the security forces, the UT's new government and everyone with a stake in democracy in J&K cannot afford to let their guards down.

For Your Information-

- The Z-Morh tunnel is a 6.4-kilometer tunnel connecting the Sonamarg health resort with Kangan town in central Kashmir Ganderbal district. The tunnel has been constructed near Gagangir village ahead of Sonamarg. The tunnel will provide all-weather connectivity to Sonamarg, a famous tourist destination on the Srinagar-Leh highway.
- The tunnel has acquired its name for the Z-shaped road stretch at the place where the tunnel is being constructed.
- The stretch where the tunnel is under construction is situated at an altitude of over 8,500 feet, and is prone to snow avalanches in the winter. The road to Sonamarg as such remains closed for most part of the winter.
- The Z-Morh tunnel is part of the Zojila tunnel project that aims to provide all weather connectivity from Srinagar to Ladakh throughout the year. While the tunnel would give all-weather connectivity to Sonamarg health resort in the Valley, it is essential for all-weather connectivity to Ladakh. This is important, as it would provide quick access for military personnel to the border areas of Ladakh. While the construction of the Zojilla tunnel at an altitude of approximately 12,000 feet connecting Sonamarg in Kashmir valley to Drass in Ladakh is under way and is expected to be completed by December 2026, the opening of the Z-Morh tunnel is essential for its all-weather connectivity.
- The construction of the tunnel will provide safe connectivity between Srinagar, Dras, Kargil and Leh regions. The Indian defence forces are deployed against Pakistan in Siachen Glacier and in the Turtuk sub sector, which abuts Baltistan in Pakistan-Occupied Kashmir (PoK). Similarly, there is widespread Indian Army deployment against Chinese forces in Eastern Ladakh, which has increased manifold after the 2020 face off with Chinese troops.

WHY ANDHRA CAME UP WITH NEW LIQUOR POLICY: REVENUE GAP WITH TELANGANA, FUNDING NAIDU'S WELFARE SCHEMES

Andhra Pradesh's new excise policy, notified on October 1, allowing private retailers to sell liquor was aimed at battling shrinking liquor revenue and maintaining funds in the exchequer to materialise the six welfare schemes which Chief Minister Chandrababu Naidu had promised before coming to power.



Stocktaking by the excise department has revealed that Andhra Pradesh has been losing out a huge chunk of the liquor revenue over the past few years.

Between 2014 and 2019, the revenue gap between Telangana and Andhra Pradesh in terms of liquor sales was Rs 4,186 crore. In 2014, Andhra Pradesh was bifurcated and Telangana was formed. Interestingly, after the split, Chandrababu Naidu had become the CM. From 2019-24, when Y S Jagan Mohan Reddy was the CM, the state government had taken over liquor trade in an attempt to reduce liquor consumption, a move which did not yield the expected results.

However, from 2019 to 2024, the excise revenue difference between the two states went up exponentially by almost 10 fold to Rs 42,762 crore, an excise department official said. This was one of the factors Andhra Pradesh decided to formulate Excise Policy 2024-26.

“With the easing of the liquor policy we are expected to match the revenue generated by states like Telangana and Haryana,” the source said.

The excise department official said, “Even if we had continued with the liquor policy of 2014-19, the state would have earned an additional Rs 18,860 crore in revenue. But the new liquor policy will make sure that we match Telangana’s revenues in the next two years.”

According to excise department officials, the state saw a decline in liquor sales because of the huge inflow of illegal liquor into the state. According to government records, over the last five years, an estimated 1.78 crore litres of illegal liquor was seized. But the amount of liquor seized was just “10% to 20% of the existing inflow of illegal liquor”, excise department officials explained.

“Moreover, as the state was selling liquor it failed to generate revenue through application and licence fees. With the new liquor policy, we have already raked in Rs 1,800 crore in application fees and Rs 2,000 crore in licence fees,” an excise official said.

Under the new policy, private retail operations have restarted with 3,736 shops notified across Andhra Pradesh. “The state has also invited different known brands to trade in the state,” excise department officials said.

The government has also decided to introduce low-cost brands — to be sold at Rs 99 per quarter of a bottle as per the policy — to prevent people from turning to adulterated liquor. For expensive brands, the state has also decided to allow liquor malls. The model, an excise official said, has been adopted by many states, including Haryana.

HOW SHOULD SOUTH INDIA DEAL WITH ITS AGING POPULATION?

Andhra Pradesh Chief Minister N Chandrababu Naidu has said his government is working on a law to incentivise residents of the state to have more children. “We are already in deficit. Having less than two children leads to the rapid decline of the young population,” he said.

Earlier, when asked by The Indian Express about concerns among Southern states that their smaller populations might impact their representation in Parliament after the delimitation of constituencies, Naidu had said: “South India, with a lower fertility rate, is already facing the aging issue, and it will gradually impact North India as well.”

On Monday, Tamil Nadu Chief Minister M K Stalin joked about the potential reduction of South India’s share in parliamentary seats due to lower population growth rates: “Why not aim for 16 children?”



What do data say on aging and overall population size in India?

With Census 2021 delayed, the most recent population projections available are in a 2020 report of a technical group within the Union Ministry of Health and Family Welfare.

India's population is projected to age with each passing year. The proportion (percentage) of people in the 60+ age bracket will rise across the board — even though the increase in the Northern states will be smaller than in the South. This is because most Southern states transitioned to a lower fertility rate sooner than the Northern states. For example, Uttar Pradesh is projected to achieve the Replacement Level of Fertility only next year — that is more than two decades after Andhra Pradesh.

Here's what else the report projected:

* In the 25 years from 2011 and 2036, India's population will increase by 31.1 crore. Almost half — 17 crore — will be added in five states: Bihar, UP, Maharashtra, West Bengal, and Madhya Pradesh. As much as 19% of the total population increase during 2011-36 is expected to occur in UP.

* The contribution of the five Southern states — AP, Karnataka, Kerala, Telangana, and Tamil Nadu — to the total increase in population during 2011-2036 is expected to be only 2.9 crore, or 9%.

* With declining fertility and increasing life expectancy, the number of older persons in the population is expected to more than double from 10 crore in 2011 to 23 crore in 2036, their share in the population rising from 8.4% to 14.9% during this period.

* In Kerala, where lower fertility and mortality rates were achieved much sooner than other states, the proportion of persons aged 60 years and older will increase from 13% in 2011 to 23% in 2036 — or almost 1 in 4 individuals. The population of UP, by contrast, is expected to be comparatively younger — the share of 60+ individuals in the state population is expected to increase from 7% in 2011 to 12% in 2036.

Why is an aging population, and a relatively smaller population, a concern?

An aging population (which Naidu spoke of) and a smaller population (that Stalin referred to) are two separate concerns.

Typically, if two-thirds of the total population is in the working-age bracket it implies a “dividend” — because the dependency ratio (that is, the percentage of population that is not earning and is dependent on others) is less than 50%.

Dependency is of two kinds: those below the age of 15, and those above the age of 60. A high percentage of aging population does imply that the state may have to spend more on taking care of this growing population.

The issue of the total population of a state being lower compared to other states is different. This issue has come into sharp focus in public discussions on electoral delimitation — where fears have been expressed that Southern states could end up getting penalised by way of fewer seats in Lok Sabha for having made the demographic transition before the North (and especially the so-called “BIMARU” states).



So, do government policies to boost fertility, as Naidu mentioned, work?

Naidu referred to some countries — such as Japan, China, and countries in Europe — that are also struggling with aging populations. But there is no real evidence that people who have reached a certain level of prosperity and education can be incentivised to have more babies.

Academics such as social demographer Sonalde Desai, Distinguished University Professor Emerita at the University of Maryland, and P M Kulkarni and Deepak Mishra of JNU, are unanimous that pro-natalist policies have had very little success.

“Virtually nowhere in the world — Japan, China, Korea, France etc. — have pro-natalist policies worked. The only place where such policies had some impact to the extent that they did not allow the fertility rate to plummet to very low levels were in Scandinavian countries. Here the policies were more in the shape of family support, childcare support, gender equality, paternity leaves etc.,” Desai said.

However, she stressed that even giving financial support doesn’t do enough to encourage families to have more babies.

Why do statements like the ones made by Naidu matter?

These statements demonstrate the stark turnaround on the stand taken by politicians, especially from the Southern states, on the population question.

Roughly five decades ago, the main concern facing India was rapid population growth, fuelled by high levels of fertility (births per woman). The situation was once deemed so grim that many wondered if India would even have enough food to feed its teeming millions.

Over the decades, however, India has been able to arrest the pace of population growth — an achievement that has been led by several Southern states. Andhra Pradesh achieved the Replacement Level of Fertility — that is, an average of 2.1 children per woman — in 2004, making it the fifth Indian state to do so after Kerala (1988), Tamil Nadu (2000), Himachal Pradesh (2002), and West Bengal (2003). Andhra Pradesh used to have a law that barred people from contesting in local polls if they had more than two children; Naidu has repealed it.

However, while individual states are witnessing considerably lower levels of fertility than in the past, India’s inherent population momentum has meant that it is now the most populous country on the planet.

If incentives don’t work, what is the way forward to address concerns about population?

“The simplest solution is (internal) migration,” Desai said.

There are three contributors to the total population: fertility, mortality, and migration. Both Desai and Kulkarni said migration can even out the imbalance caused by the mismatch in the pace of the demographic transition between North and South India.

Of course, such migration is already underway. “What’s more, the Southern states will get people in the working age,” Desai said. In other words, destination states don’t have to spend on nurturing a young population, their education, etc.; they can straightaway benefit from the working-age migrant population.



This is the model that the United States has employed over the decades — it is immigrants, their economic output and their fertility, that has helped sustain America’s economic dominance over the world.

Both Kulkarni and Mishra underscored that rather than having more children, the concern for India should be to boost the economic productivity of its labour force, and to ensure that the benefits of the ongoing demographic dividend are cashed fully.

WHY GANGSTER LAWRENCE BISHNOI CAN BE INTERROGATED ONLY INSIDE A PRISON

As part of their investigation into the murder of Maharashtra MLA Baba Siddique earlier this month, Mumbai police have alleged that the two men accused of shooting him had links to the Lawrence Bishnoi gang. Bishnoi is currently lodged in Gujarat’s Sabarmati jail, under a case of cross-border drug smuggling. He was previously also named in the case of a firing outside actor Salman Khan’s residence in Mumbai in April, but Mumbai police could not take his custody.

Usually, a person facing trial is brought before the court to attend the proceedings against him, to ensure a fair trial. A criminal court is empowered to issue an order for the same during an inquiry, trial or other proceedings under section 267 of the Criminal Procedure Code (CrPC).

However, any investigating agency seeking to interrogate Bishnoi can only access him within the jail premises. Here is why.

What prevents investigating agencies from taking Bishnoi’s custody?

In August 2023, the Ministry of Home Affairs issued an order referencing Bishnoi, restricting him from being taken out of jail for any purpose. This was under section 268 of the CrPC and was effective for a year. In August 2024, it was extended for another year under section 303 of the new Bharatiya Nagarik Suraksha Sanhita (BNSS), which replaced the CrPC.

As a result, Bishnoi cannot be directed to be produced in court and any agency seeking access to him will have to get an order from a court to question him only within the jail premises. Any court order requiring Bishnoi to be produced for legal proceedings would be rendered inoperative until the restrictive order remains operational.

What do the restrictive orders say?

Section 268 of the CrPC gave state governments the “power to exclude certain prisoners from operation of section 267”. Under section 303 of the BNSS, both the Central government (in cases instituted by central agencies like the NIA), and state governments can “by general or special order, direct that any person or class of persons shall not be removed from the prison in which he or they may be confined or detained, and thereupon, so long as the order remains in force.”

Section 303(2) of the BNSS specifies three criteria for invoking the section: a. The nature of the offence for which the person(s) has been ordered to be confined or detained in prison; b. the likelihood of the disturbance of public order if they are allowed to be removed from the prison; and c. the public interest, generally.

Investigating agencies argue that interrogating a person in jail can be limiting, as only one or two officials may be permitted to question the person for a few hours or a specific period. Other accused persons cannot be brought in during the interrogation.



When can such orders be imposed?

Governments have cited security reasons, submitting apprehensions that if the person is allowed out of jail, they may attempt to abscond or their lives could be in danger. Authorities also refer to the person's criminal history and if many cases are pending against them, an argument can be made for their movement leading to law and order problems.

Additionally, these provisions have been used to restrict furlough and parole for prisoners in terror cases. In a case before the Gujarat High Court, a man serving 20 years in jail in a terror case approached the court, stating he was not permitted to leave jail to avail of his furlough as an order had been passed under section 268 of the CrPC. Since it had been over a decade since such an order was passed and the convict had previously been permitted parole, the court directed authorities to reconsider their view.

TWO YEARS AFTER LAUNCH, DELHI GOVT. SIGNS MOU WITH EDUCATION MINISTRY TO IMPLEMENT PM SHRI SCHEME

Nearly two years after its launch, Delhi has come on board the PM SHRI (PM Schools for Rising India) scheme with Education Department officials signing a memorandum of understanding (MoU) with the Ministry of Education (MoE) on Tuesday for its implementation.

To be implemented in all States over five years at a total cost of ₹27,360 crore, the scheme proposes to convert more than 14,500 schools into 'exemplar' institutions, with the Centre contributing to 60% of the funding for upgradation.

Delhi's Secretary (Education) Ashok Kumar had written to the Centre in September expressing interest in signing the MoU. He also requested for the release of pending instalments of Samagra Shiksha funds for FY 2023-24 and FY 2024-25 amounting to around ₹330 crore.

The PM SHRI scheme, which is in line with the National Education Policy (NEP) 2020, falls under the overarching scheme of Samagra Shiksha. Senior MoE officials confirmed that the funds for Delhi will be released shortly.

While earlier Tamil Nadu, Kerala, West Bengal, Delhi, and Punjab had not signed the MoU over issues ranging from NEP implementation to scheme nomenclature, Punjab came on board in August. Senior MoE officials confirmed that Tamil Nadu and Kerala are expected to sign the MoU soon.

"We had not initially implemented PM SHRI since we had our own education model. We were also willing to implement NEP but not the way the Centre was imposing upon us. It did not release the funds for Samagra Shiksha, resulting in financial issues. We were told that funds would not be released until we signed up for PM SHRI," a source in the Delhi Education Department told The Hindu.

WHAT ARE THE STRESS FACTORS FOR INDIAN RAILWAYS?

The story so far:

On October 17, eight coaches of the Agartala-Lokmanya Tilak Express derailed in Assam with no casualties. On October 11, a passenger train rear-ended a stationary goods train near Chennai, also with no casualties. Indian trains have been involved in multiple accidents of late. The Balasore



accident on June 2, 2023, had the greatest death toll, more than 275, yet pressure on the Railways to improve safety competes with pressures straining its subsistence.

How common are accidents?

The number of railway accidents dropped from 1,390 per year in the 1960s to 80 per year in the last decade. There were still 34 consequential accidents in 2021-2022, 48 in 2022-23, and 40 in 2023-2024. A consequential accident injures and/or kills people, damages railway infrastructure, and disrupts rail traffic.

According to public records, 55.8% of all accidents involving trains have been due to the failure of Railway staff and another 28.4% due to failures on the part of non-staff people. Equipment failure accounted for 6.2%. In both the Balasore and the Kavaraipettai accidents, officials blamed the signalling system.

What is 'Kavach'?

The 'Kavach' automatic train protection system is designed to prevent collisions using devices that allow pilots to track the relative location of their vehicles and which can actuate alarms and automated braking protocols.

By February 2024, the Railways had installed 'Kavach' on 1,465 route km, or 2% of its total route length. After the Balasore accident, Union Railway Minister Ashwini Vaishnaw said 'Kavach' would be implemented in "mission mode". It costs ₹50 lakh per kilometre and ₹70 lakh per locomotive. An analysis by The Hindu found the all-inclusive cost of implementation over a decade to be less than 2% of the Railways' annual capex. When faced with criticism of the slow implementation, officials have referred to declines in accident incidence and mortality over the years. But experts have said comparing current and past accident rates is misguided because advanced safety technologies didn't exist earlier and that the government has the means today to eliminate collisions.

Since 1990-1991, the Railways has classified nearly 70% of all major accidents as derailments, but only 2% of them were due to collisions. 'Kavach' also may not have prevented the Kavaraipettai accident because the relevant error happened beyond the minimum margins 'Kavach' requires to assist.

What is the operating ratio?

The operating ratio (OR) — the amount the Railways spends to earn ₹100 — in 2024-2025 is estimated to be ₹98.2, a small improvement from 2023-2024 (₹98.7) but a decline from ₹97.8 in 2016. A higher OR leaves less for capex and the Railways more dependent on budgetary support and Extra-Budgetary Resources (EBRs). In 2016-2017, the BJP government brought the railway budget under the regular budget after nine decades of separation. One outcome was easier access for the Railways to gross budgetary support. As for EBRs: the Railways' dues have ballooned to 17% of its revenue receipts today from 10% in 2015-2016.

How are freight services faring?

The Railways' two main internal revenue sources are passenger services and freight. The latter accounts for 65%. While revenue from both sources is increasing, freight rates increased more than thrice as fast as passenger rates in 2009-2019, NITI Aayog has estimated.



According to the draft National Rail Plan, nearly 30% of the railway network is utilised to more than 100% capacity. This has translated to slow freight movement — around 26 km/hr in 2016 — and slower revenue growth. Of the Dedicated Freight Corridors (DFCs) the government mooted in 2005, only the eastern DFC is fully operational. The western DFC is partly ready; the east coast, east-west sub-corridor, and north-south sub-corridor DFCs, amounting to 3,958 km, are still in planning. Freight revenue also depends on the freight basket. Coal accounted for half of the freight revenue and 45% of volume in the 2024-2025 budget estimate. However, the government has been adding more renewable energy sources while pushing industries to reduce their dependence on fossil fuels, including coal.

The Railways also needs to keep up existing equipment, including replacing tracks and wagons and maintaining trackside infrastructure. But in the 2023-2024 budget, capital outlay for track renewal dropped to 7.2%. Appropriations to the Depreciation Reserve Fund also fell 96% in the BJP's first term; the government had moved these resources to the Rashtriya Rail Sanraksha Kosh safety fund created in 2017-2018. The Standing Committee on Railways said then the latter wouldn't be able to pay to repair or replace depreciating assets.

What about passenger services' revenue?

The Railways' freight profit is offset significantly by passenger losses. In 2019-2020, the revenue from passenger services was a little over ₹50,000 crore and loss, ₹63,364 crore. In 2021-2022 — a pandemic year in which many trains had to be cancelled — passenger services incurred a loss of ₹68,269 crore. In a July 2024 analysis, PRL Legislative Research estimated the revenue from passenger services was ₹80,000 crore in 2024-2025.

PRL also estimated the Railways had a passenger traffic of 11 lakh passenger km, expected to increase to 12.4 lakh in 2024-2025 thanks to the addition of new trains — including the Vande Bharats — on high-traffic routes. The Railways has also replaced many of the more affordably ticketed sleeper and second-class coaches with the more expensive AC coaches, all to increase passenger revenue. However, it last rationalised passenger fares in 2020.

How is safety affected?

For a long time now, the Railways has been caught between two aspirations: providing an affordable travelling option to the Indian people versus being a profitable business.

The Railways' losses are compounded by growing wage and pension bills and fuel costs. Locomotive pilots have also reported stressful working conditions, including 12-hour shifts, especially in zones with large freight volumes, and shifting standard operating procedures.

The high network congestion is likewise exemplified by the limited utility of 'Kavach' as well as the failure of a homegrown system, based on walkie-talkies, to alert trackside workers to oncoming trains. "The system does not work fully ... where a number of trains ply in a single block section at close intervals and signals are placed 1 km apart," Mr. Vaishnav told the Rajya Sabha in 2023. In sum, the Railways' inability to generate revenue to plug gaps in the gross budgetary support, burgeoning demands on its revenue receipts, and growing pressure to ease congestion and improve physical capacity mean it's constantly playing catch-up.



ON RAILWAYS DECISION TO SHRINK ADVANCE BOOKING PERIOD

The story so far:

One could book railway tickets four months in advance for long journeys. Now passengers will only be able to book tickets on Indian Railways two months in advance, a circular released by the Railway Board earlier this month stated.

When will the Advance Reservation Period (ARP) be effective?

The circular states that the new ARP rules will kick in from November 1, 2024 onwards, and that the booking window for passengers to reserve their tickets will open 60 days in advance (excluding the actual day of journey). However, if a passenger has booked any tickets up to October 31 (under the earlier 120-day period rule), all those bookings will remain intact, and the passenger also has the facility to cancel those tickets at will.

By shortening the reservation period to 60 days, the Railways has reversed its 16-year old policy of reserving tickets 120 days in advance, which had kicked in from May 1, 2008. Before this, from 1995 to 2007, the booking window was restricted to 60 days. Interestingly, between 1988 to 1993, Railways had experimented with shortening the advance booking window to as less as only 45 days. Before this, once between 1981 to 1985, the Railways had opened the ARP for a 90-day window.

Why was such a decision taken?

Railways officials observed that 120 days was too long a period for planning journeys, and that it led to a high amount of ticket cancellations. "Currently, up to 21% passengers who book their tickets end up cancelling them," a senior official stated. While allotting seats/berths, officials also observed that there was a wastage of seats/berths because of passengers who would not turn up for journeys and at the same time would not bother to cancel their tickets. "4% to 5% passengers don't turn up (which is considered as no show)," the official further said. "Another trend Railways noticed is that between 88% to 90% rail reservations occur in the period of 60 days, hence it was thought prudent to reduce the ARP," another senior official told The Hindu.

Do longer booking windows increase frauds?

The rationale given by the officials to reduce ARP is that when passengers do not cancel their tickets and do not turn up for journeys, it opens up possibilities for fraud. "We observed frauds such as impersonation, railway officials taking money illegally to allot empty berths etc. With shortening reservation period this could be prevented," the official said.

Secondly, there is an immense challenge of curtailing touts that operate on the railway network. "When reservation periods are longer, there is a greater chance that touts end up blocking a substantial tranche of tickets. Shortening the period of ARP will encourage purchase of more tickets by genuine passengers," the official added.

Parallely, Railway officials state that the decision to either reduce or increase the ARP window is open for debate. "There are two opposing camps that debate how to fix the ARP window. There is one camp in the Ministry that believes in opening up advance reservation for the entire year, and that passengers should be allowed to book and cancel tickets round the year during the period of 365 days. This camp believes that opening up the reservation window year-long will fetch



railways revenues in advance. However this facility is currently only available for foreign tourists, who avail of a certain quota to plan their train journeys across India,” the official added.

Which groups of passengers are exempt from ARP rule?

Apart from foreign tourists, the Union Railway Ministry had stated that there is no impact on General class tickets as they are purchased just before the journey. It has also stated that for certain trains like Taj Express and Gomti Express it was noticed that tickets are booked almost immediately by passengers who wish to travel in these sitting trains. “They are exempt from ARP rule as passengers who wish to travel in these trains book tickets almost immediately a day or two in advance,” the first official added.

COMPANY USES MINING DUST TO ENHANCE CARBON CAPTURE

The last thing you would expect is that dust from mining would be climate- friendly. But the right kind of dust moved to the right place is the core business of a Darjeeling-based company, Alt Carbon, and has already garnered \$5,00,000 in investments for carbon-credit companies. At the heart of the company’s approach is the geo-chemical process called rock weathering.

All rocks naturally break down into minerals over thousands of years. The consequence of this process is that atmospheric carbon reacts with these minerals (calcium and magnesium largely) and becomes bicarbonates. Eventually through aquifers, or underground streams and rivers, they make their way into the oceans where the carbon is locked in for aeons.

The oceans, thus, are the major carbon sinks and capture about 30% of the CO₂ from human activities. Left to nature, this process takes aeons. However, with the levels of carbon dioxide building up in the air and a consensus by the Intergovernmental Panel on Climate Change that some amount of carbon dioxide already present in the air needs to be removed by 2050, for keeping temperatures from exceeding 2 degree Celsius by the end of the century, governments as well as businesses are experimenting and investing in schemes to accelerate natural carbon removal processes. This is where ‘enhanced’ rock weathering comes in.

Basaltic rock, a kind of volcanic rock, is rich in minerals such as calcium and magnesium. Many parts of Maharashtra and Gujarat, where the volcanic Deccan Traps are located, are rich in such basaltic rock as parts of Jharkhand and West Bengal where the Rajmahal Traps are situated.

“Once such basaltic rock is crushed into a fine powder, its effective surface area is greatly increased. This accelerates the formation of bicarbonate anywhere from ten-fold to a hundred-fold and can be flushed into the ocean – depending on the soil, temperature and rivers – within a month,” said Sambuddha Misra, Associate Professor and expert in chemical oceanography, at the Indian Institute of Science, Bengaluru. He is also the chief scientist at Alt Carbon. The company, which derives from a family-owned tea-garden industry, collects tonnes of crushed basalt from the Rajmahal mines, transports it about 200 kilometres to Darjeeling and has them sprinkled on tea estates in the region.

Being an organic fertiliser, the basaltic dust enriches the soil as well as accelerates carbon sequestration. So far, the company has used about 500 tonnes of dust. Though still early years, it takes about 3-4 tonnes of basalt dust to sequester, or trap, a tonne of atmospheric carbon over two to four years. “Normally it would have taken 1,000 years for natural basaltic rock to capture that much carbon,” said Shrey Agrawal, CEO and co-founder, Alt Carbon. This September, the company entered into an agreement with Frontier, a consortium of McKinsey Sustainability,

3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR



Alphabet, Meta, Shopify and Stripe, to buy a tranche of carbon sequestered this way in advance for \$5,00,000. Carbon credits generated this way are bought by companies and they can use it to offset their carbon emissions, required under their national laws. Currently though, such purchases are largely voluntary.

CYCLONE DANA NEARS ODISHA, WEST BENGAL COASTS: WHAT IS THE LANDFALL OF A CYCLONE?

Heavy rainfall lashed parts of West Bengal and Odisha today (October 24) as the states braced for the impact of cyclone Dana later in the night. After having intensified into a severe cyclonic storm, with wind speeds between 88 to 117 km, cyclone Dana is set to make landfall.

According to the Indian Meteorological Department (IMD), the storm is very likely to move north-northwestwards and cross north Odisha and West Bengal coasts between Puri and Sagar Island. It will make landfall close to Bhitarkanika and Dhamara (Odisha), between the midnight of October 24 and the morning of October 25.

Odisha has already evacuated over a million people from areas likely to be affected. What exactly does a landfall mean and how long does its impact usually last? We explain.

What is the “landfall” of a cyclone?

Simply put, landfall is the event of a tropical cyclone coming onto land after being over water. As per the IMD, a tropical cyclone is said to have made a landfall when the centre of the storm – or its eye – moves over the coast.

Crucially a landfall should not be confused with a ‘direct hit’, which refers to a situation where the core of high winds (or eyewall) comes ashore but the centre of the storm may stay remain offshore. As per the US’s National Oceanic and Atmospheric Administration (NOAA), because the strongest winds in a tropical cyclone are not located precisely at the centre, it is possible for a cyclone’s strongest winds to be experienced over land even if landfall does not occur.

What is the damage caused by a cyclone’s landfall?

The damage caused by the landfall will depend on the severity of the cyclone – marked by the speed of its winds. For cyclone Dana, the impact may include extensive damage to kutcha houses, partial disruption of power and communication lines, minor disruption of rail and road traffic, potential threat from flying debris and flooding of escape routes.

The factors behind this kind of damage include extremely strong winds, heavy rainfall and storm surges which cause devastating floods in the coast.

How long does a cyclone landfall last?

Landfalls can last for a few hours, with their exact duration depending on the speed of the winds and the size of the storm system. According to the government, the wind speed of cyclone Dana during the five to six hours of the landfall process will be about 125 km per hour, with widespread impact in the region.

Cyclones lose their intensity once they move over land because of sharp reduction of moisture supply and increase in surface friction. This means that while landfalls are often the most devastating moments of cyclones, they also mark the beginning of its end.



Do You Know-

- A “Cyclonic Storm’ or a “Cyclone” is an intense vortex or a whirl in the atmosphere with very strong winds circulating around it in anti-clockwise direction in the Northern Hemisphere and in clockwise direction in the Southern Hemisphere. Tropical cyclones are also referred to as ‘Hurricanes’ over Atlantic Ocean, ‘Typhoons’ over Pacific Ocean, ‘Willy-Willies’ over Australian Seas and simply as ‘Cyclones’ over north Indian Ocean (NIO).

- Also known as mid-latitude cyclones, extratropical cyclones occur outside the tropics (that is beyond the areas that fall under the Tropic of Cancer and the Tropic of Capricorn). They have “cold air at their core, and derive their energy from the release of potential energy when cold and warm air masses interact”, according to the US National Oceanic and Atmospheric Administration (NOAA).

It added that such cyclones always have one or more fronts connected to them. A front is a weather system that is the boundary between two kinds of air masses, where one front is represented by warm air and the other by cold air. Such cyclones can occur over land and ocean.

- Tropical cyclones are those which develop in the regions between the Tropics of Capricorn and Cancer. They are the most devastating storms on Earth. Such cyclones develop when “thunderstorm activity starts building close to the centre of circulation, and the strongest winds and rain are no longer in a band far from the centre,” NOAA noted.

- The core of the storm turns warm, and the cyclone gets most of its energy from the “latent heat” released when water vapour that has evaporated from warm ocean waters condenses into liquid water, the agency added. Moreover, warm fronts or cold fronts aren’t associated with tropical cyclones.

- Tropical cyclones have different names depending on their location and strength. For instance, they are known as hurricanes in the Caribbean Sea, the Gulf of Mexico, the North Atlantic Ocean and the eastern and central North Pacific Ocean. In the western North Pacific, they are called typhoons.

- Flanked by the sea on three sides, India’s east and west coasts are affected by cyclones, annually. Climatologically, about five cyclones develop in the North Indian Ocean basin — comprising the Bay of Bengal and the Arabian Sea — each year. Of these, an average of four cyclones develop over the Bay of Bengal and one over the Arabian Sea. This basin is most prone to cyclone development during the pre-monsoon season (April – June) and post-monsoon season (October – December) months.

- Due to favourable ocean conditions, it has been observed that cyclones formed in May and November usually reach higher intensities than storms formed in the remaining months. West Bengal, Odisha, Andhra Pradesh, Tamil Nadu, Gujarat and Maharashtra are the most to be affected by cyclones.

- Even though cyclone development in the Arabian Sea may be fewer than in the Bay of Bengal, the storms here touch higher intensities and carry the potential to cause wide-scale damage.

- Tropical cyclones are fueled by ocean heat. In addition to other factors, warm oceans can contribute to the cyclone’s rapid intensification while at sea. Ocean water temperature measuring 26 degrees Celsius or above, prevailing at depths between 50 – 100 metres, makes it conducive for cyclogenesis.



- Another important factor that influences the cyclone genesis, intensification and propagation, is the value of Tropical Cyclone Heat Potential. It is the primary energy supplier to the cyclone through the upward latent heat fluxes. Cyclone intensification is a highly complex process influenced by a combination of different favourable atmospheric conditions such as the boundary layers, barotropic instability, wind shear, convection, Rossby wave, upper ocean circulation and air-sea interaction.

WHY INDIA IS BUILDING A CLOUD CHAMBER AS PART OF MISSION MAUSAM

Mission Mausam, launched by the government last month, aims to not just improve weather forecasting in the country but also 'manage' certain weather events, and on demand, enhance or suppress rainfall, hail, fog and, later, lightning strikes.

For effective weather modification, one of the most important areas is cloud physics, in which India will have to strengthen research. Towards this end, India is establishing a first-of-its-kind cloud chamber at the Indian Institute of Tropical Meteorology (IITM), Pune.

What is a cloud chamber?

A cloud chamber resembles a closed cylindrical or tubular drum, inside which water vapour, aerosols, etc. are injected. Under the desired humidity and temperature inside this chamber, a cloud can develop.

The Pune facility will allow scientists to study the seed particles that form cloud droplets or ice particles in a sustained manner. Many countries have basic cloud chambers, which have limited functionalities and scope to perform specific studies.

With Mission Mausam, however, India is building a cloud chamber with convection properties, as required to study Indian monsoon clouds. Globally, there are only a handful of convective cloud chambers.

Why is India building a convective cloud chamber?

Cloud physics basically involves the study of cloud behaviour during normal and extreme conditions; intra-particle interactions inside a cloud; the formation of rain droplets and ice particles; the influence of moisture added into the atmosphere due to cyclones or low pressure systems; and interactions between different cloud layers, among others.

The objective of establishing a convective cloud chamber is to gain a better understanding of cloud physics under conditions commonly affecting Indian weather systems. Thereafter, this knowledge can be used for strategic planning of weather modification.

With the establishment of a convective cloud chamber, scientists will have the flexibility to tailor physical and atmospheric parameters to suit environmental requirements that influence the Indian weather and climate.

How has India's experience with cloud seeding been?

One such dedicated experiment was the Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX) programme, which was conducted in four phases lasting more than a decade.



In the last phase, experiments were performed over a limited geographical area along the rain-shadow regions of Maharashtra's Solapur district from 2016-2018. Analysis of the experiments reaffirmed that under suitable conditions, cloud seeding was an effective strategy for enhancing rainfall over a region. Rainfall could be enhanced by up to 46 per cent (± 13 percent at some locations and on average), and about 18 per cent (± 2.6 percent) in a 100 square kilometre area in the downwind of seeding location over this rain shadow region.

However, it has been widely recognised that cloud seeding is not a silver bullet to address rainfall problems.

WEATHER FORECASTS AT PANCHAYAT LEVEL: WHAT WILL BE KNOWN, AND HOW IT WILL HELP

Five-day weather forecasts, updated every hour, are now available at the level of gram panchayats — the first major step towards localised forecasting across the country.

The initiative was formally launched by Panchayati Raj Minister Rajiv Ranjan Singh and MoS (Independent Charge), Ministry of Science & Technology and Ministry of Earth Sciences, Dr Jitendra Singh, on Thursday (October 24) evening.

What is the initiative?

The initiative, Gram Panchayat-Level Weather Forecasting, is a joint program of the Panchayati Raj Ministry, India Meteorological Department (IMD), and the Ministry of Earth Sciences.

According to the Panchayati Raj Ministry, the initiative is aimed at “empowering rural communities and enhancing disaster preparedness at the grassroots, and will benefit farmers and villagers across the country”. It will “strengthen grassroots governance and promote sustainable agricultural practices, making rural populations more climate-resilient and better equipped to tackle environmental challenges”, the Ministry said.

What will be forecast, and where will the forecasts be available?

Hourly forecasts will be available on the e-GramSwaraj and Gram Manchitra portals, and the Meri Panchayat app. e-GramSwaraj is already operational.

Users can see data on the current temperature, wind speed, cloud cover (in percentage), rainfall, and relative humidity at the level of gram panchayats; five-day forecasts of minimum and maximum temperatures, rainfall, cloud cover, wind direction, and wind speed, and an overall weather forecast.

How will the public benefit from the forecasts?

In the most direct way, this information will help farmers to better plan activities including sowing, irrigation, harvesting, etc.

In a statement, the Panchayati Raj Ministry underlined the importance of microforecasts in the context of intensifying climate change.

“As weather patterns become increasingly unpredictable, the introduction of weather forecasting at the Gram Panchayat level will serve as a crucial tool in safeguarding agricultural livelihoods and enhancing rural preparedness against natural disasters,” the Ministry said.



“Gram Panchayats will receive daily updates on temperature, rainfall, wind speed, and cloud cover, empowering them to make critical decisions in agriculture, such as planning sowing, irrigation, and harvesting activities,” it said.

Why does localised forecasting matter?

The significant advances made in forecasting weather notwithstanding, the science of forecasting has inherent uncertainties.

The more precise a forecast — in terms of the spatial spread or time-window for the event — the greater the uncertainty. Also, the earlier the forecast, the less precise it is likely to be.

It is usually easier to predict large systems that are spread over large geographical areas — such as the Indian monsoon, or a cyclone that develops over the Bay of Bengal, or a heat wave covering several states. But sudden, localised events — like a cloudburst — are more difficult to predict.

Localised weather forecasts can help even small communities of farmers plan their economic activities with greater confidence. There are 2.55 lakh village panchayats across the country, with resident populations of a few thousands on average.

The IMD has developed the system of localised weather forecasting based on gram panchayat boundaries data provided by the Panchayati Raj Ministry.

How accurate are India’s localised weather forecasting capabilities?

As of now, weather forecasting is available at the district and block levels.

Over the years, IMD has worked on focusing its forecasts more and more narrowly. It currently has the ability to forecast weather events over a 12 km x 12 km area, and has been trying out experimental forecasts for 3 km x 3 km grids, with the eventual objective of making hyper-local forecasts for 1 km x 1 km areas.

Localised forecasts are critical to deal with climate change-induced unpredictability in weather systems.

Officials said the Panchayati Raj Ministry is organising a training workshop on “Weather Forecasts at the Gram Panchayat Level”, which will be attended by more than 200 participants, including elected representatives of panchayati raj institutions and state panchayati raj officials.

The training session will equip panchayat representatives and functionaries with the knowledge and skills to effectively utilise weather forecasting tools and resources at the grassroots level, and thus empower them to make informed decisions and enhance climate resilience in their communities, the officials said.

\$1 TRILLION OVER 30 YEARS: WHY PIVOTING AWAY FROM COAL WILL BE COSTLY FOR INDIA

For a just transition away from coal, India will require over \$1 trillion or Rs 84 lakh crore over the next 30 years, according to a study by environment and climate change research think-tank iForest (International Forum for Environment, Sustainability and Technology).



The first-of-its-kind study, published last week, attempted to estimate the cost of phasing down coal mines and coal plants, along with the costs of ensuring socio-economic stability in coal-dependent regions.

Coal will be central to India's energy mix for at least another decade, and moving away from it poses a massive challenge.

What will a 'just' energy transition look like?

The term "just" here refers to an equitable and inclusive shift towards a low-carbon economy, which will keep in mind the interests of fossil-fuel dependent workers and societies.

India is currently the second-largest producer of coal globally, with a vast number of people employed in the industry. According to a PIB press release from March this year, public sector coal-producing entities alone employ a workforce of 3,69,053 individuals. Many more individuals are employed in the private sector, thermal power plants that run on coal, transportation, logistics, etc.

As India grows its renewable energy capacity to achieve net zero emissions — amount of greenhouse gas emitted which are offset in the atmosphere and/or with technology — by 2070, it will be important to not leave behind those who depend on coal for their livelihoods. But such a transition will not be cheap.

What are the costs associated with a just transition?

Based on assessments of four heavily coal-dependent districts in India, and review of just transition economic plans in South Africa, Germany and Poland, the study arrived at eight broad cost components.

These include the cost of mine closures and repurposing, retirement of coal plants and repurposing of the sites for clean energy, labour skilling for green jobs, economic diversification in the form of new businesses, community support, investments for green energy, revenue substitution for covering loss to states, and planning costs.

Roughly 48% of the \$1 trillion that the study estimates will be required to meet these costs over the next 30 years will go towards green investments for building energy infrastructure, which will have to replace coal mines and coal-fired plants.

Where will the funds for a just transition come from?

A combination of public funding, through grants and subsidies, and private investments in green energy plants and infrastructure will be required to fund the costs. Most of the public funding, the study estimated, would be for "non-energy" costs such as supporting community resilience during the transition, skilling of coal workers for new green jobs, and providing economic support for new businesses that will replace old coal-based industries.

India has nearly \$4 billion in district mineral foundations funds, with monies collected from miners. This fund can be used as a resource, along with Corporate Social Responsibility (CSR) funds, for supporting new businesses in coal districts, and to support communities. Private investments, the study highlighted, will cover much of the 'energy costs' of transition, and fund most new clean energy projects.



How have other countries approached a just transition?

Both developed and developing countries have adopted legislation or opted for investment plans with international funding to phase-down coal use.

South Africa's Just Energy Transition Investment Plans (JET-IP), for instance, will see it getting financial support for phasing down coal from the UK, France, Germany, the US, the European Union, the Netherlands, and Denmark. A sum of \$98 billion will be required over the next two decades to support South Africa's 20-year energy transition, with \$8.5 billion to be supplied in the 2023-2027 period. A bulk of this will be for green energy investments. The finance will be provided in the form of concessional loans, grants, and public-private partnerships.

Germany, meanwhile, enacted laws to phase out coal power by 2038, and sanctioned an outlay of over \$55 billion to close coal mines and coal-powered plants, while supporting development of coal dependent regions.

What did the study of four coal-dependent districts in India find?

The districts identified were Korba in Chhattisgarh, Bokaro and Ramgarh in Jharkhand, and Angul in Odisha. These were studied to assess their economic dependence on coal and coal-based industries, and to estimate the costs of a just transition.

For instance, it was found that the coal-based economy of Bokaro, with its multiple coal plants and one integrated steel plant, contributes to about 54% of the district's domestic product. Around 1,39,000 workers were employed in coal mining, at coal plants, and in allied sectors, such as steel and cement.

A full phase-down of coal in the district, the study estimated, will begin after 2040. It will require an outlay of Rs 1.01 lakh crore over the next three decades to rehabilitate workers, repurpose mines, and start green energy production at locations where coal plants stand today.

FEEDING PIGEONS IN DELHI MAY SOON BE A THING OF THE PAST. HERE'S WHY

The constant hum of traffic, shoppers thronging sidewalks, hawkers selling jewellery, clothes and food — Delhi is a symphony of these familiar sights and sounds. Alongside these is another ubiquitous scene — flocks of pigeons fluttering around a pavement, pecking at grain thrown by bird feeders and passersby. The 2009 Bollywood hit 'Delhi 6' and its song 'Masakali' further intertwined the city's identity with its pigeons.

Such kabutar feeding points — on pavements, roundabouts and road intersections — have long been a quintessential part of the city's landscape. This, however, could soon be a thing of the past as the Municipal Corporation of Delhi (MCD) is considering banning feeding spots due to the health risks posed by pigeon overpopulation.

The proposal is still in its early stages, but officials said the plan is to survey and then shut down pigeon-feeding spots across Delhi. An advisory is anticipated soon, they say.

Popular pigeon-feeding spots can be found across Delhi — from the walled city areas of Chandni Chowk, Mori Gate, and Kashmere Gate, Paharganj, Jama Masjid, and India Gate.



Concentrated areas of pigeon droppings can become breeding grounds for pathogens like Salmonella, E. Coli, Influenza, Hypersensitivity Pneumonitis, and can exacerbate respiratory conditions like asthma.

Warning of potential health risks, Dr Vikas Maurya, a pulmonologist at Fortis Hospital said, “Pigeon droppings can cause numerous diseases, but certain fungal infections are particularly concerning, especially in Delhi, where the pigeon population has surged due to unnecessary feeding”.

Earlier this year, an 11-year-old boy from East Delhi developed a life-threatening allergic reaction after extended contact with the bird’s excrement. “Pigeon droppings contain allergens or antigens that, when inhaled, reach the lungs and can trigger severe allergic reactions, including bronchitis and hypersensitivity pneumonitis — a serious condition that can cause lung fibrosis if it becomes chronic”, he said. With an overpopulation of pigeons, these allergens and infective organisms often become airborne.

“In fact, hypersensitivity pneumonitis is the leading cause of interstitial lung diseases and scarring in India,” he added, further highlighting that excessive population of a species can lead to suppression of other species, disrupting ecological balance.

Pigeons come close to our windows and leave droppings on cars. “When they are this near, invisible allergenic particles, which are especially harmful to those with sensitive lungs, are inhaled. Symptoms in affected patients are severe — persistent cough, breathlessness, and critically low oxygen levels that can fall below 90 in cases of high exposure. This can lead to drug and oxygen dependency, ultimately shortening life expectancy,” said Dr Maurya who has put up a small poster that reads ‘Don’t Feed the Pigeons’ in his OPD.

According to an MCD official, the issue is not that these pigeons exist; there is no risk if one or two fly over your head. “However, when pigeons are gathered in one area and their droppings accumulate there, it puts people who come to feed the birds — many of whom are elderly and frequent visitors — as well as those who are selling dana (feed) nearby and passersby at risk. Avoiding that danger is the goal,” said the official from MCD’s public health department.

For several people, feeding pigeons is a religious act; others believe that it brings good luck and fortune.

According to historian Sohail Hashmi, feeding pigeons in public spaces is a more recent phenomenon. “I don’t remember pigeons being fed at roundabouts during my childhood... Historically, pigeons were popular pets among the rich and elite because they served as letter-carriers. Many people took to collecting different breeds, and pigeon selling became a profession. The affluent would buy breeds that could perform stunts, like somersaulting, and feed them on their terraces. Over time, religious beliefs led people to feed pigeons at roundabouts, which gradually turned into dedicated feeding points,” he says.

“...Many European countries had started a whole campaign against these pigeons where they are generally referred to as the rats of the sky,” Hashmi added.



CONSENT PRESUMED: EXPERTS CLEAR NEW PLAN FOR CORNEA DONATION IN HOSPITAL DEATHS

The Union Health Ministry is considering an “opt-out” method of cornea donation, whereby anyone who dies at a hospital will be presumed to be a cornea donor unless they register their dissent, according to the minutes of a meeting of experts with the Union Director General of Health Services.

— At present, India follows an opt-in system for harvesting any organ — including tissue like cornea — from deceased donors, meaning the patient and their family members have to provide their consent to the donation.

— “Experts were of the opinion that the opt-out method — where everyone who dies in a hospital is presumed to be a donor — is likely to increase the number of corneal donation. This suggestion has been accepted in-principle” said an official.

— The official added that the proposal is being considered by legal teams as this would require changing the current law governing organ and tissue transplantation in the country.

— The move is aimed towards increasing the availability of corneas or the dome-shaped front layer of the eye. Patients with damaged cornea — bulging outward, thinning, tearing, swelling, ulcers, and complications from previous surgeries — require a cornea transplant to relieve symptoms and restore vision. An estimated 2 lakh corneas are needed each year in India with only 50% of the demand being met.

— There are several reasons why the government is considering a separate policy for cornea donation as compared to the opt-in method followed for donation of other organs.

1. Cornea is a tissue that does not need blood supply unlike other organs and can be harvested up to six hours after death.

2. Cornea can be easily harvested by technicians even at home, meaning most hospitals will be able to do it.

3. Harvesting cornea does not change any facial features of the deceased.

4. Corneas are not necessary for collecting evidence in a medico-legal case.

— The official added that the National Organ and Tissue Transplant Organisation (NOTTO) is working to set up a national registry and coordination network on the lines of what already exists for other organs.

For Your Information:

— Organ donation in India is regulated by the Transplantation of Human Organs and Tissues Act of 1994, allowing everyone to donate organs, regardless of age, caste, religion, or community, though preferably people over 18 years of age are considered.

— However, the eligibility for donation is primarily determined by the donor’s physical condition, not age, encompassing contributions from both living and deceased donors, with specific guidelines for each type of donation.



CELEBRATION AND VIGIL

The furore that accompanies an outbreak of a disease is seldom matched by the triumph over the cause of the disease, with some exceptions. The recent achievement India has struck with kala-azar, bringing it to the brink of elimination as a public health issue, or with eliminating bacterial eye infection trachoma, sits squat in that quarter. India will seek WHO certification for eliminating kala-azar, after it brought down the number of cases to under one in 10,000, for two consecutive years now. It is considered the second deadliest parasitic disease after malaria in India. As per figures by the Union Health Ministry, India registered 595 cases and four deaths in 2023, and 339 cases and one death so far this year. The country must retain this achievement for another year to be eligible for WHO certification. Epidemiology makes the differentiation between elimination and eradication of a disease; with elimination, a nation needs to keep the number of cases under a specified limit, which means it ceases to be a public health problem, whereas with eradication, no further cases can occur. While disease eradication is very challenging, and has been achieved only with smallpox, elimination is no cakewalk. Particularly for diseases that do not have a vaccine. Even modern armamentaria come up short while trying for a vaccine for either kala-azar, or trachoma, making the public health achievement all the more special. Kala-azar is spread by the sandfly which passes on the protozoan parasite, *Leishmania donovani*, and is present in only one of its forms, visceral leishmaniasis. Trachoma, caused by the bacteria, *Chlamydia trachomatis*, is the leading infectious cause of blindness in the world. India contributed about 11.5% of the cases of kala-azar globally and in the 1970s, trachoma was responsible for 5% of all blindness in the country.

Kala-azar and trachoma share other commonalities — they are classified under the category ‘neglected tropical disease’, and are caused by conditions of poverty and inadequate sanitation; it was a sustained government-run public health campaign that addressed the disease spread, and its social implications — including income, access to nutrition and health services — that finally managed to crack elimination. However, sustained surveillance, post declaration for trachoma and as India moves towards elimination for kala-azar, is key. While celebration post such a well-fought public health campaign is necessary, complacency will erode all gains, considering the disease remains in the community, below the WHO-recommended radar. Efforts to find better cures and vaccines must not be suspended because of present gains; indeed, the vigil must be eternal, or, until the disease is eradicated.

REDESIGNED PROGRAMMES CAN IMPROVE TB TREATMENT OUTCOMES

TB remains a major public health problem in India with an estimated three million new patients with TB and 3,00,000 TB deaths every year. The recent announcement by the Ministry of Health and Family Welfare of doubling the direct benefit transfer from ₹500 to ₹1,000 per month in the Nikshay Poshan Yojana (NPY) for the entire duration of treatment, and initiating the disbursement of ₹3,000 at the time of diagnosis is a welcome step. There is also a proposal to provide energy-dense nutritional supplements to underweight patients for two months and to extend nutritional and social support to the families. India is probably the only high TB burden country to roll out such a large-scale scheme that will address the nutritional needs and the economic distress of the patients.

TB remains a social disease in its causation and its outcomes. Social factors associated with poverty, such as overcrowding and under nutrition increase the risk of TB. Most other risk factors, too, like diabetes, smoking, and alcohol, are either more prevalent or are poorly managed in those



living in poverty. Undernutrition contributes to more than a third to nearly half of new TB cases in India. Poor access to primary care, poor quality of care, and poor adherence generate a vicious cycle leading to severe disease and risk of death in the poor. Their predicament is grim as they face income loss, direct and indirect costs due to the disease and its treatment, food insecurity, and often inability to return to usual work because of the sequelae of the disease.

The Nikshay Poshan Yojana is crucial because severe undernutrition is common in people with TB in India — the average weight of adult men is 43 kg and 38 kg for adult women at diagnosis. Without nutritional support, such patients have worse outcomes during and after treatment. These patients often do not have early weight gain, and this poses a high risk of death; even after effective treatment, undernutrition may persist, increasing the risk of recurrent TB. Studies also show a high prevalence of food insecurity in TB-affected households. Nutritional support thus has a sound clinical, public health, and ethical basis. It aligns with India's 2017 adaptation of the WHO guidelines on nutrition care and support for patients with TB. There is compelling evidence that nutritional support with food baskets can improve treatment adherence and weight gain, allow a successful return to work, and reduce mortality risk. In the RATIONS trial, in patients provided with a 10 kg per month food basket, early weight gain was associated with over 50% reduced risk of death. Moreover, a low-cost intervention of six months with a food basket of cereals and pulses with micronutrient pills for family members reduced new cases by up to 50%, akin to a vaccine.

WHY PRECISION MEDICINE IN INDIA CAN'T ADVANCE WITHOUT BIOBANK LAWS

Precision medicine is bringing in a new era of personalised healthcare. The field began to take concrete shape when scientists were wrapping up the Human Genome Project. Since then, genomics has played a major role in the diagnosis and treatment of various cancers, chronic diseases, and immunological, cardiovascular, and liver diseases.

Other emerging technologies, such as gene editing and mRNA therapeutics, also contribute to precision medicine. In a recent success story, researchers were able to restore vision in people who had lost it due to a genetic mutation using gene therapy. In a more recent and more notable example, researchers in the U.K. reversed an individual's diabetes by transplanting reengineered stem cells. During the COVID-19 pandemic, researchers were able to use the mRNA platform to develop new vaccines in record time, winning the technology a Nobel Prize last year.

Organ-on-chips is another area that promises precision medical solutions. These small microfluidic devices containing human cells can replicate the microenvironment of a tumour or an organ in a laboratory setting. They are expected to allow researchers to test drugs in settings more similar to the drugs' eventual users.

Precision medicine in India

The Indian precision medicine market is estimated to be growing at a CAGR of 16% and is expected to be worth more than \$5 billion by 2030, according to industry estimates.

Currently, it contributes 36% of the national bioeconomy, alongside cancer immunotherapy, gene editing, biologics, etc. The development of precision therapeutics is also part of the new 'BioE3' policy.

In October 2023, the Central Drugs Standard Control Organization approved NexCAR19, India's domestically developed CAR-T cell therapy, and earlier this year the government opened a dedicated centre for it. Recently, the Apollo Cancer Centre and a collaboration between Siemens

3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR



Healthineers and the Indian Institute of Science, Bengaluru, opened new facilities to deploy artificial intelligence for precision medicine.

Biobanks in precision medicine

A biobank is a repository of biological samples, such as blood, DNA, cells, tissues, and/or organs, alongside their genetic data. These samples are collected from consenting individuals and intended for use in research. For precision medicine to succeed, biobanks need to be large and diverse. Otherwise, only a small section of society will benefit from the findings of precision medicine.

Recently, researchers identified people with an undiagnosed rare genetic disorder using data from a biobank and comparing it to people who were already diagnosed with it. Their findings were published in Nature Communications on August 29.

In another study published in Cell on October 3, health researchers created the largest biobank of sarcoma patient-derived organoids to date. Organoids are miniaturised, synthetic versions of organs that can replicate tumours; the researchers used it to understand the sarcoma and identify potential therapies using high-throughput drug screening.

Biobanks in India

There are 19 registered biobanks in India that host many biological specimens, including cancer cell lines and tissues. Earlier this year, the 'Genome India' programme finished sequencing 10,000 genomes from 99 ethnic groups to identify treatments for rare genetic diseases, among others.

The pan-India 'Phenome India' project has collected 10,000 samples to create better prediction models for cardio-metabolic diseases. The Paediatric Rare Genetic Disorders (PRaGeD) mission could help identify new genes or variants to develop targeted therapies for genetic diseases that affect children.

However, biobank regulations in India are a significant hurdle to realising the full potential of precision medicine.

India's biobanking regulations

The U.K., the U.S., Japan, China, and many European countries have laws or comprehensive regulations that address several biobanking issues, including informed consent, withdrawal rights, privacy, and data protection. At present, India's regulation of biobanks is inconsistent, with gaps that could undermine public trust and limit the potential of precision medicine. In particular, there is no law to protect the rights of individuals.

The Indian Council for Medical Research handbook on 'National Ethical Guidelines For Biomedical And Health Research Involving Human Participants' and the Department of Biotechnology's (DBT) practices for data storage and analysis have many gaps. For instance, participants are expected to consent to providing samples without knowing how their data will be used, who will have access to it, for how long they will be stored, and when they will be used. Genetic information can provide details about a person, including their family, that also could result in discrimination.

Next, in the absence of a single authority to regulate biobanks and no penalty for misconduct, the risk of inconsistencies arising from sample mishandling and ethical violations like data or sample sharing for non-consenting purposes is nontrivial.



Without proper regulations, many pharmaceutical companies, including those abroad, will have access to samples from India. Research projects often require researchers and pharmaceutical companies to collaborate with biobanks during drug discovery and development.

In the absence of an overarching law, Indians could be deprived of the ownership of biological samples and/or the data thereof and the profits from the resulting research findings.

A leadership opportunity

Taken together, strong data and privacy protections and regulatory oversight by an expert committee will encourage more people to share samples and participate without worry. It will also allow research to happen on the right foundations instead of the findings becoming the fruits of a poisoned tree.

India is a part of international groups like the Quad and BRICS, and an important plank of its soft diplomatic efforts has been pharmaceuticals. It is a major supplier of generic drugs and is a hub of vaccine manufacturing, and it has plans to expand leadership to include next-generation therapeutics. To do this, it will have to align its biobanking laws with global standards to encourage public participation and trust.

DGCI FINDS 49 DRUG SAMPLES NOT OF STANDARD QUALITY

India's drugs regulator on Friday directed manufacturers of 49 medicines to recall their products after samples were found to be "not of standard quality". Also, action has been initiated to book the makers of four spurious drugs.

Drugs Controller General of India (DCGI) Rajeev Singh Raghuvanshi said, "The four samples of drugs lifted from the market that were found to be spurious were those that were manufactured by unauthorised companies."

Some of the samples that were "not of standard quality" were painkillers, antifungals and diabetes drugs.

Dr. Raghuvanshi said that as soon as reports of medicines not being up to the mark come in, the process of recall is initiated. "This doesn't mean that all the drugs of the brand need to be recalled," he added.

Some of the samples that were found not to be of standard quality were those of metronidazole tablets I.P. 400 mg manufactured by Hindustan Antibiotics Ltd. and used for treating infections; oxytocin injection I.P. 5 IU/1 ml manufactured by Pushkar Pharma, a synthetic hormone that helps speed up delivery or controls bleeding after childbirth; metformin hydrochloride 500 mg, manufactured by Swiss Biotech Parenterals that helps to control the amount of glucose (sugar) in blood; diclofenac sodium tablets manufactured by Hindustan Antibiotics Ltd. and used as a painkiller; nimesulide and paracetamol tablets by Innova Captab Limited, pantoprazole gastro-resistant tablets by Alkem Health, cefpodoxime tablets by Aristo Pharmaceuticals Pvt. Ltd., amoxicillin and potassium clavulanate tablets by Alkem Health and ciprofloxacin tablets by Cadila Pharmaceuticals Limited.



WHY DID THE CENTRAL GOVT. SANCTION A 50% HIKE IN PRICES OF COMMONLY USED DRUGS?

The story so far:

On October 14, the National Pharmaceutical Pricing Authority of India (NPPA) increased the ceiling prices of eight drugs, comprising medication for common diseases including asthma, tuberculosis, bipolar disorder, and glaucoma, among others. Prices have been increased by 50%.

The Central Government passed the order, citing “extraordinary circumstances” and “public interest.” The NPPA comes under the department of pharmaceuticals under the Union Ministry of Chemicals and Fertilizers, and a government release stated that it increased prices in greater public interest.

“The NPPA’s mandate is to ensure availability of essential drugs at affordable prices and ensure affordability without jeopardising access.

Essential drugs must remain available, and their price regulation should not lead to a situation where these drugs become unavailable,” it said.

The NPPA added that it has been receiving applications from manufacturers for upward revision of prices, citing increased cost of active pharmaceutical ingredients; increase in the cost of production; and a change in the exchange rate, making production and marketing of the drugs unviable. Companies also applied for discontinuation of some formulations on account of their unviability.

The mechanism:

The NPPA, constituted in 1997, regulates ceiling prices of drugs and has the power to fix costs under what is known as a ‘Drug Price Control Order’ (DPCO) issued by the government under the Essential Commodities Act.

The Central Government said the decision to hike the cost of drugs comes after deliberations in a meeting on October 8.

It invoked extraordinary powers under Para 19 of the DPCO, 2013. The NPPA approved an increase in ceiling prices of eleven scheduled formulations of eight drugs by 50% of their current ceiling prices, in the larger public interest.

“Most of these drugs are low-cost and generally used as first line treatment crucial to the public health programmes of the country,” it said.

Formulations for which ceiling prices have been revised include: atropine injection 06.mg/ml; streptomycin powder for injection 750mg and 1000mg; salbutamol tablet 2mg and 4mg and respirator solution 5mg/ml; pilocarpine 2% drops; cefadroxil tablet 500mg, desferrioxamine 500mg for injection; and lithium tablets 300mg.

Such extraordinary powers have been invoked by the NPPA in 2019 and in 2021. Prices of 21 and 9 formulations respectively were increased by 50% .

Section 19 of the DPCO allows the government to revise the ceiling cost. This can be done in extraordinary circumstances.



Section 19 states: "Notwithstanding anything contained in this order, the Government may, in case of extraordinary circumstances, if it considers it necessary to do so in public interest, fix the ceiling price or retail price of any drug for such period, as it may deem fit and where the ceiling price or retail price of the drug is already fixed and notified, the government may allow an increase or decrease in the ceiling price or the retail price, as the case may be, irrespective of annual wholesale price index for that year."

Annual revision:

Every financial year starting April 1, the NPPA increases ceiling prices of drugs based on Wholesale Price Index (WPI) of the preceding year.

Pricing of drugs in India is strictly controlled by the Central government. Action is taken against companies found selling at higher prices. During 2023-24, ₹72.73 crore was recovered from defaulting companies.

Additionally, according to the Drugs and Cosmetics Act, 1945 and Rules, manufacturers of drugs are required to comply with conditions of the manufacturing licence and the requirements of Good Manufacturing Practices (GMP).

According to Drugs Rules, 1945, manufacturing, testing, labelling, packaging, storage, and distribution are required to be carried out in compliance with the conditions of license including the GMP prescribed under Schedule M of the Drugs Rules, 1945.

ISRO-DBT SIGN AGREEMENT TO CONDUCT BIOTECHNOLOGY EXPERIMENTS IN SPACE STATION

The Indian Space Research Organisation (ISRO) and the Department of Biotechnology (DBT) have inked an agreement to design and conduct experiments, which will then be integrated into the forthcoming Bharatiya Antariksh Station (BAS), India's proposed indigenous space station.

The BAS is expected to take shape from 2028-2035.

Health impact

Some of the experiments being mooted include how weightlessness can influence muscle loss on those in space, what kind of algae may be suitable as nutrients or to preserve food for longer, how some algae may be processed to make jet fuel, and the impact of radiation on the health of those aboard space stations.

Before the BAS, the major mission on ISRO's plate is the Gaganyaan mission, which will be India's first crewed mission to space that is expected to launch in 2025-2026.

Prior to that there will be three uncrewed test missions. Some of the biology missions could be included in these test missions.

Bio-manufacturing

The ISRO-DBT collaboration stems from another initiative this year called the BIOE3 (Biotechnology for Economy, Environment and Employment) policy by the Department of Biotechnology (DBT) that aims to stimulate 'bio-manufacturing' in India. The bio-economy, officials in the DBT said, would be worth \$300 billion by 2030.



“The space bio-manufacturing sector is part of this. This agreement will spur innovation and developments in human health research, novel pharmaceuticals, biotherapeutics, regenerative medicine, bio-based technologies for waste management as well as support multiple start-ups,” said Rajesh Gokhale, Secretary, DBT.

INDIA SHOULD BUILD ITS OWN OBSERVATION CAPABILITY TO PREVENT COLLISION WITH SATELLITES IN CROWDED ORBIT, SAYS ISRO CHIEF

ISRO will use its Space Docking Experiment or Spadex — planned next month — to deorbit a satellite, said the space agency’s Chairperson S Somanath Friday.

The mission will see the satellite dock and connect a propulsive device to help deorbit another in keeping with the agency’s commitment to zero space debris.

Speaking at an event in Delhi, Somanath said that another mission also planned for this year will attempt tethered capturing — where a robotic arm on the upper stage of a launch vehicle will capture a moving satellite and collect it. He said ISRO is also working on developing a service module that will be able to refuel a satellite allowing it to be fired or brought down from orbit.

With an increasing number of satellites and debris in low earth orbit, he said India needed to create its own observation capability for situational awareness, which is tracking the size, velocity, and movement of objects in orbit to prevent collision with satellites or upper stages of launch vehicles.

“Unless you have strong observational capability, there’s no point in working in space situational awareness... while we have perfected our mathematical prediction capability, we need to improve our observational capability,” he said.

Without strong observational capability, he said, a country will depend on others for orbital data, believe it’s correct, and think that their satellites are safe, which might not always be true.

Space situational awareness might require several technologies including radars, optical telescopes, radio telescopes, geo-locating sensors, lasers, space weather forecasting sensors, and even sensors on-board other satellites.

There are about 40,500 debris items above the size of 10 cm, 1.1 lakh objects of sizes ranging from 1m to 10 cm, and 130 million objects of sizes 1mm to 1 cm that are currently tracked in space.

Objects between 1cm and 10 cm size pose a bigger challenge, Somanath said, as debris shielding cannot handle them for being big enough, but at the same time, those are too small to be tracked easily. Batting for automated collision avoidance manoeuvre, Somanath said that even with just over 50 satellites, India needed to perform 100 collision avoidance manoeuvres over the last one year.

TEA DRINKING ACROSS INDIA

Tea plants came to India from China and Southeastern Asia about three centuries ago, brought here by India by the British colonialists. While experimenting to introduce tea in India, they noticed that tea plants with thicker leaves also grew in Assam, and these, when planted in India, responded very well. (We must add that tea is also grown in some areas in Karnataka, Kerala, and Tamil Nadu, though not in amounts comparable to that in the Northeast). Recently, Uttaranchal



and U.P. have also started growing tea. Today, India has the largest total consumption of tea (540,000 metric tonnes of tea, or 620 grams per capita). And India is the world's fourth largest exporter of tea and generates about \$800 million.

According to the National Sample Survey Organization, India consumes 15 times more tea than coffee. In North India, tea has become the main daily drink there, both in urban and rural areas. A cup of it costs just ₹8 to ₹10, affordable for all. In contrast, even in South India (the home for coffee), a cup of tea is Rs.10 while coffee costs ₹15 to ₹20.

Chemical components

Several publications in the journals Food Chemistry and Food Science and Human Wellness have described the chemical molecules in tea leaves. They point out that these leaves are rich in aroma, which gives tea its fragrance. A 2015 paper in the journal Food Science and Human Wellness offers some examples of such aroma-filled compounds. In our daily diet, we have them in carrots, pumpkins, and sweet potatoes. Among the non-volatile examples, we have foodstuffs such as salt, sugar, calcium, and fruits, which are rich in vitamins and minerals.

Tea leaves are also rich in vitamins, and protective compounds that help in improving blood pressure, and cardiovascular health, reducing diabetes risk, improving gut health, alleviating stress and anxiety, improving attention and focus, and improving attention. In these, tea scores better than coffee, since tea has less caffeine, which is a nervous system stimulant. This is also why children are not advised to drink either of these.

The authors of the 2015 paper found that the aroma of tea leaves is due to the presence of carotenoids such as volatile compounds called carotenoids such as lycopene, lutein, and Jasmonate. On the other hand, the taste of food is due to non-volatile compounds such as sugar, salt, iron, and calcium.

In daily food cooked and made at home, these flavours come by using iron, salt, calcium, and sugar on one hand, and vegetables such as carrots, sweet potatoes, and fresh vegetables on the other. In India, the Central Food Technology and Research Institute (CSIR-CFTRI) at Mysuru (and its branches elsewhere), is involved in studying antioxidants, polyphenols, and other health-promoting molecules in Indian food.

As mentioned above, more Indians drink tea rather than coffee. What then are the benefits of drinking tea over coffee? Tea has less caffeine than coffee. Tea has more antioxidants than coffee beans, but some scientists claim that coffee is better against diabetes than tea. So, depending on your taste, you may choose!

JUST 150 OF THEM LEFT, GLIMMER OF HOPE FOR GREAT INDIAN BUSTARD AFTER FIRST-EVER ARTIFICIAL INSEMINATION BIRTH

The birth of a great Indian bustard through artificial insemination at the Sudasari Great Indian Bustard Breeding Centre in Rajasthan's Jaisalmer district is an "extremely important step" in the conservation of the critically endangered species, authorities said.

- It is the birth of a great Indian bustard through artificial insemination. "This is an extremely important step in the conservation of the GIB, which is an endangered species," said Pavan Kumar, Chief Wildlife Warden of Rajasthan. He said a similar initiative had been started in Abu Dhabi,



where a project by the International Fund for Houbara Conservation has been using artificial insemination to hatch the houbara bustard.

- Wildlife biologist Sumit Dookia, from the University School of Environment Management at Guru Gobind Singh Indraprastha University, said, “This is part of a captive breeding project that has been going on since 2019. While this is a positive step in the right direction, it will take at least 25 years to be able to develop enough birds (in this manner) to allow for natural increase of their population after they are released in the wild.”

Do You Know:

- According to the government, there are fewer than 150 GIB – birds that are found only in India. Most of these are found in Rajasthan.
- Increased human activity in their habitat, predators preying on their eggs, and deaths due to overhead power lines are seen as being among the causes of the bird’s population decline.
- In 2020, a study carried out by WII in the 4,200-sq-km of the great Indian bustard (GIB) habitat in and around Desert National Park in Rajasthan estimated that power lines had killed around 84,000 birds of multiple species every year. This included the endangered GIB, which are particularly vulnerable because of their narrow frontal vision and large size.
- In April 2021, the Supreme Court had ordered that all power lines in the GIB habitat be buried underground. However, earlier this year, the apex court said it would review its 2021 order after the central government found that it would be “practically impossible to implement” over long distances.
- As part of conservation efforts, the Centre, the Rajasthan government and WII have been collaborating on a captive breeding programme for GIB. The artificial insemination method was successfully implemented as a part of this project. The plan is to eventually release the captive bred birds into the wild.
- According to wildlife experts, while the birth of the GIB chick by artificial insemination is an important step in conservation efforts, it is too early to speculate on the extent of the impact this could have.

INDIA GOES TO KENYA, LOOKING TO SOURCE CHEETAHS BETTER SUITED FOR HOME CONDITIONS

With sourcing of cheetahs on agenda, a four-member delegation of the Union Environment Ministry and the National Tiger Conservation Authority (NTCA) is in Kenya to discuss finalisation of a memorandum of understanding (MoU) on wildlife conservation.

Under the ambitious Project Cheetah, which saw the intercontinental translocation of African cheetahs to Madhya Pradesh, the government’s aim is to introduce eight to 14 cheetahs each year, subject to availability.

- A draft of the MoU was first exchanged and discussed by officials of the two countries in May when a six-member Kenyan delegation visited Delhi as well as Kuno National Park and Gandhi Sagar Wildlife Sanctuary in Madhya Pradesh.



- A key component of the MoU is “promotion and exchange of relevant wildlife species”, indicating the discussions the countries have undertaken on potential import of cheetahs from Kenya and discussions that are likely to happen on the issue during the visit of the Indian delegation.
- India has been exploring the option of sourcing cheetahs from Kenya for Project Cheetah as it is believed that they would adapt better to India’s tropical climate, as part of the African country lies in the northern hemisphere.
- Cheetahs sourced from southern hemisphere countries — Namibia and South Africa — had developed winter coats during Indian monsoon, and the dampness led to fatal infections under their radio collars.

Do You Know:

- Cheetahs are among the oldest of the big cat species, with its ancestors going back about 8.5 million years. It is listed as “vulnerable” by the World Conservation Union (IUCN) Red List of Threatened Species. Two subspecies, the Asiatic cheetah and the Northwest African cheetah, are listed as “critically endangered”.
- Project Cheetah, which saw the introduction of the African sub-species of the wild cat in India, recently completed two years.
- The ambitious project has two overarching objectives. First, to establish a stable, breeding population of cheetahs in central India. Two, to use cheetahs as an umbrella species to restore open natural ecosystems such as scrubs, savannahs, grasslands, and degraded forests.
- Project Cheetah began with the intercontinental translocation of African cheetahs from Namibia and South Africa to the Kuno National Park in Madhya Pradesh. This translocation took place in two batches of eight and then 12 cheetahs.
- These cheetahs were initially kept in soft-release bomas, small enclosures inside the national park to get them adapted to the local environment. Although confined to an area of roughly 1 sq. km, the cheetahs hunted live prey inside these bomas. While some cheetahs were later released in the wild, they were later brought back into the enclosures. Mating within the translocated cohort of cheetahs led to the birth of 17 cubs.
- The ‘Action Plan for Reintroduction of Cheetah in India’ proposes bringing in 12-14 cheetahs each year from South Africa, Namibia, and other African countries for five years to build a founder stock.
- One of the project’s most significant obstacles is a lack of prey. According to the project’s most recent yearly report, the density of chital, the principal prey for cheetahs (and leopards), has dropped from 23.43 animals per square kilometre in 2021 to 17.5 animals per square kilometre in 2024.

AS 7 CUBS DEAL WITH TICK INFECTION, KUNO OFFICIAL WAIT & WATCH

Wildlife officials at Kuno National Park are keeping a close watch on seven cheetah cubs who have a tick infestation, especially since they “have no prior experience of anaesthetising them in the open forest” and apprehend that the mothers will abandon the cubs following medical intervention, The Indian Express has learnt.



— According to the park’s management, the cubs’ “young age, combined with their location in expansive soft-release bomas, makes the tranquilisation process risky and complicated”.

— Reuniting tranquilised cubs with their mothers is also a concern, as previous attempts have seen mothers reject their cubs after separation.

— Park officials also flagged “uncertainties in tracking the cubs after darting” given the tall grass and waterlogged terrain. The lack of radio collars on the cubs also complicates efforts to monitor their movement.

— The Kuno director Uttam Sharma, told The Indian Express, “The tick infestation is not dangerous yet. Last time three cheetahs died during the monsoon season, but in the case of the cubs, we don’t feel the need to medically intervene. Only when the need arises will we intervene.”

— The monsoon season has historically seen heightened risk of tick outbreaks. In 2023, ticks were a contributing factor in the deaths of three cheetahs. This year, in preparation for the rainy season, the veterinary team administered Bravecto, a potent anti-ectoparasitic medication, to all the cheetahs at Kuno. Depending on each cheetah’s condition, the “medicine was either given orally or delivered via darting,” officials said. This proactive treatment aimed to combat parasites that thrive in the warm, humid conditions of the monsoon.

HOW WILL A CLASSICAL STATUS HELP LANGUAGES?

The story so far:

The Union Cabinet approved classical status for five languages earlier this month — Marathi, Bengali, Assamese, Pali, and Prakrit — by tweaking the criteria for the declaration.

What makes a language classical?

When the new UPA-led Union government introduced the classical status for Indian languages in 2004, it defined them using three criteria: that its earliest texts or recorded history dated back over a thousand years; that it had a body of ancient literature considered a valuable heritage by generations of speakers; and that its literary tradition must be original and not borrowed from another speech community. Tamil was the first language declared to be classical. In 2005, these criteria were tweaked to push back the historical requirement to 1,500 to 2,000 years and to stipulate that “the classical language and literature being distinct from modern, there may also be a discontinuity between the classical language and its later forms or its offshoots”. Under these norms, five more languages were declared as classical over the next decade: Sanskrit, Telugu, Kannada, Malayalam, and Odia.

How did these languages attain this status?

“In 2012, the Pathare committee was set up to develop the proposal [for Marathi to be declared a classical language] with evidence from old documents. It was finally submitted to the [Union Culture Ministry’s] Linguistic Experts Committee [LEC] in November 2013,” says Sadanand More, chairman of the Maharashtra State Literature and Culture Board. In July 2014, then-Congress Chief Minister Prithviraj Chavan presented the proposal to the newly elected Modi-led government at the Centre, and State governments led by the BJP and Shiv Sena continued to pursue the matter for a decade. “Over a lakh people sent postcards to the President, MPs asked questions in Parliament, someone went to court...” says Dr. More. Noting that Marathi has at least 2,000 years



of consistent history, he claimed that Maharashtri Prakrit was an original language, unlike other forms of Prakrit which are derivative.

In July 2024, the LEC removed the requirement that any proposed language's "literary tradition must be original and not borrowed from another speech community", and added a requirement for "knowledge texts, especially prose texts in addition to poetry, epigraphical and inscriptional evidence". It also said a classical language "could be" distinct from its current form.

These new criteria paved the way for not just Marathi, but also Bengali and Assamese, which are also modern languages in current use. "We submitted a 392-page report to the Culture Ministry in March 2021 tracing the history of Assamese to prove its antiquity. Stone inscriptions go as far back as the third century AD. There are copper plates and manuscripts written on the bark of the Sanchi tree, as well as extensive folklore and folksongs in Assamese," Kuladhar Saikia, former president of the Assam Sahitya Sabha said, noting that the popular drive to protect Assamese comes from a colonial history of attempted language erasure. West Bengal Chief Minister Mamata Banerjee had, in January 2024, sent a four-volume report to the Centre, seeking classical status for Bengali on the grounds of concrete evidence proving that it existed as a written language as far back as the 3rd or 4th century BCE.

What lies ahead for the newly declared classical languages?

"It is important that the language in which Nobel Prize winner Rabindranath Tagore wrote is recognised as a classical language, at a time when many people are reluctant to speak in Bangla," says Nrisingha Prasad Bhaduri, a writer, historian and Indologist. "So many Bengali works are awaiting translation. Bengali dialects also need support. This will also help research proposals in Bangla to get central funds." The Centre has funded universities for Sanskrit and Tamil and centres of excellence and university chairs for the other existing classical languages, as well as national and international awards. Central budget grants for classical languages have ranged from ₹51 crore for Tamil in the last decade to ₹3.7 crore for Malayalam since 2020.

"There are so many rock inscriptions in Assamese which are yet to be deciphered, and this will support researchers seeking to study the ancient language and translate Assamese classics," says Mr. Saikia. "But we also hope it will give a fillip to the learning and use of modern Assamese, given the rise of English-medium schools. Our report proved that our language has deep roots. Now we must ensure that it also has support to spread its leaves and branches."

HOW TO VISIT A TEMPLE

A visit to a Hindu temple can be a lesson in history and geography, politics and economics, along with spiritual upliftment. If we allow it, the structure, to speak to us.

Let us begin with history. How many of us ask who built the temple? Temple lore will say every temple was built thousands of years ago, in Satya Yuga or Treta Yuga, that the images existed in the time of Rama and Krishna. But historians will argue that Hindu temples emerged slowly, from orchards full of termite hills where Yakshas and Nagas were worshipped, to rock-cut caves and rock-cut temples emerging after 500 CE, and eventually to free-standing temples by 1000 CE. Many were built by kings to declare royal power. Pattadakal in Karnataka was built by the Chalukyas. Tamil Nadu's Brihadeeswara was built by the Chola kings. It revealed their military might.



Now comes the geography. Is the temple located on a mountain or a seaside? For example, the Srirangam temples are on river islands. Puri Temple is on the seacoast. Tirupati is on a mountaintop. Kedarnath and Badrinath are far away from human habitation, on trade routes. There is meaning here. It is not random. Ask yourself — why was it built here? We find Jain temples on mountaintops because it represents the Tirthankara achieving omniscience, and so is visualised seated atop a mountain, facing all four directions, speaking to all creatures who gather around him in circles.

Tall gopurams and shikharas

The third aspect is about the economics and politics around the temple. Who is funding it? Who is taking care of it? How is it related to the surrounding neighbourhood — is there a marketplace outside? These are questions you can think about on your way to the temple. It draws attention to the many farmers, herdsmen, artisans who contribute to the upkeep of the temple, not just the priests and patrons.

When you see the temple, you can notice immediately if it has walls. Khajuraho does not have walls. Jagannath Puri has walls. These were built after Islamic invasions from Bengal. Tamil temples often have elaborate gopurams or entry gateways. The Chola period gopurams were small. Over the centuries, they became higher and higher, as if competing with the minarets of mosques, and with the achievements of previous rulers.

Next, observe if the temple is facing east or west. Many Vaishnava temples face the west or Lakshmi because she emerges from the ocean, while others face east, the rising sun. It is not standard. Some temples in the South, especially of goddesses, face the north.

Then, there are the shikharas, the tower above the garbha griha or the sanctum sanctorum. Multiple domes are seen in North Indian Hindu and Jain temples. The North Indian shikharas look like a set of mountains, while the South Indian ones look like a series of huts built one on top of the other, more pyramidal, not curvilinear. At the top of the temple, is there a pot or a flag or a wheel?

Does the temple have a staircase, or multiple storeys, commonly seen in Rajasthan and Gujarat, or a gathering hall? Original temples did not have gathering halls. It was during the Vijayanagara period that gorgeous pillared halls were set up in South Indian temples for devotees, for rituals, as well as for music and dance and storytelling.

The stories they tell

Once you enter the temple, look at the passageways and spaces of congregation. You can look at the internal economy — the kitchen, the living quarters, the performance spaces (did devadasis live and perform here?). Look at the way the temple is organised spatially. Who frames the door? It could be Ganga and Yamuna, creating the sacred Arya-varta doab, or Jaya and Vijaya establishing Vaikuntha. Often, outside temples are pillars established by kings. And images of saints who were not allowed by the “pure” to enter the shrine. The shrine of Chokhamela in Pandharpur, for instance.

Then, there are the carvings, the stories they tell, the non-religious iconography — dancing women, warriors, plants, fantastic beasts. There is sex and violence, and sages in meditation. Buddhist shrines tell stories of Buddha’s life, and his past lives. In Jain temples, the 24 Tirthankaras all look the same, because they have all risen beyond their ego and identity.



Shiva temples tell the story of Shiva's marriage. Vishnu temples recount tales of Vishnu's avatars. In Shiva temples, the goddess is with the god inside the shrine; she turns hermit into husband. In Vishnu temples, especially in the South, the Lakshmi temple is separate, though within the precinct; she knows the hermit mind of her husband.

Thus, a tour of temples is far more than a pilgrimage. It is a peep into Indian culture.

POST-MENOPAUSE WOMEN

Historically, the cultural narrative surrounding post-menopause women in India has been one of withdrawal. Menopause was seen as the point at which a woman retreats from the public eye, resigning herself to a quieter, often invisible role within the household. In some traditional homes, they were seen primarily as caregivers for their grandchildren or as the keepers of family traditions. While respected in these roles, their personal desires and ambitions were often ignored or considered irrelevant.

Menopause was also framed as an end — not just of a woman's fertility but also vitality and social relevance. Indian culture, which places a premium on youth and fertility, often left older women feeling sidelined. This cultural attitude was even more pronounced in rural areas, where access to healthcare and information about menopause was limited, and where talking openly about this natural transition was discouraged.

Though the modern era has brought in some changes, with more open conversations about menopause in urban spaces, many of these stigmas persist, especially in rural areas. Many still view post-menopause women as "past their prime", adding to a sense of invisibility and emotional isolation for those undergoing this transition.

Change the view

It's high time for Indian society to shift its view of menopause radically. Rather than seeing it as an end, recognise menopause for what it truly is: the beginning of a new chapter in a woman's life. This life stage offers women the freedom to focus on themselves, their passions, and their potential. With the end of their reproductive years, women can embrace new roles that are not defined by family expectations or societal norms.

Menopause should be seen as a time of empowerment and self-discovery, when women can reinvent themselves and contribute to society in new, meaningful ways. This new narrative should not just be confined to urban and privileged spaces but should also extend to rural women who often face additional barriers to reclaiming their identities post-menopause.

Challenging journey

For homemakers, the journey through menopause can be particularly challenging. They often have spent their entire lives caring for their families, with little attention to their own desires and ambitions. Menopause, however, offers them an opportunity to refocus on themselves and explore new avenues of growth and fulfilment.

In rural areas, women often lack access to information and resources that could help them understand the changes they are going through. This makes menopause a time of uncertainty and fear rather than a time of empowerment. However, with increasing awareness and education, they can be encouraged to embrace this new phase of life with confidence. Local women's groups,



NGOs, and health workers play a critical role in creating awareness of menopause and helping women navigate this transition.

One of the most important steps to changing the narrative around menopause is education. Rural women should have access to information that demystifies menopause and provides them with practical ways to manage the physical and emotional changes. Health camps, community meetings, and women's collectives can help spread this knowledge, empowering women to take charge of their health.

Menopause often marks the end of a woman's child-rearing responsibilities, leaving her with more time for personal growth. This is an ideal time for women — especially homemakers and rural women — to pursue skill development and explore ways to achieve financial independence. Programmes that offer training in small-scale businesses, crafts, and local enterprises can help women create new livelihoods and contribute economically to their families and communities.

Post-menopause women possess a wealth of life experience that can be shared with younger generations. Encouraging these women to take on leadership roles in their communities can give them a renewed sense of purpose. They can mentor younger women, become advocates for social issues, and participate in local governance or cooperative societies.

Menopause can be a time of emotional upheaval, especially for women who feel isolated or undervalued. Counselling services and peer support groups can provide these women with a safe space to express their feelings and receive emotional validation. Mental health initiatives specifically targeting rural women and homemakers are essential to helping them embrace menopause as a positive life transition.

To fully embrace menopause as a new beginning, Indian society must move beyond the patriarchal idea that a woman's worth is tied to her reproductive abilities or her youth. Women at every stage of life have something valuable to offer. Menopause is an opportunity for women to step into their power, pursue long-overdue dreams, and redefine their contributions to their families and communities.

Popular culture has begun to portray this shift in perspective, showing that menopause is not just about biological changes but also about an emotional transformation. This kind of narrative is vital in reshaping how we view menopausal women — not as individuals in decline but as women beginning a new journey of empowerment and self-expression.

As October is World Menopause Awareness Month, let us shift the conversation around menopause in India.

Rather than perpetuating the narrative of decline, let us focus on the opportunities this life stage offers. For homemakers and rural women, menopause can be the start of something truly liberating — an opportunity to reclaim their time, pursue their passions, and make a renewed impact on their communities.

Menopause is not the end of vitality or relevance; it is the beginning of a vibrant, renewed sense of self. It is time to break the cultural silence, embrace this transition, and support women in creating new, fulfilling lives after menopause.



TRACING DELHI THROUGH ITS MANY NAMES, HISTORIES

Vidheesha Kuntamalla writes— “Over centuries, Delhi, a city of many names, has worn titles including ‘Dhillupura’, ‘Dhillika’ and ‘Yoginipura’. The earliest reference to the city, founded by the Tomaras, describes it as ‘Dhillupura’, while ‘Yoginipura’ appears in various inscriptions and ancient Jain texts.”

— “One such inscription — the Iron Pillar inscription and other fragments from the Qutb archaeological area — suggests that the region was known as ‘Yoginipura’ during the Gupta period (between the 4th and the 6th centuries) and Pratihara period (believed to be between the 6th to the 9th centuries), potentially comprising a temple complex before it was recognised as ‘Dhilli’ or ‘Dhillika’. It is believed that a city named ‘Indraprastha (City of the Lord Indra)’ was built around Delhi around 1400 BCE and was the capital of the Pandavas.”

— “Many historians argued that while there was some historical evidence connecting Delhi to the name ‘Yoginipura’, the location and significance of the site were subject to academic contention. Several of the varsity’s faculty members argued over the validity of the site’s historical prominence as the city’s many names continue to reveal layers of its complex and contested past.”

— “Some references in Jain texts support the existence of a settlement by the name of ‘Yoginipura’, besides the occurrence of a similar name in three 13th and 14th century inscriptions, which confirm the sequence of rulers but offer little detail on the name’s origin”

— “A 13th-century inscription found in a baoli (stepwell) in Palam village refers to the construction of a well by Uddhara, a householder of ‘Dhilli’. The 13th line of the inscription identifies ‘Dhilli’ as ‘Yoginipura’. Since physical evidence is limited, besides a mention in a few inscriptions, historians are divided on how much historical weight the name ‘Yoginipura’ should carry.”

— “The inscription lists the rulers of the Slave dynasty, up to Balban, and identifies the region of ‘Dhilli’ or ‘Yoginipura’ as once ruled by these dynasties. However, few believe the area was known as ‘Yoginipura’ in ancient Jain texts and that Prithviraj Chauhan himself was said to have patronised a Yogini temple here shortly before his city’s destruction.”

— “References to ‘Yoginipura’ as the name of an ancient or early mediaeval settlement in the Delhi area may have been connected with a Yogini temple that was once located in the area but no remains of an ancient temple in the area have survived.”

— “A Jogmaya temple does exist in Mehrauli today, but it was built in the 19th century. Also Jogmaya is different from the Yoginis. The 64 Yoginis are considered the attendants or manifestations of Goddess Durga. Yogini temples usually have distinctive architectural features: they are circular and don’t have roofs. Sculptures of Yoginis are found around the inner circle.”

— “Unlike Delhi, there are ancient Yogini temples across the country: the Chausath Yogini temples in Odisha’s Ranipur Jharial and Hirapur, and a few others in Madhya Pradesh’s Jabalpur and Khajuraho. These temples broadly belong to the early mediaeval period, when tantra was gaining ground.”

**For Your Information:**

— Historians identify seven cities of Delhi, dating from the 11th century onwards: Lalkot/Quila Rai Pithora/Mehrauli, Siri, Tughlaqabad, Firozabad, Shergarh (present-day Old Fort), Shahjahanabad and New Delhi. Depending on how one counts and what one considers 'a city', this number can be as high as 11.

— Mehrauli is widely considered to be the oldest 'city' of Delhi and is the oldest area of the metropolis to be continuously inhabited.

COST OF GAMES

As spiralling costs of organising multi-sport events and the lack of appeal for a Games with a colonial hangover have forced Glasgow 2026 to be a much scaled-down affair, the immediate impact was felt by India – the most populous country in the Commonwealth Games family. It has consistently earned top-five finishes in the new millennium, including its best-ever showing of a second place, with 101 medals, when Delhi played host in 2010. As the organisers have decided to limit the Games to 10 integrated disciplines (including para-sports) to be held at four venues, Indians are disappointed to note that some of the country's medal-producing disciplines — including wrestling, badminton, table tennis, hockey, squash and cricket — have been dropped. Even after excluding shooting, which contributed the most to India's overall tally in the Games, the nation was fourth with 61 medals in Birmingham 2022, and 30 came from these six disciplines. India's medal prospects in 2026 will be practically restricted to athletics and para-athletics, weightlifting and para-powerlifting, boxing, judo, bowls and para-bowls. Shooting and wrestling, which have featured in most of the editions barring a few, have not only enriched the Indian medal kitty but have also produced glorious moments for the Games.

Top medal-getting shooters Jaspal Rana (15), Samaresh Jung (14), and triple gold-winning wrestlers Sushil Kumar and Vinesh Phogat have etched their names among the all-time greats. Athletes such as Abhinav Bindra, Rajyavardhan Singh Rathore, and Yogeshwar Dutt have experienced Olympic fame after shining at the Commonwealth Games. The Indian women's hockey team's gold medal-winning moment in Manchester in 2002 and wrestler Geeta Phogat's historic gold in Delhi in 2010 inspired blockbuster movies Chak De! India and Dangal, respectively. In table tennis, India has consistently been placed among the top countries, and many still remember Manika Batra's superb showing of four medals in 2018. Hockey remains an all-time favourite for the Indians while the country's silver medal in women's cricket's debut in Birmingham is still fresh in fans' minds. Shuttlers Saina Nehwal and P.V. Sindhu and squash players Saurav Ghosal and Dipika Pallikal have ensured that their sports contributed medals regularly. While the organisers' compulsion was understandable after Victoria's pull-out last year, it would have been prudent to include a couple of disciplines with a significant global appeal as those could have ensured a better future for the Games, which began as the British Empire Games in 1930, and now is closer to the centenary mark. Sadly, the cost burden has impacted the staging of what appears to be a dying 'spectacle'.

NOTED PHYSICIST ROHINI GODBOLE, A STAUNCH ADVOCATE FOR WOMEN IN SCIENCE, DIES AT 71

Physicist Rohini Godbole, one of the prominent voices advocating equal opportunities for women in science in India, passed away on Friday. She was 71.



A Padma Shri recipient, Godbole was associated with the Centre for High Energy Physics at the Indian Institute of Science, Bengaluru, for over 25 years. Since 2018, she has worked as an honorary professor after superannuation. Pune-born Godbole was an alumnus of SP College and IIT, Bombay. In 1979, she got her doctorate from Stony Brooks University, USA.

A much-loved teacher, Godbole, who would have turned 72 on November 12, participated in several panel discussions that focused on opening up the Indian science arena to women and suggested ways to support women, especially those on a career break.

Godbole often criticised how academic institutional hirings and promotions favoured male candidates, failing to note the qualifications and skills possessed by women scientists. She was also vocal about the alleged disparity in the selection of awards and recognitions, many of which as she would point out were handed to men.

“At the convocation of IISER Kolkata earlier this year, Dr Godbole was the chief guest. She spoke about ‘hidden biases’, not just regarding women but also disadvantaged groups. She told the audience ‘I don’t want to blame you and say you are the villain. But we need to address these issues together,’” Singh, who happens to be one of Godbole’s PhD students, said.

Godbole had served as a member of the coordination and steering committee for CERN-India since 2015 and was also a member of the Scientific Advisory Committee of the Union Cabinet in the 2007-2013 period.

She was a recipient of numerous prestigious awards, including the Padma Shri, France’s Ordre national du Mérite, and the Lifetime Achievement award by the Karnataka science and technology department.

SHORT NOTES

EMISSIONS GAP REPORT

- The Emissions Gap Report is an annual publication released by the UN Environment Programme.
- According to the report, greenhouse gas emissions of China and India, two of the top three emitters, grew by 5.2 per cent and 6.1 per cent respectively in the year 2023. It said the global emissions in 2023 was 1.3 per cent higher than the previous year.
- The report said that the current climate actions could reduce global greenhouse gas emissions by only 10 per cent by 2030 on 2019 levels, when the bare minimum required to keep the 1.5 degree target in sight was 42 per cent reduction. The reductions must increase to 57 per cent by 2035.

HIGH SEAS TREATY

- The High Seas Treaty, also known as the Agreement on Biodiversity Beyond National Jurisdictions or BBNJ, was finalised last year as a separate international agreement to maintain the ecological health of oceans and was a major step forward in meeting the **30 x 30 targets**.



- One of the objectives of the High Seas Treaty is to demarcate protected areas in biodiversity-rich parts of the oceans — just like national parks or wildlife reserves on land — where human activities can be regulated and restricted.
- Another goal of the High Seas treaty is to ensure that the benefits from exploitation of genetic resources in the oceans outside of national boundaries of countries are equitably distributed among all.
- **India** has signed and ratified the High Seas Treaty in July this year.

BHITARKANIKA NATIONAL PARK

- Cyclone Dana, which made landfall close to **Bhitarkanika National Park** and Dhamra Port in Odisha on 25th October, did not cause significant damage as many had feared.
- Bhitarkanika Wildlife Sanctuary spans across coastal patches of 672 sq km and was declared a sanctuary in 1975. Its core area, covering 145 sq km, received the National Park designation in September 1998.
- It is the **second largest mangrove ecosystem** after Sundarbans in West Bengal.
- Mangroves are salt-tolerant trees and shrubs typical of estuarine and intertidal regions, meaning they grow in areas where freshwater and saltwater meet.
- Mangroves typically have aerial, breathing roots and waxy, succulent leaves, and are flowering plants.
- When cyclones strike, mangrove forests act as a barrier against storm surges by obstructing the water flow with their roots, husks, and leaves, according to a report published by the World Bank Group.

UNITED NATIONS DAY

- **October 24**, 2024 marks 79 years since the United Nations was formed. It is annually celebrated as the UN day.
- The term “United Nations” was suggested by US President Franklin D. Roosevelt during the Second World War.
- The United Nations consists of 193 Member States of the United Nations. The latest State to join the United Nations was **South Sudan**.
- The first Secretary-General of the United Nations was **Trygve Lie** from Norway who served from 1946-1952.
- The longest statement at the United Nations was delivered by **V.K. Krishna Menon** of India. His speech to the Security Council spanned three meetings, lasting a total of 8 hours.
- Over nearly 80 years, the United Nations, along with its specialized agencies, funds, programs, related organizations, and staff, has been honoured with the Nobel Peace Prize **twelve times**.



WORLD POLIO DAY

- **October 24** is observed as World Polio Day.
- **Rotary International** established the Day to commemorate the birth of Jonas Salk, who led the first team to develop the vaccine against the disease in the 1950s.
- India has managed to eradicate polio. In 2009, India had reported 741 polio cases, the highest in the world, according to the Global Polio Eradication Initiative. In January 2011, India reported its last polio case, in West Bengal's Howrah.
- Polio is a highly infectious viral disease that causes paralysis and even death, mainly affecting children. There is no cure for polio, it can only be prevented through a vaccine.

WORLD FOOD DAY

- October 16 is observed as World Food Day every year by the United Nations Food and Agriculture Organisation (FAO). It is a reminder of the commitment made at the highest level to ensure food and nutritional security.
- The world has made tremendous progress in increasing food production by large-scale adoption of better seeds, more irrigation, and higher doses of fertilisers and pesticides. Farm machinery has become more efficient. All this could not have been done without increasing incentives to farmers — input subsidies, higher prices for their produce, or a mix of some of the two.
- Globally, as per the State of Food Security and Nutrition in the World (SOFI report) of FAO, roughly 2.33 billion people still face moderate to severe food insecurity. This a challenge to those committed to providing food and nutrition security to all.
- This year's theme of FAO's World Food Day is "Right to Foods for a Better Life and a Better Future". The "Right to Food" approach of the FAO encouraged the UPA government led by Manmohan Singh to pass the National Food Security Act (NFSA) in 2013.

E. COLI INFECTION

- One person has died and 10 have been hospitalised in the US due to an E.coli infection after eating McDonald's burgers.
- The most common symptoms of E.coli (Escherichia coli) infection include fever of more than 102 degree F, persistent diarrhoea, bloody diarrhoea, and vomiting. Most people who suffer an infection will start feeling sick three to four days after eating or drinking something that contains the bacteria.

RACHEL GUPTA

- 20-year-old Rachel Gupta from Jalandhar has become the first Indian to win the prestigious **Miss Grand International 2024** crown.
- Miss Grand International is said to be currently the number one Beauty Pageant in the world with over 5 Million followers across the globe.



VIJAYA KISHORE RAHATKAR

- The Centre has appointed Vijaya Kishore Rahatkar as the chairperson of the **National Commission for Women (NCW)**.
- Rahatkar, the ninth chairperson of the NCW, succeeds Rekha Sharma whose tenure as NCW chairperson ended in August after two consecutive terms.
- Rahatkar has been appointed for a three-year term or till the age of 65 years, whichever is the earliest.

LUONG CUONG

- **Vietnam** elected Luong Cuong, a military general, as its new president on Monday, the fourth official to fill the largely ceremonial role in 18 months.
- Cuong, 67, was elected by the National Assembly to replace To Lam, who remained president even after he was formally appointed as the general secretary of the ruling Communist Party in August.

BIHTA, BIHAR

- Bihar Industry Minister Nitish Mishra on October 21 inaugurated the state's first dry port at **Bihta**, a town near the state capital Patna.
- A dry port, or inland container depot (ICD), provides a logistics facility away from a seaport or airport for cargo handling, storage, and transportation. It acts as a bridge between sea/air ports and inland regions, facilitating efficient movement of goods.
- The Bihta dry port is spread over seven acres. It is being run in a Public-Private Partnership (PPP) mode by Pristine Magadh Infrastructure Private Limited and the state industry department.

KAZAN, RUSSIA

- The host city for the 16th BRICS summit in **Kazan, Russia**.
- It is located roughly 900 km to the east of Moscow at the confluence of the rivers **Volga** and **Kazanka**. This city of 1.2 million is the capital of the Republic of Tatarstan, the homeland of the Tatar people, the second largest ethnic group in the country after Russians.
- **Kul Sharif mosque** which was originally built in the early 16th century. It was burnt down by Ivan the Terrible (Grand Prince of Moscow) during the Siege of Kazan. The mosque was rebuilt with Saudi and UAE help in 2005.

UN RESOLUTION 1701:

The 2006 United Nations resolution 1701, which the caretaker Lebanese PM Najib Mikati said should be honoured, seeks a permanent ceasefire between Hezbollah and Israel by creating a buffer zone. The UN Interim Force in Lebanon (UNIFIL) with 15,000 troops would monitor borders, support Lebanese forces as Israel withdrew in 2006.



BUSINESS & ECONOMICS

OWNER, MANAGER OF SHIP DALI THAT COLLIDED INTO BALTIMORE BRIDGE AGREE TO PAY \$102 MN

Grace Ocean Private Ltd and Synergy Marine Private Ltd, Singapore-based owner and manager of the ship Dali that collided into the Francis Scott Key bridge in Baltimore in March this year, have agreed to pay nearly \$102 million to resolve a civil claim brought by the U.S. Department of Justice (DoJ) in Maryland.

Dali had a 21-member crew out of which 20 were Indians. Synergy has Indians in key positions, has a large base in India, and employs thousands of Indian seafarers.

ON SANCTIONS AND SHADOW FLEETS

The story so far:

While covering the Russia-Ukraine conflict, many western media outlets have used the term 'shadow fleet' to describe tanker ships that carry Russian crude oil or oil products to other countries. The term conjures up images of pirate-like vessels and phantom owners trading in illegal, contraband substances. India has been painted as a host of a shadow fleet that is 'laundering' Russian crude.

How are sanctions implemented?

When the U.S. sanctions a country, as is the case with Russia, it launches investigations into entities, companies and individuals who violate the sanctions. Their assets in the U.S. are seized, bank accounts accessible to the western banking system are frozen and, sometimes, criminal prosecutions are launched against them. U.S. sanctions against Russian oil mandate that Russia can only sell its crude oil at \$60 a barrel. Current market prices are at least \$15 more. This is to ensure Russia doesn't profit much from oil sales and use that to fund its war effort in Ukraine.

What is structure of global shipping?

The global shipping industry is highly diversified. Greeks own 20% of the global merchant shipping fleet with China now crossing Japan to become the second leading nation in terms of merchant shipping fleet ownership. Most ships are built and repaired in China, Japan and South Korea. Yet, marine insurance, ship finance as well as global shipping regulations revolve around the U.K. and rest of Europe. U.S. sanctions are sought to be enforced through these levers.

Each ship is associated with different stakeholders at various nations and locations. Although tracking systems allow authorities to access previous ports of call, some companies do succeed in hiding the original source of their cargo. Ships are registered in particular nations called flag states as they fly that country's flag. Flag states were meant to indicate the origins of the ship.

To beat sanctions, ships often hop between flags. There are Flags of Convenience (FoCs), such as Panama and Liberia, which started out as tax avoidance entities, and to avoid too rigorous a scrutiny or inspection of a ship. FoCs obscure the ownership of ships. Then there are classifications societies (class, in shipping parlance) that certify ship structures and machinery for safety of life at sea and marine pollution, facilitating insurance cover for these. An insurance type



called Protection and Indemnity (P&I) covers loss of life and damage to property. These P&I insurance firms form 'clubs' to pool the risk.

How do ships keep their insurance?

Turkey, a member of the NATO, has been found to be extensively trading in Russian oil. A Turkish-owned ship found to be trading in Russian oil at more than \$60 a barrel may lose its P&I club, since clubs are controlled from London and the U.S. has leverage there. However, the owner can divest the management of the vessel and contract with a European manager that has P&I cover. And the ship will be back in business with the same owner but with a new European manager. Corporations with large fleets often set up shell companies that own just one or two ships. Such complex ownership structures hide the true identity of a ship and its owner. Yet, another phenomenon is registering the ships within jurisdictions that are not compliant with regulatory agencies such as the International Maritime Organization (IMO). Eswatini, a country in southern Africa, is not a signatory to the IMO charter. It has therefore emerged as a FoC.

What is the accusation against India?

Soon after sanction enforcements, many Russian ships struck alliances with Indian firms. Many switched their base to Dubai where Indians have a presence in shipping. The Indian Register of Shipping (IRS), a classification society, did see an increase in the ships it was certifying, bolstering charges of Indian involvement in shadow fleets. Noting that it has been linked to Russian shipping entities, the IRS said its primary responsibility is to the safety of a vessel and that it will not be compromised. IRS reported that it has indeed been asked to provide safety-related classification services to a number of vessels by Dubai-based entities. These vessels were registered under the flag administrations of Liberia and Cyprus and none flew the Russian flag, the IRS reported.

In 2015, when Iran was sanctioned, some 160 ships, many with trade links to Iranian oil, switched their classification society to the Korean Register of shipping — Korea is a U.S. ally. Sometimes renaming a vessel can help to erase association with sanctions.

Can U.S. sanctions be enforced?

Many agencies and shipping experts acknowledge that sanctions on Russian oil cannot be rigorously enforced because of its potential impact on world economy, the complex ways in which the shipping industry is structured, and because ownerships and origins of stakeholders are obscure and often based on voluntary disclosure.

More recently, the BBC reported that the U.K. had taken only mild action against some 35 U.K. companies found to have violated the price cap set by sanctions. Industry voices there say that taking strong action would be bad for U.K. businesses.

INDIA SEEKS CRITICAL MINERALS PACT WITH US

Commerce and Industry Minister Piyush Goyal on Saturday said India has proposed a critical minerals partnership agreement (CMPA) with the US, that will help domestic firms in the sector such as electric vehicles to get certain benefits in the American market.

— During the visit, the two countries signed a memorandum of understanding (MoU) to enhance cooperation in the critical mineral supply chain.



— Critical minerals, such as cobalt, copper, lithium, nickel and rare earths, play a crucial role in the production of clean energy technologies, from wind turbines to electric cars. Such minerals are in demand for the production of batteries for electric cars.

For Your Information:

— Critical minerals refer to mineral resources, both primary and processed, which are essential inputs in the production process of an economy, and whose supplies are likely to be disrupted due to the risks of non-availability or unaffordable price spikes. To tackle such supply risks, major global economies periodically evaluate which minerals are critical for their jurisdiction through a quantitative assessment.

— Recently, India became a part of the Minerals Security Finance Network (MSFN), a US-led initiative aiming to strengthen cooperation among members to secure supply chains for critical minerals.

— MSFN is a new initiative that stems from the Minerals Security Partnership (MSP), a framework established by the US in 2022. India was inducted into the MSP in June 2023.

— India has identified 30 critical minerals in July 2023 depending upon their disruption potential, substitutability, cross-cutting usage across different sectors, import reliance, recycling rates etc.

AS TRADE GAP WITH UAE, ASEAN WIDENS, INDIA PAUSES TALKS WITH OTHERS

After a series of free trade agreements (FTAs) that have proved more beneficial to partner countries, India is adopting a more cautious negotiating strategy, temporarily pausing talks for trade pacts with smaller countries such as Oman and Peru.

For Your Information-

- The Commerce Ministry is working on developing a fresh Standard Operating Procedure (SOP) aimed at addressing the “lack of consistent and streamlined” procedures for negotiating future trade agreements. This comes after several trade agreements, including the pact with the UAE that came into effect in February 2022 and the one with the Association of Southeast Asian Nations (ASEAN) signed way back in 2010, have resulted in significantly higher imports of goods compared to exports, and concerns over potential breaching of rules of origin by the other side.

- The new SOP, designed to serve as a template for negotiation of multilateral and bilateral trade agreements, covers modern chapters in trade deals such as labour and environment, and emphasises the need for a clear understanding of “trade-offs” and “each party’s bottom line”.

- The ASEAN trade deal, signed during the UPA era, has faced significant criticism due to the widening trade deficit, particularly after Covid-19. The trade deficit with the region increased by a sharp 70 per cent in FY23 compared to FY22. The goods trade deficit reached \$44 billion in FY23. Officials have stated that India faces tariff asymmetry in the ASEAN agreement and aims to complete the review by next year. Concerns over a fresh surge in imports have also arisen as ASEAN has joined the China-led RCEP trade deal. Trade between China and ASEAN grew by 15 per cent in 2022 after the deal came into effect. India exited the RCEP negotiations in 2019 due to concerns about rising imports from China.



- It aims to “streamline” the process of launching, conducting and concluding trade negotiations, and addresses issues such as human resource mobilisation, negotiation team formation, and the composition and “hierarchy of negotiating teams”.
- The review of the negotiating strategy comes amid concerns over possible investment outflows, rapidly surging imports from FTA nations, and recognition of errors made when dealing with specific chapters in FTAs. These errors have led to a surge in the inflow of goods that are not even produced in the partner country.
- “The pause in negotiations comes not only due to the widening trade gap but also concerns over the outflow of investment from the country. The focus is shifting to larger markets such as the European Union and the UK, where significant benefits could be gained, and to countries of geopolitical importance, such as the Maldives. However, the problem is the lack of subject matter expertise and loss of institutional memory. Foreign negotiators are battle-hardened with years of expertise in negotiations, unlike in India where officials are rotated periodically,” an official said.
- Before the Lok Sabha elections, the government had signed a trade agreement with the European Free Trade Association (EFTA) and was close to signing an agreement with Oman to expand its footprint in the West Asia region. The deal with the UK was also near completion but could not be finalised due to several leadership changes in the UK. The government had also indicated plans to begin talks with the Russia-led Eurasian Economic Union (EEU). But the Ministry could now narrow its efforts to maximise export gains.
- Notably, while India has been able to manage early harvest deals and negotiate with countries that have accommodated India’s style of functioning, trade deals with more competitive countries, such as the UK and the EU, have been stalled for years. India had earlier decided to exit from the China-led Regional Comprehensive Economic Partnership (RCEP) after years of negotiations.

Do You Know-

- **Rules of origin** — the criteria that determine the national source of a product — have been among the most contentious issues for the FTA talks with the UK. These are important in trade negotiations since countries levy duties or impose restrictions on products based on the source of imports. In addition, India’s commerce and tax officials are negotiating on the crucial aspects of duty cuts for alcohol/whisky from the UK that could have an impact on the local bottling industry, the official said, adding that the pace of negotiations has been decidedly kept slow for this reason.

GROWTH PRESCRIPTION

The latest World Economic Outlook released by the International Monetary Fund (IMF) has some good tidings, and some ominous assessments. The good news — that largely pertains to the short term — is that a much-feared global recession has been averted, the global war against inflation ‘almost’ won, and growth is holding steady. The U.S. is likely to grow faster this year than anticipated earlier, balancing out lower estimates for some large European nations. Among developing countries, the IMF downgraded growth hopes for West Asia, sub-Saharan Africa and Central Asia as conflicts and unrest disrupt production and shipping. However, brighter prospects for emerging Asia, enhanced by higher public investments in China and India, offset those downward pressures. The IMF expects the world to grow 3.2% in 2024, as in 2023. The moderation in inflation has been partly attributed to the unwinding of shocks since the COVID-19 pandemic and the Ukraine war, but tight monetary policies played a crucial role too, it noted. With



inflation returning near central banks' targets, there is now room for pivoting monetary policy to a neutral stance and supporting economic activity. Yet, the IMF has cautioned about food price pressures again in some emerging economies, and services inflation being too high, at almost double the pre-pandemic levels.

For India, the IMF has maintained its GDP growth estimate at 7% for 2024-25, followed by 6.5% next year, but linked the moderation in growth from last year to the exhaustion of "pent-up demand accumulated during the pandemic". Some of this is visible in car and consumer non-durable sales, with urban demand stumbling. A Reserve Bank of India index pegs second quarter GDP growth at 6.8% — it was 6.7% in the first. The favourable monsoon and improved rural incomes could lift the tide in coming months, but may not be taken for granted yet. Of concern, however, is the IMF's prognosis that global growth should reach a "mediocre" 3.1% in five years, underwhelming relative to pre-COVID trends, with protectionist industrial and trade policies gaining more traction. India's economy may hinge more on domestic momentum but weaker exports and investment flows will not help. The Centre's recent averments on the reform agenda have signalled that most work now needs to be done in the States. While that is a truism, central policymakers also need to work doubly hard to lift potential growth: be it to make India a more open economy by lowering import tariffs and FDI barriers as the World Bank has mooted, as well as undertake "ambitious" domestic reforms to improve competition, economic integration and spur private investments, suggested by the IMF.

REDUCED SPENDING BY MIDDLE-INCOME HOUSEHOLDS IS A CONCERN

Nestle India chairman Suresh Narayanan has expressed concern over middle-income households, especially in urban areas, not buying enough packaged foods, beverages and other fast-moving consumer goods. The "middle segment", which is the main market for FMCG players, "seems to be shrinking". Narayanan, whose company reported a 1.2 per cent year-on-year domestic sales revenue growth for July-September 2024, isn't alone here. Hindustan Unilever and Tata Consumer Products, too, have flagged "moderating" and "softness" in urban demand. The former registered a 1.9 per cent annual sales and a 3 per cent underlying volume growth during the last quarter. The latter has seen its tea volumes declining by 4 per cent and that of foods, including salt, increase by just one per cent. If one adds to this Reliance Retail, which posted a 3.5 per cent drop in revenues from operations on the back of "weak fashion and lifestyle demand", a clear pattern emerges.

One, the slowdown in consumer spending is no longer a mere rural phenomenon. Rural demand, if at all, is recovering gradually. It's partly borne out by motorcycle sales going up 13.4 per cent in April-September 2024 over April-September 2023. A revival in agricultural production from a good monsoon — plus assorted cash transfers and other welfare schemes, both at the Central and state government levels (Maharashtra's Ladki Bahin Yojana being the latest) — should further aid this recovery, albeit from a prolonged period of stress. On the other hand, the pressure points are now apparently coming more from the metros and urban centres. This weakening of urban consumer demand was somewhat hidden by the growing "premiumisation" and "polarisation", with the lower and middle-income households curtailing their expenditures and the well-off/wealthy continuing to spend. But passenger vehicle sales in April-September recording a marginal 0.5 per cent growth over the same period of 2023 suggests that the pent-up demand accumulated from the pandemic has been more or less satiated.

It links up with the second takeaway. The biggest drags on consumer spending, whether urban or rural, are food inflation and muted growth in real incomes. Both are limiting the capacity of households to diversify their expenditures and of firms to grow the market by attracting new,



rather than the same set of, buyers. Food inflation should hopefully soften with the arrivals of the kharif crop picking up post Diwali and the prospects for the upcoming rabi planting season also looking good. The government can help by keeping the door on imports open and not resort to politically-motivated duty or minimum support price hikes. It's high time for the Reserve Bank of India to also consider cutting interest rates, taking a more proactive view that accommodates growth (read jobs and incomes) concerns as much as inflation targets.

EXPRESS VIEW ON SC VERDICT ON INDUSTRIAL ALCOHOL: LIFTING SPIRITS

A nine-judge Bench of the Supreme Court held in a 8:1 ruling on Wednesday that states have the **power to tax not just alcoholic beverages, but also 'industrial' alcohol.**

- The key interpretative question before the court was whether “intoxicating liquor” can be defined to also include “industrial alcohol”.
- IN A decision that will boost the coffers of States, the Supreme Court, in an 8:1 majority ruling on Wednesday, held that the phrase “intoxicating liquors” in the State list includes industrial alcohol, and States have the power to regulate and tax it.
- Writing for the bench, the CJI said that analysis of previous judgments on the subject make it “clear” that the “meaning of the phrase ‘intoxicating liquor’ in Entry 8 of List II (State list) has been expanded beyond the narrow definition of alcoholic beverages that produce an ‘intoxicating effect’ upon consumption. Liquids which contain alcohol and which can possibly be used (or misused) as intoxicating liquor have been included within the meaning of the phrase.”
- “The Constitution uses three distinct expressions relating to alcohol: ‘intoxicating liquor’, ‘alcoholic liquor for human consumption’ and ‘intoxicating drinks’... The expressions ‘alcoholic liquor for human consumption’ and ‘intoxicating drink’ are used in the context of ‘consumption’. However, the provision relating to ‘intoxicating liquor’ is not limited to its consumption. It stretches to ‘production, manufacture, possession, transport, purchase and sale of intoxicating liquors’ and beyond. The second difference is the use of the expression ‘intoxicating’ instead of ‘alcoholic’ as the adjective to liquor,” the majority ruling said.
- In her dissenting verdict, Justice Nagarathna said that states can only tax intoxicating alcohol which can be consumed by direct ingestion.

Do You Know:

- The SC’s majority judgment on Wednesday overturned its 1990 seven-Judge judgment in Synthetics & Chemicals Ltd vs State of Uttar Pradesh, which held that States cannot tax industrial alcohol. Several state governments, including Uttar Pradesh, had challenged this judgment. The matter was referred to the nine-judge bench in 2010.
- The seven-Judge bench “did not determine the meaning of the expressions ‘intoxicating’ or ‘liquors’ or ‘intoxicating liquors’ independently,”.
- The core of the dispute arises from two “overlapping” entries in the Seventh Schedule of the Constitution, which lays down the division of lawmaking powers between the Centre and the states.
- Entry 8 of List II (State List) gives states the power to regulate “the production, manufacture, possession, transport, purchase and sale of intoxicating liquors”, while Entry 52 of List I (Union

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List) allows the Centre to regulate industries as a whole to the extent “declared by Parliament by law to be expedient in public interest”.

- As alcohol and other products of fermentation industries that deal with non-potable (non-drinkable) alcohol are included in the Industries (Development and Regulation) Act, 1961 — a law passed by Parliament — the Centre argued that it “occupied the field” when it comes to industrial alcohol, and that states could not regulate the subject. States, on the other hand, argued that industrial alcohol can be misused to produce consumable alcohol illegally, which required them to enact legislation.
- The ruling also set aside the SC’s 1990 judgment in *Synthetics & Chemicals Ltd. v State of Uttar Pradesh*, which held that “intoxicating liquor” refers only to potable alcohol and, therefore, states could not tax industrial alcohol.

TAMIL NADU LEADS IN BOTH WORKER STRIKES AND NUMBER OF FACTORIES

When workers at Samsung India Electronics’ factory in Sriperumbudur, near Chennai, went on strike for more than a month recently, many people argued once again that strikes are harmful to business. This view gathered steam when Samsung India Electronics claimed in the Madras High Court on Tuesday that it had suffered a loss of around \$100 million due to the strike by the workers, who were demanding recognition of their recently formed trade union. On October 15, the Tamil Nadu government announced that the strike had finally been called off.

The strike was widely seen as a disruption to the State’s industrial climate and a potential threat to future industrial investments. However, data suggests that in most industrialised States, worker strikes are fairly common, with the number of factories continuing to remain high and even growing.

In the 2008-2018 period, Tamil Nadu was the State with the highest number of industrial strikes, but it was also where the maximum number of factories were set up and factory workers employed. This contradicts the argument that strikes are harmful to business. Reliable State-wise data for workplace disputes is available with the Union Labour Ministry between 2008 and 2018, so this is an analysis of that time period.

In 2008-2018, Tamil Nadu recorded over 26% of all the strikes called, the highest among all States by a wide margin.

At the same time, the State also hosted 16% of India’s factories and a similar share of India’s factory workers during the period, again leading other States by a wide margin.

17% of workers in India who were involved in a strike in that period were working in Maharashtra — the second-highest among States. In the share of man days lost — total working days lost due to strikes — Tamil Nadu’s share was again the highest (15% of total man-days lost in India). In terms of value lost — production work hampered due to strikes — Gujarat was at the top of the list, forming 24% of such losses. Gujarat featured second-highest in the number of strikes called.

Tamil Nadu, Maharashtra, and Gujarat are the top three States, in that order, in measures such as the number of factories set up and workers hired. They also lead in the Gross Fixed Capital Formation (GFCF) of factories — which measures the net investment in fixed assets such as machinery — which acts a proxy for a firm’s health and productivity. Their share in India’s industries’ overall profits also outsizes other States.



In fact, in the 2008-2018 period, the share of worker strikes grew in Tamil Nadu and so did the State's share of the nation's factories. In 2008, 28% of India's worker strikes occurred in Tamil Nadu, and in 2018 the figure was 30%, with the State first on the list in both years in this measure. In the same period, the share of India's factories in Tamil Nadu also grew from 14% to 16%. The State occupied the first place in this measure in both the years.

In fact with a trade union density rate — union members/total workers — of about 20%, India is not even among the top 50 economies in this measure. India's figure is less than half of China's 44.2%, a highly industrialised nation. Iceland, followed by advanced Scandinavian economies, lead the world in this measure with over half of their workers unionised.

WHY PUNJAB'S PADDY PROCUREMENT HAS BEEN DELAYED

The paddy procurement process in Punjab has been marred by significant delays and mismanagement this year.

Despite favourable weather conditions, the pace of harvesting has slowed down due to almost 90% of the procured crop being stuck in mandis, and private rice millers refusing to store government paddy. This situation, stemming from a combination of logistical, bureaucratic, and political factors, is likely to worsen without swift intervention.

How does paddy procurement work ?

The Centre, in consultation with state governments and the Food Corporation of India (FCI), finalises estimates for paddy procurement every year prior to the commencement of the kharif marketing season (October to September).

State government agencies and the FCI purchase paddy from farmers within a stipulated period for the central pool at the Minimum Support Price (MSP). This paddy is milled, after which the procured rice is transported by the FCI to government storage facilities across the country. There it is stored for maintaining the buffer stock, or further distributed for consumption under the National Food Security Act (NFSA) and other welfare schemes.

What is the current status of paddy procurement in Punjab?

As of October 23, only 37.68 lakh tonnes of paddy has been procured by the FCI from Punjab, well below the 49 lakh tonne mark at the same time last year, and a far cry from the expected 185 lakh tonnes for the entire season. The peak procurement season ends in the first week of November.

The slow movement of procured paddy from the mandis (grain markets) is the biggest concern. While around half of the procured paddy had already been moved out of the mandis this time last year, this year a little more than a tenth of the procured paddy (10.55% or 8.7 lakh tonnes) has left the mandis. This is glut of paddy in the mandis is slowing down the entire procurement process.

What explains this situation in Punjab?

There are three primary factors at play.

Lack of storage space: Private rice millers are resisting taking in government paddy due to a space crunch in government go-downs. Millers are concerned that they would themselves have to store this paddy for an entire year — something not many are keen to do.



This problem emanates from a previous one. Punjab, this year, could move only 7 lakh tonnes of the roughly 124 lakh tonnes of milled rice in its government godowns. This has left very little space in these godowns to store milled rice from this year.

Controversy around hybrids: Adding to the problem are certain privately-developed hybrid varieties that have seemingly inundated the market this year. Millers claim that these non-recommended hybrids are responsible for a lower milling out-turn ratio (OTR) than FCI standards demand, making them a loss-making proposition.

OTR refers to the proportion of rice that is extracted from paddy after the milling process. Millers have to deliver an OTR of 67% per quintal. If the out-turn is lower, they must pay the government for the difference. Millers say that the hybrids in question have an OTR of only 60% to 62%, leading to a loss of roughly Rs 300 per quintal.

Troubles from labour, arhtiyas: Arhtiyas (commission agents) are the middlemen in the grain procurement process. They are now demanding a compensation of 2.5% on crop purchase as opposed to the current system of fixed remuneration of Rs 46 per quintal. Mandi labourers too are seeking higher wages, comparable to their counterparts in Haryana. Protests by these groups have further stalled the procurement process.

What is the impact of the delay in paddy procurement?

* Only 22% of the paddy crop has been harvested so far — roughly 20% less than last year. Farmers are deliberately slowing down the harvest process because mandis simply do not have space to store their crop. They hope this would mitigate the risk of distress sales caused by the grain spoiling in poor storage conditions.

However, the longer paddy stands on the field, the greater the risk of weight loss and overall quality deterioration, which too leads to a fall in prices. This means that a persistent delay in paddy procurement will lead to significant economic distress among farmers.

* With farmers typically sowing the winter wheat crop in November, a delay in harvesting paddy also threatens to throw off the state's agricultural cycle. This too can be very damaging for the state's agriculture sector.

Moreover, a smaller window between harvesting paddy and sowing wheat is also likely to lead to more stubble fires, which lead to air pollution across much of North India.

* A prolonged crisis could also spark unrest among farmers. This could quickly spiral into a law and order problem for the state, which would further compromise Punjab's ability to manage the situation.

How can this crisis be managed?

The government urgently needs to find temporary storage solutions. The most readily available such solution would be to store paddy in Punjab's 5,000 odd rice mills. But to do this, the government must first address the millers' concerns which include OTR trials for hybrid varieties, and stricter regulation of seed certification.

Better coordination between procurement agencies, transportation networks, and storage facilities, as well as timely payment of arhtiya commissions, and addressing labour demands will also help in improving the procurement process.



In the long term, Punjab must diversify its crop base to avoid the problem of surplus which lies at the heart of the current crisis.

MORE RURAL HOUSEHOLDS NOW 'AGRICULTURAL': WHAT DATA SAYS, WHAT THIS MEANS

Is dependence on farming for livelihoods and incomes rising in India, reversing a decades-old trend of the rural countryside becoming increasingly less tethered to agriculture?

The All India Rural Financial Inclusion Survey for 2021-22, released earlier this month, found that 57% of rural households in the country — including households in semi-urban centres with a population of less than 50,000 — were “agricultural”. This was significantly higher than the 48% reported in the previous survey of 2016-17.

The survey, commissioned by the National Bank for Agriculture & Rural Development (NABARD), defined an “agricultural household” as one that (i) reported a total value of produce from farming exceeding Rs 6,500 (be it cultivation of field and horticulture crops, livestock and poultry rearing, or aquaculture, sericulture and apiculture); and (ii) had at least one member who was self-employed in such activities during the reference year (July 2021 to June 2022). In the 2016-17 survey, the threshold cut-off value of produce was Rs 5,000.

More krishi in Bharat

The share of rural households identified as agricultural, based on the above definitions, has gone up for nearly all states between 2016-17 and 2021-22.

Also, the all-India average monthly income of agricultural households, at Rs 13,661 in 2021-22, was more than the Rs 11,438 for non-agricultural rural households. In the 2016-17 survey, too, agricultural households earned a higher average monthly income (Rs 8,931) compared with their non-agricultural rural counterparts (Rs 7,269).

Comeback of krishi in Bharat Percentage share of agricultural to rural households

Within agricultural households, the contribution of cultivation and animal husbandry to total income was over 45% in 2021-22, up from 43.1% in 2016-17. This increased share of income from farming activities was seen for agricultural households across most size classes of land possessed: from 23.5% to 26.8% for those with less than 0.01 hectare, from 38.2% to 42.2% for those with 0.41-1 hectare, from 52.5% to 63.9% for those with 1.01-2 hectares, and from 58.2% to 71.4% for those with more than 2 hectares.

Simply put, the proportion of households in rural India reliant on agriculture as a livelihood source has registered a sharp increase between 2016-17 and 2021-22. Even for agricultural households, the income from farming has gone up as a share of their overall income. There is correspondingly a smaller share of income coming from non-farm sources (such as government/private jobs, self-employment, wage labour, rent, deposits and investments), which applies to all land size categories.

The recent period, in other words, has witnessed more, not less, of krishi (agriculture) in rural India or Bharat. Not only is there a higher share of agricultural households, their incomes are less diversified than before, and they are earning more from farms.



Impact of Covid-19?

The reference year (2021-22) for the latest survey was one that followed the Covid-induced lockdowns. The impact of the restrictions on economic activity, imposed in the wake of the pandemic's first and second waves, may well have been reflected in the survey's findings. While the curbs were fully lifted from July 2021, the economic scars took time to heal.

Agriculture-related activities were specifically exempted from the lockdowns. Since the farm sector didn't suffer the disruptions that the rest of the economy did — and India also had four consecutive good monsoon years from 2019 — the 2021-22 survey findings might overestimate agriculture's share in rural livelihoods and incomes. Comparisons with the 2016-17 survey should, therefore, be made keeping this in mind.

But there is also an additional data source that points to Indians increasingly returning to, rather than leaving, farms.

According to the National Sample Survey Office's Periodic Labour Force Surveys (PLFS), agriculture engaged 64.6% of the country's workforce in 1993-94. That share fell to 58.5% in 2004-05, 48.9% in 2011-12, and a low of 42.5% in 2018-19. Thereafter, a reversal of trend has taken place, with the farm sector's share of the employed labour force rising to 45.6% and 46.5% in the two pandemic-affected years of 2019-20 and 2020-21 respectively (the PLFS reference year is July-June; Covid first struck in March 2020).

The paradox

The significant point to note is that agriculture's share has remained elevated even after 2021-22, despite the economy coming out of the pandemic, and recording an average annual GDP growth of 8.3% in the three years ended 2023-24. The latest ratio of 46.1% for 2023-24 is way above the pre-pandemic low of 42.5% in 2018-19.

The above trend reversal is equally visible in rural areas. Agriculture employed 57.8% of the Indian rural workforce in 2018-19, which climbed to 61.5% in 2019-20 and 60.8% in 2020-21. That dropped to 59% in 2021-22 and 58.4% in 2022-23, but only to soar again to 59.8% in 2023-24.

The increased dependence on agriculture for employment and livelihoods — borne out both by the NABARD and PLFS data — in an economy that has expanded over 1.4 times in constant rupees between 2016-17 and 2023-24, is a paradox requiring some explanation. It may partly have to do with the lack of jobs in manufacturing, which employed only 11.4% of India's workforce in 2023-24, down from 12.6% in 2011-12 and 12.1% in 2018-19.

Manufacturing's share of employment in 2023-24 was even below that of trade, hotels & restaurants (12.2%) and construction (12%). The movement of surplus labour in agriculture is occurring, if at all, not from farms to factories. Instead, it is to sectors that tend to have quite similar employment characteristics as agriculture — having low marginal productivity (output per worker), paying just above subsistence wages, and largely informal.

As per the PLFS data for 2023-24, the states with the highest share of their labour force employed in agriculture included Chhattisgarh (63.8%), Madhya Pradesh (61.6%), Uttar Pradesh (55.9%), Bihar (54.2%), Himachal Pradesh (54%), Rajasthan (51.1%) and Jharkhand (50%). Among the ones with relatively low shares were Goa (8.1%), Kerala (27%), Punjab (27.2%), Haryana (27.5%), Tamil Nadu (28%) and West Bengal (38.2%).



The reasons for an economy, whose size has grown from \$1.82 trillion in 2011 to \$2.29 trillion in 2016 and \$3.55 trillion in 2023 (World Bank data), having to depend more on agriculture for employment should be a subject of debate among economists.

DAP SHORTAGE DAMPENS RABI CROP PROSPECTS

A shortage of di-ammonium phosphate (DAP), a key fertiliser required at the time of sowing, is undermining crop production prospects for the current rabi season.

- According to official data, the all-India sales of DAP, at 45.72 lakh tonnes (lt) during April-September 2024, were 27.2 per cent, lower than the 62.83 lt for April-September 2023. Imports (19.67 lt versus 34.53 lt) and domestic production (21.53 lt versus 23.29 lt) of the fertiliser, too, were lower for this period relative to last year.
- Being a basic nutrient for Rabi crops, the DAP fertiliser has to be sprinkled at the time of sowing crops like mustard and wheat. The farmers say they need a bag of at least 45 kilos for sowing an acre of land. Any delay in its supply could adversely impact the sowing of crops. So, the farmers of the state have started turning impatient as they see a lack of supply of the fertilizer.

Do You Know:

- DAP contains 46 per cent phosphorus or P, a nutrient crops need at the early growth stage of root establishment and development. Alternatives to DAP include complex fertilisers containing nitrogen (N), P, potassium (K) and sulphur (S) in varying proportions, such as 12:32:16:0, 10:26:26:0, 20:20:0:13 and single super phosphate or SSP (0:16:0:11). These have much less P content compared to DAP.
- Sales of Single Superphosphate (SSP) fertiliser also fell to 23.55 lt during April-September 2024, from 29 lt during April-September 2023. However, sales of both urea (189.11 lt versus 183.95 lt), complex fertilisers (72.49 lt versus 61.36 lt) and muriate of potash (9.27 lt versus 7.74 lt) were higher during the first six months of 2024-25, compared to April-September 2023-24. The shortage of DAP is being blamed on higher global prices, aggravated by the government policy of fixing a low MRP with inadequate subsidy concession to enable imports.
- India consumes 10.5-11 million tonnes (mt) of DAP annually — next only to the 35.5-36 mt of urea — more than half of which is supplied through imports from China, Saudi Arabia, Morocco, Russia, and other countries.
- In addition, India imports phosphoric acid (mainly from Jordan, Morocco, Senegal, and Tunisia) and rock phosphate (from Morocco, Togo, Algeria, Egypt, Jordan, and the UAE) for the domestic production of DAP, as well as other P-containing fertilisers. In 2022-23, India imported 6.7 mt of DAP (valued at \$5,569.51 million), 2.7 mt of phosphoric acid (\$3,622.98 million) and 3.9 mt of rock phosphate (\$891.32 million). These amounted to \$10 billion-plus of imports — excluding imports of other inputs, namely ammonia and sulphur/ sulphuric acid.

NON-COMPLETION OF KYC DETAILS DEPRIVES THE POOR OF THEIR OWN MONEY IN JHARKHAND

Numerous individuals in Jharkhand's Latehar and Lohardaga districts are unable to withdraw funds from their bank accounts as they have been frozen citing failure to complete Know Your



Customer (KYC) details or identity verification formalities, according to surveys by socio-economic activist Jean Drèze and his team.

The surveys conducted this month by local MGNREGA Sahayata Kendras revealed that the mass freezing of bank accounts has severely impacted vulnerable groups, including retired employees who rely on their modest pensions, children receiving scholarships, and women entitled to ₹1,000 per month under the State government's flagship scheme, Mukhyamantri Maiya Samman Yojana, launched in the run-up to the two-phase Assembly election next month.

The door-to-door surveys, covering 244 households in seven villages — Dumbi, Kutmu, and Uchvabal of Manika block in Latehar district, and Booti, Dhanamunji, Kandra, and Palmi of Bhandra and Senha blocks in Lohardaga district — found that 60% of them had at least one frozen bank account, with some households reporting all accounts frozen.

Overcrowding woes

Rural banks in the surveyed areas are grappling with severe overcrowding, exacerbating the existing issues. Long queues are a common sight, consisting mainly of individuals attempting to complete their KYC formalities and women seeking to access funds under the Maiya Samman Yojana.

WHAT IS SATELLITE SPECTRUM, WHY MOST COUNTRIES PREFER NOT TO HOLD AUCTIONS

Union Communications Minister Jyotiraditya Scindia clarified last week that spectrum for satellite communication (satcom) would be allocated “administratively”, rather than through an auction of airwaves, which was proposed by Reliance Jio earlier this month.

This was seen as a victory for some of the company's biggest rivals, especially Elon Musk's Starlink. However, the fact is, given the nature of satellite spectrum, it is not feasible for any one country to auction it. Unlike terrestrial spectrum, which is used for mobile communication, satellite spectrum has no national territorial limits. Due to this international character, satellite spectrum is coordinated and managed by the International Telecommunication Union (ITU), a specialised agency of the United Nations (UN).

Spectrum for satcom is part of the first schedule of The Telecommunications Act, 2023 (“Assignment of spectrum through administrative process”). Under Section 4(4) of the Act, telecom spectrum shall be assigned through auction “except for entries listed in the First Schedule for which assignment shall be done by administrative process”.

“Administrative process” under the Act “means assignment of spectrum without holding an auction”, and “‘auction’ means a bid process for assignment of spectrum”.

The Department of Telecommunication (DoT) had asked the Telecom Regulatory Authority of India (Trai) to come up with a methodology to assign the spectrum. As Trai explored pricing models for the service, Jio submitted to the regulator that administrative allocation may not be able to ensure a level playing field between satellite and terrestrial services.

In response, Musk posted on X on October 14 that an auction process “would be unprecedented, as this spectrum was long designated by the ITU as shared spectrum for satellites”.



Satcom & its benefits

Satcom services use an array of satellites in orbit to provide connectivity on the ground. They do not require wires to transmit data, and are an alternative to ground-based communication, called terrestrial networks, such as cable, fibre, or digital subscriber line (DSL).

For end-users such as homes and businesses, satellite-based communication and broadband services offer two key benefits: wider coverage, and a more resilient network. Even though the latency of satcom services can at times be higher than terrestrial broadband networks, they can cover vast areas without needing to install much physical equipment.

The use of satellites allows communication networks to reach remote locations that mobile telephony cannot access. It is generally understood that when satcom services become more mainstream, low-lying and rural areas, and areas prone to natural disasters, will benefit from constant connectivity.

Satellite-based Internet is also believed to be more resilient than terrestrial-based services, since they have comparatively fewer components on the ground. The equipment for satellite communication is, therefore, less likely to sustain damage due to extreme weather events.

Size of satcom sector

Consulting firm KPMG in India has estimated in a recent report that the country's satcom sector, which currently stands at \$2.3 billion a year, will reach \$20 billion by 2028.

India is ranked fourth in terms of investments in the sector globally. Investment bank Morgan Stanley has estimated roughly 290.4 million households in India are untapped with broadband, which present a strong market opportunity for satellite operators.

Auction vs allocation

It is important to understand the key difference between spectrum for terrestrial networks and satellite communication, and why the distinction between allocation and auctioning arises in the first place.

For terrestrial mobile services, spectrum is exclusive, and is managed only by a single mobile operator in a given geographical area; therefore, this cannot be shared between or amongst operators.

In the case of satellites, the same spectrum is non-exclusive in nature — and can be used by multiple satellite operators to serve the same geographical area.

The general trend, therefore, is to allocate satellite spectrum administratively.

Auction experiment

A few countries such as the United States, Brazil, and Saudi Arabia, have held auctions for frequency spectrum in the past. The US and Brazil conducted an auction of satellite spectrum along with orbital slots. Both countries have since reverted to administrative assignment after finding the auction process infeasible.



The US last conducted an auction for satellite spectrum in 2004 for three domestic orbital slots for broadcasting services. The annual regulatory fee for VSAT and equivalent C-Band antennas operating in the 12 GHz and 14 GHz frequencies is \$595 per licence or authorisation.

Brazil amended its regulatory framework in 2020 to replace satellite auctions with administrative licensing. Though satellite landing rights are assigned through bidding in the country, the spectrum to be used for satellite services is not auctioned separately.

Saudi Arabia recently conducted a spectrum auction in the S-band, which ranges from 2 GHz to 4 GHz and is used for mobile satellite services (MSS) as well as weather and air traffic control applications. The technical characteristics of the S-band are such that it is assigned on an exclusive basis for MSS; auction can, therefore, be conducted in a manner similar to the spectrum auction for terrestrial mobile services.

CABINET CLEARS ₹1K-CR FUND TO SUPPORT SPACE START-UPS OVER 5 YEARS

The Union Cabinet on Thursday approved setting up of a Rs 1,000-crore venture capital fund to support 30 to 35 space start-ups over a period of five years, which, the government hopes, will attract private funding.

- Start-ups will receive between Rs 10 to Rs 60 crore support from the fund based on its stage of development, growth trajectory, and its potential impact on national space capabilities.
- The step is in line with the government's vision of India capturing a bigger chunk of the global space market. The Indian space sector is currently valued at USD 8.4 billion and is expected to grow to USD 44 billion with the government's support. There are already 250 space start-ups in the country since the space sector was liberalised in 2020.
- This move — which was announced in this year's budget — will also generate thousands of direct and indirect jobs, develop new manufacturing capability and supply chains, and create trained space professionals. The fund is expected to drive innovation in satellite technology, launch vehicle technology, as well as space applications. It will also advance space reforms.
- Around Rs 150 crore from the fund is likely to be deployed in its first year (2025-26), ₹250 crore for next three years, and ₹100 crore in its last year of operation, according to a government statement. The fund will be managed by professional managers and follow the structures of an alternative investment fund as per SEBI.



LIFE & SCIENCE

BROWN DWARFS: WANNABE STARS

Q. What is a brown dwarf?

A: In 1995, astronomers confirmed the discovery for the first time of a brown dwarf, a body too small to be a star and too big to be a planet. They could be considered wannabe stars that, during their formative stages did not reach the mass necessary to ignite nuclear fusion at their core like a star. But they are more massive than the biggest planets.

“They are formally defined as objects that can burn a heavy form of hydrogen, called deuterium, but not the most common basic form of hydrogen,” said Sam Whitebook, a graduate student in Caltech’s division of physics, mathematics, and astronomy.

Recently, researchers took a closer look at the first brown dwarf discovered and found that it’s actually two brown dwarfs orbiting astonishingly close to each other while also circling a small star. The research papers were published in the *Astrophysical Journal Letters*.

These two brown dwarfs are gravitationally locked to each other in what is called a binary system, an arrangement commonly observed among stars but quite rare among brown dwarfs. So the brown dwarf that three decades ago was named Gliese 229B is now recognised as Gliese 229Ba, with a mass 38 times greater than Jupiter, and Gliese 229Bb, with a mass 34 times greater than Jupiter.

They are located 19 light-years from our solar system, rather close in cosmic terms, in the constellation Lepus. – Reuters

THE DIGITAL WAY FORWARD

Mansi Kedia, Sruthi Vanguri Writes: The adoption of the Global Digital Compact (GDC) at the UN Summit on September 22, 2024, officially marks the beginning of a period of global multi-stakeholder cooperation in digital governance. It is a commitment by the 193-member UN General Assembly to ensure that the design, use, and governance of technology benefits all. It follows the multi-phase Universal Safeguards for Digital Public Infrastructure (DPI) initiative, launched in 2023 by the Office of the UN Secretary-General’s Envoy on Technology (OSET) and the United Nations Development Program (UNDP).

For Your Information-

- Though the term DPI is relatively new, the concept is not. The internet, powered by common protocols like HTTP, HTML, and SMTP, is a prime example of DPI. It ensures global information exchange and interoperability. Telecom, with standards like GSM, SMS, CDMA, and IEEE 802.11, is another example. Loosely defined, DPI is a set of technology building blocks that drive innovation, inclusion, and competition at scale, operating under open, transparent and participatory governance.
- In 2009, the project of creating unique identities for residents of India, later christened Aadhaar, was started. Aadhaar was developed as a next-generation digital ID, offering authentication as a service. Being a bonafide proof of identity residing on the cloud, it could be plugged into any service delivery transaction to verify an individual’s identity. It soon began to be used for multiple

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service deliveries, like opening bank accounts, obtaining mobile SIMs, or receiving ration. Products like the Digital Locker, electronic KYC (eKYC) and digital signature on demand (e-Sign) were developed in addition to Aadhaar. A massive programme of Direct Benefit Transfers (DBT) also began, resulting in huge savings for the government. Payment of subsidies directly into bank accounts eliminated the black marketing of commodities, with LPG cylinders being the most visible examples.

- A comprehensive understanding of DPI requires recognition of its three integral layers: Market, governance, and technology standards. The market layer consists of innovative and competitive players designing inclusive products. The governance layer requires legal and institutional frameworks, along with public programmes to drive adoption, and specific overarching principles and policies. Technology standards, including those for identity, payments, and data sharing, must be built or adapted to enable interoperability and the adoption of shared standards. These layers collectively define the structure and functionality of DPI, reflecting the complexity and potential of this transformative concept.
- Two paths to the development of digital systems are common: All government or all private. The former may lead to quality and maintenance issues, while the latter may result in monopolies. DPI creates a balance, identifying frameworks consisting of frequently required services and components efficiently managed by the public authority. It develops open protocols, shared platforms, and enabling policies to create an interoperable ecosystem.

WHY ARE BIG TECH COMPANIES SUCH AS GOOGLE SCOUTING FOR NUCLEAR POWER?

The story so far:

On October 14, Google announced the “first corporate agreement” to buy nuclear energy from multiple Small Modular Reactors (SMR). These SMRs will be developed by Kairos Power. The initial phase of the work will bring up the first SMR by 2030, and subsequent deployments will continue through 2035. Per Google, this deal will provide 500 MW of carbon-free power to the U.S. electricity grid. They said this agreement will help in the development of AI technologies to power scientific advances.

Why nuclear energy?

Training AI models, ensuring that they remain always online, and maintaining growing data centres are energy-hungry tasks. In a 2024 Environmental Report, Google admitted that its total global greenhouse gas emissions rose by 13% in 2023 year-over-year, pointing to the “challenge of reducing emissions while compute intensity increases and we grow our technical infrastructure investment to support this AI transition.” Google has held that nuclear energy is clean, available round-the-clock (unlike solar energy), and carbon-free. In that vein, the search giant sees the next generation nuclear reactors as a way to power global data centres and its offices with the help of clean energy. Smaller sizes and modular designs further help the tech giant in faster deployment cycles.

Which companies are partnering with nuclear reactor makers?

On September 20, Microsoft and Constellation signed a 20-year power purchase agreement intended to launch the Crane Clean Energy Center (CCEC) and restart the Three Mile Island Unit 1. The deal should add around 835 MW of carbon-free energy to the grid, according to Constellation’s statement. “This agreement is a major milestone in Microsoft’s efforts to help



decarbonise the grid in support of our commitment to become carbon negative,” said Bobby Hollis, Microsoft’s VP of Energy, at the time. Amazon also announced that it signed three new agreements to support nuclear energy projects, such as the construction of SMRs. In Washington, it partnered with Energy Northwest. It is further making an investment in SMR reactors and fuel developer X-energy, and partnering with Dominion Energy in Virginia. “We also previously signed an agreement to co-locate a data centre facility next to the Talen Energy’s nuclear facility in Pennsylvania, which will directly power our data centres with carbon-free energy, and helps preserve this existing reactor,” Amazon said in a blog post.

OpenAI CEO Sam Altman backed the nuclear startup Oklo, which aims to build a commercial microreactor in Idaho and have it operational in 2027, though delays could affect this, reported CNBC. Mr. Altman also invested in the nuclear fusion company Helion in 2021.

Is nuclear energy truly clean?

This is still a matter of debate. The main takeaway is that nuclear energy has a serious reputation problem, due to public memory of past accidents and crises that span generations.

For example, Ukraine’s Chernobyl explosion (1986) and Japan’s Fukushima accident (2011) resulted in extensive environmental destruction that lasted for years, even as the impact on human health is still being researched. While Chernobyl is a case study on multiple human errors and a communication breakdown, Fukushima demonstrates how natural disasters beyond human control — such as a tsunami — can lead to devastating nuclear accidents.

Separately, in the U.S., the Three Mile Island accident of 1979 in Unit 2 of the facility’s nuclear generating station involved the combination of a malfunctioning valve and human error, resulting in the core overheating and releasing radioactive gases. While not considered overly dangerous to the surrounding population, it is regarded as one of the worst industrial nuclear accidents in U.S. history. Microsoft’s deal with Constellation aims to start Unit 1 again; Unit 2 was decommissioned after the accident.

Many environmental groups are actively protesting nuclear energy and the way it is being presented as “clean”. ‘Friends of the Earth,’ an international network of organisations, said on its website in 2018, “Since it was first commercialised, nuclear power has proven to be one of the dirtiest, most dangerous and most expensive sources of energy. Nuclear reactors have a long history of accidents, leaks, extended outages and skyrocketing costs.” The organisation also pointed out the dangers of nuclear infrastructure being built over earthquake-prone areas.

But there is hope in SMRs as they have potentially lower building and operational costs. A U.S. Department of Energy report noted that SMRs have compact designs and can function in areas unable to withstand larger or older nuclear power plants that require huge volumes of water.

What is the U.S. government’s stance on nuclear energy?

Apart from seeing nuclear power as one source of clean energy, the U.S. Department of Energy’s Office of Nuclear Energy highlighted the importance of re-establishing the U.S. as a nuclear leader, to stay ahead of China and Russia.

Dr. Rita Baranwal, Assistant Secretary for Nuclear Energy, noted, “As the use of nuclear energy continues to expand internationally, it is crucial that the United States reasserts itself as a leader in this incredible technology. Existing U.S. nuclear plants prevent almost 500 million metric tons of carbon dioxide emissions each year — the equivalent of taking 100 million cars off the roads.”



WHY IS CALL OF DUTY: BLACK OPS 6 BANNED IN KUWAIT?

Call of Duty: Black Ops 6 is releasing this Friday (October 25) across the world, except in Kuwait. Authorities in Kuwait have blocked the release of the popular first-person shooter game, just days before its global launch.

While Kuwaiti authorities have not explicitly said anything, social media users speculated that Black Ops 6 has been blocked because it is set during the 1990 Gulf War between Iraq and US-led coalition forces. Iraq, under Saddam Hussein, invaded Kuwait during the Gulf War, which continues to remain a sensitive subject in the region.

What is Call of Duty: Black Ops 6?

Black Ops 6 has been co-developed by video game publishers Treyarch and Raven Software Corporation. It is the 21st instalment of the Call of Duty franchise that made its debut on October 29, 2003, for Microsoft Windows users. The first instalment of the franchise was developed by Infinity Ward and published by Activision.

The first edition was set against the backdrop of World War II, allowing players to view the war through the eyes of the British, American, and Soviet soldiers. The game combined the single and multiplayer missions. Each subsequent game had a series of campaigns where players were required to advance and fight against opponents in its multiplayer mode.

Call of Duty: Black Ops 6, Kuwait, and Gulf War

The Gulf War, which spanned nearly seven months, continues to be a sensitive topic in Kuwait owing to its traumatic impact and historical context. On August 2, 1990, Iraq led by Saddam Hussein invaded Kuwait resulting in a prolonged occupation of the country on the northern edge of the Arabian Peninsula. Following the occupation, Kuwait witnessed heightened human rights violations such as civilian deaths, torture, forced displacements, and disappearances.

Being a small nation with a strategic position, the invasion violated Kuwait's territorial integrity and also challenged its national sovereignty. In simple words, the occupation affected every aspect of life in Kuwait. Over half of the population reportedly fled during the war. While many nationals returned in 1991, non-nationals, especially Palestinians, were prohibited from coming back.

Iraqi forces pulled out from Kuwait in 1991 after they were defeated by US-led coalition forces.

Call of Duty's history of controversies

The popular video game franchise has faced a similar fate in the past too. Russia banned Call of Duty: Modern Warfare, while China banned Call of Duty: Black Ops Cold War.

In 2021, it was reported that Call of Duty on mobile was banned for users in Iran without any official notice. Just as with Kuwait, there was no straightforward explanation by the Iranian government. However, it was speculated that the sudden ban could have been due to rising tensions between the US and Iran.

In 2012, Pakistan banned Call of Duty: Black Ops 2 along with Warfighter and Medal of Honour for allegedly depicting the country in poor light. The All Pakistan CD, DVD, Audio Cassette Traders and Manufacturers Association had said that the video games went against the country's national



unity and sanctity. Call of Duty: Modern Warfare 2, which was released in 2009, was blocked in Russia but not officially banned.

While the bans have been mostly due to political reasons, several nations also momentarily halted first-person shooter games over concerns about the propagation of violence.

NIMA RINJI SHERPA'S MOUNTAIN CLIMBING RECORD — AND AN OCCASION TO GIVE SHERPAS THEIR DUE

18-year-old Nima Rinji Sherpa from Kathmandu has accomplished what seemed unthinkable. He has surpassed his father's and uncles' record (the first brothers to scale the world's 14 highest peaks) and become the youngest person to summit the same 14 peaks — “eight-thousanders” — this month.

Unlike most people, Rinji had “a greater motive” than bragging rights and glory. He aspires for his community to be more than “guides” and “support” climbers. More than 70 years since Tenzing Norgay's historic feat of being the first, along with Sir Edmund Hillary, to climb Mount Everest, the Sherpas are no closer to being perceived as equal to their Western counterparts: “We are rarely seen as elite athletes in our own right in the same way that Western climbers are.” A 2017 PNAS study confirms that there is, indeed, an explanation for the extraordinary abilities of Sherpas that allows them to be better climbers — they are acclimatised to high altitudes.

However, even in the exhilaration of the ascent, Rinji is well aware that “there is a risk of not returning home.” To be able to selflessly give, only to ensure other people's safety at the cost of one's own, is a uniquely generous ability. It is about time that Rinji's push bears fruit and Sherpas are given the recognition they rightfully deserve. For now, as much as the young climber's heroic feat is a testimony to the Sherpas' athleticism, it is yet again, a tale to be repeated, about the trials and tribulations of a man who sowed — so the later generations could reap.

WILL NEW RESTRICTIONS ON THICKNESS OF SHOE SOLES MAKE RACES SLOWER?

World Athletics has ruled that from November 1, the thickness of shoe soles worn by competitors for all track and field events must not exceed 20 millimeters. Will this affect the timings and performance of athletes?

What is the present rule, what changes from November 1?

For track events from 800 metres and longer, athletes can currently wear shoes with soles up to 25 mm thick. For track events shorter than 800 metres in distance, the maximum sole height is 20 millimetres. In field events, the restriction is 20mm but for the triple jump, upto 25mm sole thickness is allowed. This rule came into force from January 1, 2022. Prior to this, the maximum height allowed for track spikes was 30mm.

Shoe sole changes

After November 1, the maximum thickness of the sole, irrespective of the distance of the race, will be 20mm. The same holds good for field events. This means the shoes worn by triple jumpers will have their sole height reduced by 5mm. For road events, like the marathon and race walk, the permitted sole thickness remains at 40mm as before.



Why is the 20mm limit being enforced?

World Athletics has long been trying to find the middle path between advancement in shoe technology, and athletes getting an unfair advantage. It had set up a Working Group on Athletic Shoes in 2020 to come up with rules to keep the advances in shoe technology — thickness of the sole, material used within the shoe like carbon fibre plates — in check.

In December 2021, the Working Group had announced that from November 1, 2024, the thickness of the sole of track shoes would become uniform irrespective of the event. The rule change was announced in advance to give shoe manufacturers enough time to make modifications.

Has the thickness of track spikes been controversial?

Till January 2022, the thickness of track spikes could be up to 30mm. Just before the Tokyo Olympics, the legendary Usain Bolt had said that advances in shoe technology were putting records under threat. “I couldn’t believe that this is what we have gone to... that we are really adjusting the spikes to a level where it’s now giving athletes an advantage to run even faster,” Bolt told Reuters.

After winning the 400m hurdles gold in a world record time of 45.94 seconds in Tokyo, Karsten Warholm, who wore Puma shoes, criticised the Nike shoes worn by second-place finisher Rai Benjamin. Warholm claimed that the shoes he wore were much thinner than Benjamin’s.

“In middle distance, I can understand it because of the cushioning. If you want cushioning, you can put a mattress there. But if you put a trampoline, it takes credibility away from our sport,” Warholm had said.

Why have advances in shoe technology been controversial?

When Kenya’s Eliud Kipchoge, the Rio Olympics gold medallist, broke the two-hour marathon barrier in Vienna in 2019, the thick-stacked sole of the Nike shoes he wore attracted controversy though his time didn’t enter the record books as it was not an open race and he used rotating pace-makers.

Since then, World Athletics has ruled that (from April 30, 2020) shoe companies can no longer develop cutting-edge footwear custom-made just for elite international athletes, without first releasing it in the open retail market where anyone can buy it. A new shoe must be in the market for four months before it can be used in competition.

The rules also specified that the maximum thickness for road shoes should be 40 millimetres, which remains unchanged.

The New York Times reported that the average winning time at major marathons (Boston, Tokyo, London, Berlin, Chicago, New York) in 2023 — compared to the 2013-16 average — was much faster. Four and a half minutes for women and three and a half minutes for men. The first of the supershoes were introduced in 2017.

AS CHINA SIGNS PANDA CONSERVATION PACT WITH US ZOO, A LOOK-BACK AT ‘PANDA DIPLOMACY’

Continuing with a longstanding policy, China has signed agreements with two zoos in the United States and Spain on panda conservation. On February 22, China’s Wildlife Conservation

3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR



Association, the Madrid Zoo Aquarium of Spain, and the San Diego Zoo Wildlife Alliance of the US agreed to cooperate for the conservation of giant pandas.

A pair of pandas may soon be sent to the American zoo, the Associated Press reported. Some analysts interpreted the news as a positive sign for ties between the US and China, which have hit a marked low recently over issues ranging from trade to security.

The development was also seen as a return to so-called 'Panda diplomacy' — China leveraging the fluffy creatures, unique to its geography, to build ties with nations. Here is how.

When the West spotted the Giant Panda

Pandas are native to China and are only found there in the wild at present. According to the World Wildlife Fund, the animal was once "widespread throughout southern and eastern China, as well as neighbouring Myanmar and northern Vietnam." However, human activities contributed greatly to its falling numbers.

It is widely believed that the first Westerner to make note of the panda was a French Catholic priest named Pierre Armand David, who lived in China briefly and had an interest in zoology.

According to China's state media agency Xinhua, in 1869, "During his stay in Baoxing in the city of Ya'an, he came across a black and white fur, which was found to belong to a species totally new to science – the giant panda." Since then, "Giant pandas have played the role of "ambassadors," fostering a bridge of friendship between China and France," it added.

In 2023, Chinese President Xi Jinping similarly described pandas as "envoys of friendship between the Chinese and American peoples."

The Panda goes global

In politics, China gifted the animal to potential allies. China's Nationalist party, which sought to ally with the United States against Japanese aggression during the Second World War, gifted the US a pair of pandas in 1941.

In the 1980s, the "gifting" stopped given global concerns from conservationists over the endangered status of the species at the time. Thus began the "loaning" of pandas. This means that pandas are owned by China, but zoos elsewhere can host them for some years with rent that goes from \$500,000 to US\$1 million per pair, per year. Cubs born in foreign zoos result in additional payments to China.

At the end of this period, the pandas are returned to China. Of late, following a lawsuit from a conservation organisation, a part of this loan money is donated to wildlife conservation agencies.

Panda politics and soft diplomacy

Following years of no official contact during the Cold War, US President Richard Nixon became the first US head of state to visit communist China in 1972. This would lead to the eventual normalisation of relations between the countries in later years.

During their meeting, Chinese President Mao Zedong is believed to have told Nixon that two giant pandas would be sent to the US. And indeed, Ling-Ling and Hsing-Hsing were sent that very year.



National Geographic gave one possible explanation for the feelings that pandas seem to evoke: “This tremendous devotion to pandas has roots in science. When humans see pandas, we are subconsciously affected by what developmental biologists call neoteny, the retention into adulthood of certain infant characteristics. That cute baby face and toddler-like behaviour boost our body’s production of oxytocin, a hormone that makes us feel loving and protective.”

Pandas today

The latest panda agreements come at a time when China’s ties with much of the Western world have worsened, and there were fears many of the animals in different countries would be on their way back soon.

China did not renew its loan agreements with three American zoos in recent years. There are four remaining pandas in the US now who are due to leave soon. Similarly, agreements with Australia and the UK have not been renewed yet.

Around the time of the 2022 FIFA World Cup in Qatar, two pandas were sent there and renamed Suhail and Soraya. The first pandas in the Middle East reflected China’s ambitions as a global player in politics and were also seen as a possible sign of moving away from the West to gather other allies.

Criticism of Panda Diplomacy

Some have criticised the increasing spending on loaning pandas from China, or the need for frantically attempting to conserve an animal whom humans mainly want to cage in and admire.

In 2016, the International Union for Conservation of Nature’s (IUCN) Red List degraded the threat level for pandas from “endangered” to “vulnerable”. However, the survival rate of the animals in the wild is quite low compared with when in captivity, raising questions about the resources being devoted to saving one species instead of undertaking more holistic conservation.

Another factor behind the waning enthusiasm for pandas could be China’s overall reputation. Its aggressive reiteration of claims on Taiwan, trade and diplomatic rows with countries such as Canada and Australia, and military assertions with India and in the South China Sea have contributed to a less-than-positive view of the country. When that is the case, pandas can hope to do something, but they can only do so much.

WATER IN COMMON

A major assessment of hydrological systems has concluded that the global water crisis could spiral out of control if urgent remedial measures are not undertaken. Set up by the Netherlands in 2022, the Global Commission on the Economics of Water draws on the findings of leading scientists and other experts to arrive at a comprehensive understanding of the management of aquifers worldwide.

For Your Information-

- The Commission’s report, released last week, warns that more than half of the world’s food production could be imperilled if countries do not find better ways to manage water resources. The crisis could shave off 8 per cent of the global GDP by 2050, with poor countries facing a 15 per cent loss. The panel reckons that the “demand for freshwater will outstrip supply by 40 per cent by the end of the decade.”

3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR



- The report underlines that a large part of the Third World is already water-stressed. Every day, more than 1,000 children die, most of them in economically poor countries, from the lack of access to safe water. The panel urges countries to rethink how water is regarded: As a global common good, not as an endlessly renewable resource.
- In Nov 2022, the report “National Compilation on Dynamic Ground Water Resources Of India, 2022” was released which said: “The total annual groundwater recharge for the entire country as of 2022 has increased by 1.29 bcm as compared to the last assessment (2020). The total annual extractable GW resources has also increased by 0.56 bcm. The annual groundwater extraction for irrigation, domestic and Industrial uses has also decreased by 5.76 bcm during this period.”

SPRAYING DIAMOND DUST TO COOL EARTH: WHAT A NEW STUDY PROPOSES, DESPITE ‘GEOENGINEERING’ CONCERNS

A new study has argued that spraying millions of tonnes of diamond dust in the Earth’s upper atmosphere every year could help cool down the Earth and combat global warming. It might appear to be a rather outlandish claim, but this is not the first time such a solution has been proposed.

- The new study published in Geophysical Research Letters found that diamonds would be more effective in doing the job than any other material previously considered.
- The bare minimum for achieving the target requires the world to cut its emissions by at least 43 per cent from the 2019 levels, by 2030. Ongoing and promised actions, however, will likely result in a reduction of just two per cent by 2030. As a result, scientists have been looking for radical technology solutions that achieve dramatic results within a short period, even if only temporarily. Geoengineering offers such options.

Do You Know:

- Geoengineering refers to any large-scale attempt to alter the Earth’s natural climate system to counter the adverse impacts of global warming. Solar Radiation Management (SRM), in which materials are proposed to be deployed in Space to reflect incoming solar rays and prevent them from reaching Earth, is one of the two broad geoengineering options being explored.
- The most ambitious and potentially rewarding form of geoengineering is SRM, which is still at the conceptual stage. It draws inspiration from the natural process of volcanic eruptions, in which large amounts of sulphur dioxide are released. These combine with water vapour to form sulphate particles that reflect sunlight into space, reducing the amount reaching Earth.
- Carbon capture and storage (CCS) is a way to catch carbon and trap it beneath the earth. It is different to carbon dioxide removal (CDR) — where carbon is sucked out of the atmosphere — although some of the technologies overlap. The key difference is that CDR brings down the level of carbon dioxide in the atmosphere, cooling the planet, while CCS in fossil fuel plants and factories prevents the gas from getting out in the first place.
- Scientists see a big role for CCS in factories that make cement and fertiliser, as well as in plants that burn rubbish. They are split on whether it makes sense to use it to make steel and hydrogen, which have some greener alternatives. Most of their scepticism goes to capturing carbon when making electricity, because there are already cheaper alternatives that work better, like wind turbines and solar panels. In theory, it could play a role in gas plants as a back-up when the sun



doesn't shine and wind doesn't blow — particularly in countries that are still building fossil fuel plants today — but it would have to quickly grow cheaper and more effective.

1.5 DEGREES CELSIUS TARGET WILL BE 'GONE' IN A FEW YEARS: UN REPORT

- The Emissions Gap Report, an annual publication of the UN Environment Programme, warned that the Paris Agreement objective of keeping global rise in temperatures to within 1.5 degree Celsius would be “gone within a few years” and even the 2 degree Celsius threshold would be in danger of being breached, unless countries dramatically scale up their climate actions to reduce global emissions in two years.
- The report, which is released just ahead of climate change conference every year, said current climate actions, even in the most optimistic scenario, could reduce global greenhouse gas emissions by only 10 per cent by 2030 on 2019 levels, when the bare minimum required to keep the 1.5 degree target in sight was 42 per cent reduction. The reductions must increase to 57 per cent by 2035.
- The report called for a massive increase in investment in emissions reductions. It said the emissions gap for 2030 and 2035 could still be bridged at the cost of US\$ 200 per ton of CO₂ equivalent. At this cost, about 31 billion tonnes of CO₂ equivalent could potentially be reduced from annual emissions by 2030, more than the nearly 28 billion CO₂ equivalent that is required for 1.5 degree goal.

Do You Know:

- According to the UNEP website, the Emissions Gap Reports are annual science-based assessments of the gap between countries' pledges on greenhouse gas emissions reductions and the reductions required to deliver a global temperature increase of below 2°C by the end of this century.
- Each year the reports also feature assessment of key opportunities for bridging the gap. The reports have gained wide reputation as a scientifically authoritative source of timely and policy relevant information to key decision-makers, informing the UNFCCC process, and – looking forward – the implementation of the Paris Agreement. UNEP Copenhagen Climate Centre (UNEP CCC) has managed the production of UNEP's flagship report on climate change – the Emissions Gap Report – since 2011.

FAIR TRADE

Ahead of the 29th edition of the Conference of Parties in Baku, Azerbaijan, next month, there is renewed energy in government circles to accelerate Indian industry's transition to carbon markets. While the broader theme of this edition of the COP is increasing ambition on climate finance, a key item on the agenda is clarity on carbon markets. A specific section under the Paris Climate Agreement of 2015, called Article 6, lays the contours under which carbon markets — or the enabling of trading of prevented greenhouse gas emissions among countries — can be operationalised. Carbon markets incentivise climate action by enabling parties to trade in carbon credits generated by the reduction or removal of greenhouse gases from the atmosphere, such as by switching from fossil fuels to renewable energy or enhancing or conserving carbon stocks in ecosystems such as forests. Subsections within Article 6 provide guidelines on what kinds of carbon-reduction activities and verification mechanisms are permissible, and how countries may



enter into bilateral agreements so that emission reductions in one country may be legally claimed by another.

While carbon markets came into existence nearly two decades ago, they have been plagued by opacity and criticism that they only created the illusion of emission reductions. Although such markets have revived, confusion remains about how credits may be verified. There is optimism that Baku may see a final resolution of this problem and that the first legal credits may begin to be claimed by countries next year. India, due to its voluntary commitment to generate half its electricity from non-fossil energy sources by 2030, stands to gain as a host of several carbon-reduction projects. Additionally, there are also mushrooming private sector enterprises in India setting up innovative forestry projects that reportedly lock carbon and can be claimed as credits by multinational companies, traded through so-called voluntary carbon markets. India's iron and steel industries are among the nine types of industries expected to meet emission intensity standards by 2025. By restricting the amount of carbon per unit of production, this will, depending on regulatory enforcement, formally kick-start India's carbon market. However, this will invite complex calculations and, given the experience of a related energy-efficiency trading scheme, run the risk of not exerting enough pressure on companies to comply. While calculating carbon saved is a fraught exercise, India must aim, through its research institutions and authorities, to evolve a transparent and fair policy that is on a par with the best internationally.

ON CLIMATE FINANCE TO DEVELOPING NATIONS

The story so far:

The 29th Conference of the Parties (COP29) of the UNFCCC to be held in Baku, Azerbaijan, from November 11 to 22 is expected to be a "finance COP" as key climate finance issues feature at the top of its agenda.

Are developing states more at risk?

Economically developing countries are among the most vulnerable to climate change's effects. This is because of geographical factors and, because their economies rely more on sectors like agriculture, which are particularly sensitive to climate change.

Despite being among the most vulnerable, developing countries have contributed relatively little to the cumulative emissions that cause climate change. According to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, developed countries account for 57% of cumulative global emissions since 1850 despite hosting smaller populations than the developing world. Developing countries also face competing developmental needs, vexing their ability to take climate action by themselves. The 2009 Copenhagen Accord had developed countries commit to providing \$100 billion a year in climate finance to developing countries by 2020, later also made applicable through 2025. A new mobilisation target for the post-2025 period is on the agenda at COP29.

What is climate finance?

The United Nations Framework Convention on Climate Change (UNFCCC) defines climate finance as "local, national, or transnational financing — drawn from public, private, and alternative sources — that seeks to support mitigation and adaptation actions addressing climate change." This specifies two aspects of climate finance: sources (public or private, and flowing either domestically or across borders) and end-uses (climate mitigation or adaptation). The



Organisation for Economic Co-operation and Development (OECD) publishes reports on climate finance flows from developed to developing countries. They cover flows from four sources, including international public finance and the private finance mobilised by it. International public climate finance is composed of commercial and concessional loans, grants, equity and other instruments. Loans typically constitute the largest share (69.4% in 2022), followed by grants (28%). However, developing countries and observers such as Oxfam have noted several shortcomings with the OECD's reports. They have argued they should represent actual disbursements and not simply commitments to provide climate finance; that a flow should be new and additional and not simply a reclassification of existing aid; and that only grants, or grant-equivalents of concessional finance, should be counted, not finance provided on a commercial basis.

Who needs climate finance?

Developing countries require external financing for climate action. According to the International Energy Agency (IEA), 675 million people in the developing world didn't have access to electric power in 2021. Developing countries need to universalise access and increase electricity consumption.

Developing countries also have smaller domestic financial systems relative to their GDPs and face higher costs of capital. For instance, the cost of capital for solar photovoltaic and storage technologies is about twice as high in developing economies than in developed ones, according to the IEA. Therefore, if developing countries are to balance development and climate action, external finance should be made available.

How much does India need?

India has both short-term and long-term climate targets. By 2030, India aims to install 500 GW of generating capacity from non-fossil-fuel sources; five million metric tonnes per annum of green hydrogen (GH₂) production capacity; and differentiated levels of penetration for various Electric Vehicle (EV) categories. The authors have estimated (as part of a co-authored report) that achieving 450 GW of renewable energy by 2030 will require an additional ₹16.8 lakh crore investment. Per the National Green Hydrogen Mission, India's GH₂ target will need ₹8 lakh crore. Consumers will also need to spend around ₹16 lakh crore to purchase EVs to achieve this vision. A long-term perspective reveals a greater requirement: ₹850 lakh crore in investments between 2020 and 2070 to achieve net-zero emissions.

What should the NCQG quantum be?

Determining a new annual climate finance mobilisation target — called the New Collective Quantified Goal (NCQG) — is a top priority. The NCQG should include flows that are (i) actual disbursements, not just commitments; (ii) new and additional (iii) public capital in the form of direct grants; and (iv) private capital that is mobilised by public capital. However, organically flowing private finance to developing countries should not be counted. An independent high-level expert group constituted by the presidencies of COP26 and COP27 has already determined that developing countries (excluding China) will require around \$1 trillion in external finance by 2030.

BIODIVERSITY COP16: WHAT IS IT, WHAT IS ON AGENDA THIS YEAR

- Ahead of the annual climate change meeting, scheduled in Baku, Azerbaijan, this year from November 11, countries are currently assembled in the Colombian city of Cali for the UN Biodiversity Conference that takes place every two years.



- This year's meeting — the 16th Conference of Parties to CBD, or COP16 — is the first after a landmark agreement on biodiversity was finalised two years ago. This agreement, the Kunming-Montreal Global Biodiversity Framework that was concluded at COP15 in Montreal in 2022, lay down four goals and 23 targets to be achieved collectively by 2030.
- These include the so-called 30 x 30 targets — a commitment to put at least 30% of the world's lands and oceans, especially biodiversity rich areas, under conservation by 2030, and to initiate restoration work in at least 30% of degraded land or marine ecosystems by 2030.
- The climate crisis and the threat to biodiversity are closely linked — both are caused by indiscriminate extraction of natural resources, over-consumption, and unsustainable human activities. The two crises also feed off each other. Climate change has been expediting the loss of biodiversity, while changes in land and oceans have been contributing to global warming.
- Like in climate change negotiations, finance is crucial in CBD discussions as well. One of the 23 goals of the Kunming-Montreal Framework is to mobilise at least \$200 billion per year by the year 2030, from all sources, for spending on biodiversity conservation. Out of this, developed countries must provide at least \$20 billion every year to developing countries to support their biodiversity-related work. This money has to increase to at least \$30 billion every year by 2030. Ways and means to mobilise these financial resources is one of the main items on the agenda at COP16.
- Countries are also supposed to ensure that perverse incentives or subsidies that are harmful for biodiversity are phased out, eliminated, or repurposed. These can be incentives that allow over-fishing, encourage deforestation, or subsidise the use of fossil fuels. Under the Kunming-Montreal Framework, such measures should scale up to at least \$500 billion by 2030.

Do You Know:

- The Convention on Biological Diversity (CBD) came out of the same 1992 Rio Earth Summit that gave rise to the UN Framework Convention on Climate Change (UNFCCC). CBD aims to protect global biodiversity, restore natural ecosystems, and ensure that benefits from the world's biological resources are equitably distributed.
- One of the main objectives of COP16 is to expedite progress on the 30 x 30 targets which are the most immediate. Under the Kunming-Montreal Framework, each country is supposed to prepare and submit action plans to halt and reverse biodiversity loss within their jurisdiction. These National Biodiversity Strategies and Action Plans, or NBSAPs, are similar to the Nationally Determined Contributions, or NDCs, that countries have to submit under the 2015 Paris Agreement on climate change, mentioning their time-bound goals and actions being taken.
- So far, only 32 countries out of the total 196 parties to CBD, have submitted their NBSAPs. Many more are likely to do so during COP16.
- The High Seas Treaty, also known as the agreement on Biodiversity Beyond National Jurisdictions or BBNJ, which was finalised last year as a separate international agreement to maintain the ecological health of oceans, was a major step forward in meeting the 30 x 30 targets.
- One of the objectives of the High Seas Treaty is to demarcate protected areas in biodiversity-rich parts of the oceans — just like national parks or wildlife reserves on land — where human activities can be regulated and restricted.



WHY 'PROTECTED' AREAS ARE SEEING FASTER BIODIVERSITY DECLINE

Biodiversity is declining more quickly inside key protected areas than outside them, according to a new study. The findings, which raise questions about the ongoing conservation practices, suggest that merely designating more areas as protected “will not automatically result in better outcomes for biodiversity”.

- The analysis was carried out by the Natural History Museum (NHM), based in London, and published on Monday.
- Dr Gareth Thomas, head of research innovation at NHM, told The Guardian, that the study’s findings should be “a wake-up call” to policymakers and enforcers of the legislation that it was not enough just to designate an area as protected. “The ministers and policymakers need to know it is not about just hitting a number,” he said.
- The researchers involved in the study examined the Biodiversity Intactness Index (BII), which estimates how much of a region’s natural biodiversity is still left on average, according to the NHM website.
- They found that the index has decreased by 1.88 percentage points globally between 2000 and 2020.
- The researchers also examined critical biodiversity areas (CBAs) — ecosystems and areas such as wetlands that are crucial for biodiversity — 22% of which is protected. They found that “within those critical areas that were not protected, biodiversity had declined by an average of 1.9 percentage points between 2000 and 2020, and within the areas that were protected it had declined by 2.1 percentage points,” according to a report by The Guardian.
- One of the primary reasons for the decline is that many of the protected areas are not designed to safeguard the whole ecosystem but only certain species. This means that complete “biodiversity intactness” is not a priority, according to the study.
- The researchers also said that these areas could have already been witnessing degradation, which is why they were declared protected in the first place. They pointed out that region-specific analysis is required to determine why these landscapes are deteriorating.
- Another threat to the protected areas is oil, gas, and mining concessions — land granted by the government to companies which explore for and produce oil, natural gas, and other hydrocarbons. For instance, more than 65% of the Conkouati-Douli national park, which is one of the most biodiverse protected areas in the Republic of the Congo, is occupied by oil and gas concessions, The Guardian report said.
- The climate crisis also has a role to play. The researchers said that more frequent and intense droughts and wildfires have severely impacted the protected areas.

Do You Know:

- The United Nations Convention on Biological Diversity defines biodiversity as: “The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.”



- The Intergovernmental Platform on Biodiversity and Ecosystem Services, in their 2022 report, lists five direct anthropogenic drivers of biodiversity change – (i) Pollution, (ii) land/sea use change, (iii) direct exploitation and extraction of resources, (iv) climate change, and (v) invasive alien species.
- The state of biodiversity in the world today is dire, and the response of the global community to this has been much slower and less organised than the response to climate change. This could be in part because biodiversity loss has been harder to define and measure as compared to climate change. The narrative and action around biodiversity conservation is now growing as the scale of the current crisis becomes apparent to everyone.

HOW EARLY HUMANS EVOLVED TO EAT STARCH, WHY THAT MATTERS

As soon as starch — whether it be in the form of boiled rice, french fries, or momos — enters the human mouth, an enzyme in the saliva starts breaking it down. This enzyme, known as amylase, was critical for human evolution, helping the species adapt to a changing food supply.

Two new studies, one published last week in the journal *Science* and the other published last month in *Nature*, have revealed that our ancestors began carrying more amylase genes in two major waves. The first one occurred several hundred thousand years ago, possibly in response to the invention of fire, and the second one came after the agricultural revolution, only 12,000 years ago.

Why starch is a useful enzyme

In the 1960s, scientists discovered that some people produced extra amylase in their saliva. But it has only been in the past few years that researchers have been able to zero down on the amylase genes.

Both the studies catalogued a wide range of amylase copies in people's DNA. Some had a single amylase gene on each copy of chromosome 1, whereas most people had many more — in some cases, as many as 11 copies. These numbers were in stark contrast to even the closest extant species to humans. Chimpanzees, for instance, also make amylase in their saliva, but they carry only a single gene for the enzyme.

History in our mouths

The two studies looked at fossil evidence for when (and how) humans' early ancestors gained more amylase genes.

Their findings indicated that natural selection might have started favouring human ancestors with more amylase genes roughly around the time humans began to create and control fire, hundreds of thousands of years ago. This is because prior to the advent of cooking, humans likely did not consume starch-rich plants, which would have been tough to chew and digest (consider eating a raw potato).

That said, the studies found no evidence that hunter-gatherers gained any evolutionary advantage from having extra amylase genes. This changed drastically about 12,000 years ago. It was then, at the end of the last ice age, that a number of societies began domesticating crops, including starch-rich foods like wheat, barley and potatoes.



The studies revealed that DNA containing extra amylase genes became more common over the past 12,000 years as people with more amylase genes were more likely to survive and reproduce with the kind of nutrition that was now available. The study published in Science also found that extra copies of amylase rose rapidly in the past few thousand years in Peru, where potatoes were domesticated over 5,000 years ago.

Speculation for future

Omer Gokcumen, a geneticist at the University at Buffalo who led the Science study, speculated that people today who have fewer amylase genes may be more vulnerable to diseases like diabetes, that are fueled by a starch-heavy modern diet.

He said that more amylase might prompt people to make more insulin, which would in turn make them absorb more sugar from starch. Down the line, the findings could point to potential amylase-based treatments for these diseases.

FDA APPROVAL FOR COBENFY CASTS LIGHT ON SCHIZOPHRENIA'S WICKEDNESS

On September 26, the U.S. Food and Drug Administration (FDA) approved a drug called Cobenfy to treat schizophrenia. Cobenfy is a combination of xanomeline and trospium chloride that has a novel mechanism of action that steers clear of older drugs' side effects, too. It has side effects of its own, of course.

Schizophrenia is one of the most serious of all psychiatric disorders. It has life-changing consequences, including social isolation, stigma, and diminished prospects of finding a partner. Persons with schizophrenia have a life expectancy lower by 13–15 years, with contributions from weight gain, poor dietary habits, smoking, and comorbid substance use. Five percent of people with schizophrenia die by suicide.

Schizophrenia affects one in a hundred people in their lifetime. Newer evidence has challenged the idea that it is equally prevalent in both sexes, finding it is slightly more common in men. It typically develops during late adolescence and early adulthood. In men, it peaks in the early 20s; new cases among women are also seen in the mid- to late 40s.

Appreciating Cobenfy's novelty and the difference it can make requires awareness of the various effects of schizophrenia, its diagnosis, and scientists' understanding of what causes it.

Clinical symptoms of schizophrenia

Most people who develop schizophrenia display prodromal symptoms. They last for a little under 12 months on average and may include unexplainable feelings of inner change, the development of novel spiritual and philosophical interests, anger, irritability, anxiety, depression, and social withdrawal.

The clinical phenotype of schizophrenia falls into three categories: reality distortion, disorganisation, and negative symptoms. The so-called positive symptoms are characterised by delusions, hallucinations, and a pattern of speech that is difficult to follow; the technical name for this is formal thought disorder.

The Swiss psychiatrist Paul E. Bleuler used the "four As" to characterise schizophrenia in 1911: affect, associations, ambivalence, and autism. Contemporary descriptions are richer and more sensitive to differences in symptoms. They include negative symptoms like reduction in the



quantity of words spoken, reduced goal-directed activities, apathy or lack of motivation, anergia, reduced experience of pleasure, and reduced expression of emotions.

Disorganisation symptoms include formal thought disorder (also considered a positive symptom), disorganised behaviour, and inappropriate affect. Another intriguing symptom that has today become more uncommon, especially in the economically developed world, is catatonia: characterised by a host of abnormal motor behaviours occurring alongside stupor or excitement. It is no longer considered characteristic of schizophrenia, as it is seen in other psychiatric disorders as well.

The German psychiatrist Kurt Schneider had described “first rank” symptoms previously considered to be pathognomonic of schizophrenia. These included auditory hallucinations referring to the patient in the third person, subjective changes in the ownership of thinking, and the experience that one’s actions, bodily sensations, or emotions are controlled by external forces.

Cognitive impairment is ubiquitous in schizophrenia. Patients have shown impaired performance on various cognitive tests that measure judgement, attention, memory, and general intellectual functions.

What causes schizophrenia?

Schizophrenia is a multifactorial disorder. Viewing it through the lens of a single construct is futile. The role of genetics in the pathophysiology of schizophrenia cannot be overemphasised. Genetic variants associated with risk play a direct role in the brain by changing gene expression that disrupt brain development and function.

A genome-wide association study in 2014 identified 108 genetic loci associated with schizophrenia. (Reminder: correlation does not imply causation.) Disorders like Huntington’s disease, cystic fibrosis, hemochromatosis, and sickle cell anaemia are caused by mutations in a single gene. Unlike them, schizophrenia is polygenic, meaning it is the result of hundreds and possibly thousands of genes of small effect sizes. Rare genetic variants of moderate to large effect sizes have also been identified.

According to neurodevelopmental theory, the causes include events in early life, at birth, or even in utero. Prenatal and perinatal complications represent the most common environmental risk factor for schizophrenia. The genetic risk for schizophrenia interacts with early life complications and increases the risk probability up to fivefold when there are early-life complications.

The discovery of genes that confer risk and the neurodevelopmental origins of schizophrenia have expanded our understanding of disease pathophysiology.

Xanomeline and trospium

Dopamine and glutamate, two neurotransmitters, have been implicated in the genesis of schizophrenia. But studies investigating the neurochemical origins of the disorder have thrown up conflicting results.

Amphetamine abuse stimulates dopamine release and produces a clinical syndrome resembling schizophrenia. Antipsychotics act by blocking brain dopamine receptors. These two premises gave rise to the dopamine hypothesis. The initial version of the dopamine hypothesis now stands discredited in light of new evidence. Multiple studies have demonstrated people with established



schizophrenia have an increased dopamine synthesis capacity, and so far only one replication effort has failed to reproduce their findings.

Cobenfy, the new drug that has just received the FDA's approval, "is the first antipsychotic drug approved to treat schizophrenia that targets cholinergic receptors as opposed to dopamine receptors, which has long been the standard of care," the FDA said in a statement.

According to a review of xanomeline and trospium chloride published in 2022, the early development of xanomeline as a drug candidate to treat Alzheimer's disease and schizophrenia was stopped due to the compound's adverse effects. It gained favour again after researchers considered using it with trospium. Xanomeline is an agonist of muscarinic receptors (i.e., of the parasympathetic nervous system) and "might lead to improvement in all symptom types of schizophrenia," while "trospium is expected to reduce the adverse effects of xanomeline" given "its role as an antimuscarinic agent."

The FDA said Cobenfy's most common side-effects include nausea, indigestion, hypertension, tachycardia, and dizziness. The drug belongs to Bristol Myers Squibb, which has priced it at \$1,850 a month.

E. COLI OUTBREAK LINKED TO MCDONALD'S BURGERS: WHAT IS THE DISEASE?

One person has died and 10 have been hospitalised in the US due to an E.coli infection after eating McDonald's burgers.

While the source of the infection is not known yet, the fast food giant has stopped serving quarter pound patties and slivered onions in several US states. Both ingredients are primarily used in the burger.

Has the E.coli outbreak been reported outside the US too?

No. The outbreak is restricted to 10 states in the United States. However, E.coli, which causes gastrointestinal symptoms, is not uncommon in India. It spreads through contaminated food and water. "We usually see cases during the summer and rainy seasons, when there is an increase in gastrointestinal infections in general," said Dr Atul Gogia, senior consultant of internal medicine at Sir Ganga Ram hospital, New Delhi.

Dr Suranjit Chatterjee, senior consultant of internal medicine at Indraprastha Apollo Hospital, New Delhi, said: "Among gastrointestinal and urinary tract infections, E.coli is one of the most common pathogens."

How common are E.coli infections?

More than 500 outbreaks of diarrhoeal diseases were reported across India in 2023, according to the National Centre for Disease Control.

E.coli is the most common bacteria isolated from patient samples, according to the latest report of ICMR's Antimicrobial Surveillance Network. The pathogen was found in 23.19% of all types of patient samples from tertiary care hospitals across India, where the surveillance is carried out.

The Food Safety and Standards Authority of India (FSSAI) is working on creating a network of 34 microbiology labs across the country that will test food products for 10 pathogens, including



E.coli, salmonella, and listeria. Tests for microbial contamination were missing from most state food safety laboratories in the country.

What are E.coli infection's symptoms?

The most common symptoms of E.coli infection include fever of more than 102 degree F, persistent diarrhoea, bloody diarrhoea, and vomiting. The main problem, however, is dehydration due to the inability of the patient to retain water and fluids.

In very few cases, people may get acute kidney injury.

How is it treated?

E.coli is a bacterial infection for which antibiotics are prescribed. Doctors emphasise that medicines should not be taken without consultation.

Indiscriminate use of antibiotics leads to antimicrobial resistance and further difficulty in treating common infections. For example, E.coli's susceptibility to even strong antibiotics, such as carbapenem, has been on the decline, reducing from 81.4% in 2017 to 62.7% in 2023 to one type of medicine in this category.

When should you go to a doctor?

You must go to a doctor if you have had diarrhoea for more than a couple of days; you have to visit the toilet every half hour to an hour; you have bloody diarrhoea; you vomit frequently; and are unable to retain any water and fluids.

MEDICINE USE AND MISUSE

- UNGA considered AMR an imminent threat to human, animal and plant health. It also rightly recognised that dealing with the problem is essential to enabling equitable economic development and a healthy environment.
- Antimicrobial is an all-encompassing term that includes antibiotics, antivirals, antifungals and antiparasitics administered to humans, animals and plants. They have been misused and overused not just to treat diseases but also as "growth promoters" in industrial-scale food production since the 1950s. In 2000, the WHO recommended rapidly phasing out antibiotic growth promoters from the agriculture and animal sectors.
- The World Bank estimates that this threat could result in additional healthcare costs of up to \$1 trillion by 2050 and GDP losses per year ranging from \$ 1-3.4 trillion (Rs 10.9-11.7 lakh crore) by 2030. This translates to annual costs being as large as those of the 2008 global financial crisis and could widen the inequality between nations.

Do You Know:

- According to the WHO website, One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent. While health, food, water, energy and environment are all wider topics with sector-specific concerns, the collaboration across sectors and disciplines contributes to protect health, address health challenges such as the emergence of



infectious diseases, antimicrobial resistance, and food safety and promote the health and integrity of our ecosystems.

- By linking humans, animals and the environment, One Health can help to address the full spectrum of disease control – from prevention to detection, preparedness, response and management – and contribute to global health security. The approach can be applied at the community, subnational, national, regional and global levels, and relies on shared and effective governance, communication, collaboration and coordination. Having the One Health approach in place makes it easier for people to better understand the co-benefits, risks, trade-offs and opportunities to advance equitable and holistic solutions.

- AMR is a condition in which a pathogen acquires the ability to survive and cause infection even in the presence of an antimicrobial drug. AMR is the result of evolution of microbes in a situation where there is a misuse or overuse of antibiotics.

Excessive use of antimicrobial drugs can lead to the creation of resistant or extremely resistant superbugs, which can circulate in hospitals, through drinking water, or sewers. Infections caused by these pathogens will not respond to commonly prescribed antibiotics.

CAN A POPULAR WEIGHT-LOSS DRUG REDUCE RISK OF ALZHEIMER'S?

Semaglutide, the active ingredient in popular blood sugar control and weight loss drugs such as Ozempic and Wegovy, can reduce the risk of Alzheimer's disease (AD) in people with type 2 diabetes, a new study shows.

Alzheimer's causes a gradual decline in memory, thinking, behaviour, and social skills, and it is the most common cause of dementia. According to the new study published in the journal Alzheimer's & Dementia on Thursday, semaglutide was found to significantly lower the risk of developing AD compared to other diabetes medicines. Specifically, it was found to reduce the risk of a first-time Alzheimer's diagnosis by 40% to 70%.

A promising study

Researchers analysed health records of over a million patients in the US with type 2 diabetes to see how semaglutide affects the risk of developing AD. They compared semaglutide to seven other diabetes medications, and tracked the patients for up to three years to see if they were diagnosed with Alzheimer's. The other diabetes drugs used in the study included metformin, insulin, and older GLP-1 drugs like liraglutide.

Using specific statistical methods, they studied the time it took for Alzheimer's to be diagnosed in these patients, if at all. The study found that patients prescribed semaglutide had a significantly lower risk of AD than those who had taken one of the seven other diabetes drugs.

The most notable difference with regards to AD incidence was seen between patients who took semaglutide and those who took insulin, with semaglutide patients boasting a 70% lower risk of developing Alzheimer's.

Science behind findings

The study said GLP-1 RAs, a group of drug which includes semaglutide, might help protect brain function. Early research on semaglutide identifies a number of ways in which it might benefit the brain such as lowering toxic effects of certain proteins linked to AD, improving how brain cells use



glucose for energy, and reducing the buildup of harmful plaques and tangles associated with Alzheimer's.

“Semaglutide reduces neuro-inflammation, which is commonly linked to Alzheimer's. It helps stabilise blood sugar levels, limiting oxidative stress or cell damage and enhancing cellular energy. This action can protect neurons from degeneration, a hallmark of Alzheimer's and other neurodegenerative diseases,” Dr (Prof) M V Padma Srivastava, chairperson, Neurology, Paras Health, Gurugram, told The Indian Express.

Potential implications

The US Food and Drug Administration (FDA) has approved two treatments — Biogen's Leqembi and Eli Lilly's Kisunla — that marginally slow the progression of AD by targeting the disease's hallmark amyloid plaques in the brain. But these can cause serious side effects, including brain swelling and brain bleeding. Traditionally, Alzheimer's has been managed largely using cognitive and lifestyle interventions.

This is what makes the latest research, which introduces a new therapeutic pathway for treating Alzheimer, potentially ground-breaking. “By demonstrating that GLP-1 drugs can mitigate some risk factors for Alzheimer's, the study suggests a dual-purpose use for these drugs: managing diabetes and offering a preventive mechanism for dementia,” Dr Srivastava said.

For India, this is particularly significant. The country boasts among the highest global rates of type 2 diabetes, which is associated with a higher risk of cognitive decline. This is because type 2 diabetes results in chronic insulin resistance, higher levels of inflammation, oxidative stress in the brain — all of which lead to impaired glucose metabolism in the brain, resulting in cognitive decline and neuron damage over time.



DreamIAS