

CURRENT AFFAIRS for UPSC

28TH JULY TO 3RD AUGUST 2024

DreamIAS



INTERNATIONAL

ON ELECTION OF THE EUROPEAN COMMISSION PRESIDENT

The story so far:

On July 18, the newly constituted European Commission (EC), the executive arm of the European Union, elected Ursula von der Leyen, the EC's first female President, for a second term. Ms. Von der Leyen, of the centre-right European People's Party (EPP), won by a clear majority of 40 votes unlike the razor-thin nine vote margin she secured in 2019.

How is the EC President chosen?

The selection of the EC President entails a two-stage process in consonance with the results of the parliamentary polls. The candidate is initially proposed and elected by the European Council — comprising the leaders of the EU's 27 member countries — and subsequently put to a secret ballot in parliament. Conventionally, the Council's choice has been a straightforward affair, determined essentially by the steady dominance of top three of the bloc's eight political groups, namely the EPP, the centre-left Socialists & Democrats (S&D) and the liberal Renew group.

Yet the decision regarding Ms. Von der Leyen's candidature was not unanimous. Brothers of Italy, the party of Giorgia Meloni, Italy's far right Prime Minister, had bagged the maximum number of seats in the EU parliamentary polls. The European Conservatives and Reformists (ECR), the far-right caucus Ms. Meloni heads, had for a short time managed to muster the numbers to be counted the third largest group in the legislature. Italy, moreover, is one of the EU's six founder members and the bloc's third largest economy. Given this formidable background, the Italian far-right caucus was straining every nerve to exert Rome's clout on the EU stage. While EU leaders and heads of the three main groups finalised Ms. Von der Leyen's candidature, Ms. Meloni took strong exception to her exclusion from the meeting. In the end, Ms. Meloni and the hard-right Hungarian Prime Minister Viktor Orban disapproved the decision, leaving it to the remaining 25 leaders to back the Council's nominee.

What about the vote in parliament?

The ripples from Ms. Meloni's abstention in the Council were felt across the board, giving momentary pause for Ms. Von der Leyen's prospects for automatic reinstatement by the legislature. There were even murmurs of the Council calling for a possible second vote in case parliament rejected her appointment.

Eventually, Ms. Von der Leyen secured 401 votes, exactly the number of seats held by the parliament's three main political groups supporting her, and well over the halfway mark in the 720-strong house. It fell to the 53 MEPs from the Green party to come to Ms. Von der Leyen's final rescue, backing for the first time a commission nominee. The revival of the landmark Green Deal to achieve net zero emissions by 2050, in return for the party's critical support, remains to be seen. Ms. Meloni and the ECR are for now a much reduced force. A more potent threat facing EU centrists is the newly launched Eurosceptic and anti-immigrant Patriots for Europe group, which has overtaken the ECR and is now the third largest bloc in parliament.



What will be the challenges Ms. Von der Leyen will have to face?

The bloc's most powerful institution, the EC, speaks as a single voice on external affairs and proposes legislation covering areas that require collective action, sifting through competing claims arising from divergent national and ideological perspectives. The most complex exercise of them all is the formulation of the bloc's seven-year budget. Crucially, Ms. Von der Leyen has pledged to tie national disbursements from the EU budget to the observance of the rule of law and plans to impose conditions relating to the respect for fundamental rights for availing other funds. With far-right parties heading national governments or in coalition, democratic backsliding could be a matter of some concern in the coming years.

Ms. Von der Leyen's second term would be anything but smooth sailing, as she seeks to appease and accommodate particular political constituencies.

UKRAINE, A DIVIDED WORLD AND INDIA'S GROWING CHALLENGES

The joint statement at the end of the meeting of the Quad foreign ministers — the Quadrilateral Security Dialogue comprising the US, Australia, Japan and India — assumes added significance in the current moment. Ever since Russia's invasion of Ukraine over two years ago, Delhi has had to walk, often against the wind, a diplomatic tightrope. The sharpening differences between the West and Russia-China and within Europe and the US, coupled with the uncertainty around what the results of the American presidential election might mean for European security, and the hard lines being drawn currently, make this balancing act all the more difficult.

The Quad statement must be read against the background of an increasingly aggressive China — in the Indo-Pacific as well as along the Line of Actual Control with India. India's endorsement of "a free and open Indo-Pacific, vowing to work towards a region where no country dominates others and each state is free from coercion in all its forms", comes as no surprise. The forum is also a way for its members to share technologies and develop common strategies for the region.

The statement also expressed "deepest concern over the war raging in Ukraine including its terrible and tragic humanitarian consequences. We reiterate the need for a comprehensive, just, and lasting peace in line with international law, consistent with the purposes and principles of the UN Charter, including respect for sovereignty and territorial integrity". The reference to "sovereignty and territorial integrity" is for India a way to assuage concerns about PM Modi's Moscow visit expressed by Ukraine President Volodymyr Zelenskyy and US officials. External Affairs Minister S Jaishankar spoke of his long association with the grouping as a way to put a face and story to Delhi's commitment to the Quad. India is also set to send a high-level delegation to Kyiv in August.

The fact is that New Delhi's primary concern is to secure the interests of its citizens. But its backing "territorial integrity" is not merely paying lip service: It is a matter of principle on the boundaries with Pakistan and China as much as it is in Europe. Its commitment to peace, too, has been a long-standing position as has the principle of independence in foreign policy. Jaishankar told reporters that India's issues with China must be solved bilaterally, without third parties getting involved. But despite these anchors, "multi-alignment" will only get more challenging. Donald Trump's return to the White House could mean a very different scenario in Europe and perhaps a greater focus on containing China. For now, however, going ahead, the foreign office must continue to be nimble and responsive, as it has been so far.



STEALING THE VOTE

On Nicolás Maduro's watch, Venezuela's economy contracted 80% in less than a decade. Some 7.8 million Venezuelans fled from the economic hardships. If extreme poverty was at 11% in 2013, the year Hugo Chávez died and Mr. Maduro ascended to presidency, it now stands at 53%, while household poverty is much higher, at 82%, as per the UN. The oil-rich country had witnessed anti-government protests in recent years which were met with crackdowns. Before the July 28 presidential election, opinion polls showed that Edmundo González, the main opposition candidate, had a 20-point lead over the President. But none of these seemed to have mattered in the election, according to official results. Mr. Maduro won 51% of the vote, while Mr. Gonzalez secured 44%, said Venezuela's election authority. Mr. Maduro can now extend his rule for six more years. But the opposition has reported widespread irregularities in the counting, and accused the President and his allies in state institutions of stealing the vote. According to the opposition, its vote tallies show that Mr. González won some 7.1 million votes against Mr. Maduro's 3.2 million. Anti-Maduro protests broke out after the official results were announced. And the government is yet to release detailed voter data.

Mr. Maduro is not singularly responsible for the economic crisis. Chavez, a former tank commander who rose to power through elections, defied the liberal economic orthodoxy and built a new welfare state that was funded by oil revenues. By the time Mr. Maduro, who lacked his predecessor's charisma, came to power, falling oil prices had dealt a blow to Venezuela's economy. The sanctions by the Trump administration on the oil industry, pushed the economy to the brink of collapse. Mr. Maduro's response was to tighten his grip on power. His regime seemed helpless when Venezuela was gripped by hyperinflation and scarcity of essential goods and medicines. In the run-up to the elections, the government had promised a free and fair vote. But even before the campaign started, María Corina Machado, the opposition's most popular candidate, was banned from contesting. Mr. Maduro has rejected the opposition's claims of fraud after the vote, but he is also under pressure. The U.S. on Thursday recognised Mr. González as the winner and called for a peaceful transition. Even Mr. Maduro's leftist allies in Latin America, including Colombia and Brazil, have called for full and transparent voting data. Mr. Maduro now has the support of the military. But the deepening divisions at home and isolation abroad would continue to pose questions of legitimacy to his presidency.

WIDENING CONFLICT

A rocket attack on a football ground in Majdal Shams in the Golan Heights, in which 12 young people were killed, has taken West Asia to the brink of a wider war. Israel and the U.S. have blamed Hezbollah, Lebanon's powerful Shia militia that is backed by Iran, for the attack. Hezbollah, which initially claimed rocket strikes on an Israeli military outpost in the nearby Mount Hermon, later denied any role in this incident. But Israel has not bought Hezbollah's claims and is preparing its response. From October 7, 2023, the day Hamas carried out a cross-border attack in Israel, killing an estimated 1,200 people, a slow-burning war has been raging on Israel's northern border with Hezbollah. When Israel launched the Gaza war following the Hamas attack, Hezbollah began rocket attacks from southern Lebanon, its stronghold, mostly targeting Israel's military outposts in the occupied Shebaa Farms or the Upper Galilee region of northern Israel. Hezbollah's attacks forced some 60,000 Israelis to flee from Upper Galilee, with Israeli forces carrying out air strikes inside Lebanon in retaliation. Hezbollah claimed that it was fighting Israel "in solidarity" with the Palestinians, while Israel's leadership said none of Hezbollah's attacks would go unpunished.



However, both sides were, until recently, cautious not to let the conflict spiral into an all-out war. But the Majdal Shams attack seems to have broken those unwritten rules of the war.

Hezbollah's claim that it was not involved in the attack cannot be taken for granted. It is possible that the group targeted IDF outposts in the Golan Heights, under Israel's illegal occupation since 1967, and the rocket fell on the football field, but still the responsibility lies with the militia. Israel's hands are not clean either. The IDF, whose Gaza campaign has killed thousands of Palestinian civilians, has also carried out strikes in Lebanon's civilian neighbourhoods. Hezbollah and Israel last fought an all-out war in 2006, and it did not end well for the Jewish state. Hezbollah also takes credit in forcing Israel to withdraw from southern Lebanon after 18 years of occupation. And since 2006, Hezbollah has built a stronger army and a huge stockpile of weapons. A war could spiral out of control with a high risk of Iran's involvement. Hezbollah's rocket attacks in recent months have only provoked Israel; and Israeli strikes on Lebanon have done little in deterring the group. This cycle of violence is self-defeatist and there will be peace only if both parties reset the current hostility and calm the borders. The obvious first step is to end the war which triggered this regional crisis — the war on Gaza.

ISRAEL'S HARD MILITARISM HAS CONSEQUENCES FOR THE WHOLE REGION

How can mediation succeed when one party assassinates the negotiator?" The question posed by Qatar's Prime Minister Sheikh Mohammed bin Abdulrahman Al Thani — Qatar is a mediator in the ceasefire negotiations between Hamas and Israel — in the aftermath of the assassination, allegedly by Israel, of Ismail Haniyeh, head of Hamas's politburo and one of its primary negotiators, frames the fundamental issue in the Middle East. The Benjamin Netanyahu government, seemingly immune to international pressure or criticism, is playing a maximalist game that makes a negotiated peace a more distant possibility. The number of deaths in Gaza is now at nearly 40,000 and injuries are over twice that number. Less than 24 hours before Haniyeh's killing in Tehran, Israel claimed it had killed a Hezbollah commander in an airstrike in Beirut. Israel must know that this hard militarism does more than just make Palestinians, and the region, more insecure — it also damages its own social and political fabric irretrievably.

Haniyeh's assassination and the Beirut strike threaten to expand the conflict into an all-out regional war. Iran's Supreme Leader and Revolutionary Guards Council (IRGC) have already spoken of retaliation, including through the "axis of Resistance" — a term it uses for the network of non-state actors including Hamas, Hezbollah and the Houthis that are engaged in various degrees of conflict with Israel. The assassination on Iranian soil shows the depth of Israel's penetration of its security shield. The IRGC cannot appear to be weak, and it may well be the case that the cycle of violence — through proxies and agents, if not more directly — could continue and escalate. India has huge economic stakes in the region, apart from its commitment to peace, that are endangered by the conflict. In addition to the estimated 8.9 million migrant workers, it has much to gain from the India-Middle-East-Europe Economic Corridor (IMEC), announced at the G20 summit in New Delhi last year. Without peace and stability, the IMEC cannot take off. As a friend to Israel as well as Palestine, Delhi should continue to do all it can to bring both sides to the negotiating table.

Earlier this week, Israel's military police were surrounded by right-wing protesters — endorsed by some leaders of the ruling coalition — after the arrest of soldiers accused of abuse of Palestinians in a detention facility. In essence, hate and impunity were being championed over due process. For a country that pledges commitment to the rule of law, that should be unacceptable. Netanyahu must realise that there are no winners in this war.

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



INDIA FACES 'DILEMMA' AMID RISING IRAN-ISRAEL TENSIONS OVER ISMAIL HANIYEH'S KILLING

India's silence for another day on rising tensions between Iran and Israel over the killing of Hamas leader Ismail Haniyeh reflects its "dilemma" in trying to balance ties with both countries, say experts. The assassination of Mr. Haniyeh, the political chief of the group that carried out the October 7 terror attacks in Israel, who was also Hamas's lead negotiator with Israel and other countries on a possible ceasefire deal and hostage release negotiations that have failed to fructify for months, is likely to put a pause on the peace process under way.

While the Ministry of External Affairs has put out a travel advisory for Indians in Israel and Lebanon, and is likely to update travel advisories for other parts of the region, sources said there would be no statement on the Haniyeh killing itself.

"The assassination is definitely a major event for India, because it has happened very close to India's neighbourhood," said Sujatha Aishwarya, Professor at Jamia Milia University's School of West Asian Studies. "But the government appears to be in a dilemma as to how to respond to the event," she added, citing India's close ties with Iran and Israel as a factor.

Adding to the complications for New Delhi, India had sent Road Transport and Highways Minister Nitin Gadkari to Iranian President Masoud Pezeshkian's inauguration and Mr. Gadkari was in Tehran when Haniyeh was killed and had been in a group photo with Haniyeh, as well as Hezbollah leaders along with dozens of international dignitaries attending.

Indian workers

While India condemned the October 7 attacks in Israel as terrorist acts, the government has not banned Hamas as a terror group, despite requests from Israel. On the other hand, the government has facilitated the transfer of at least 5,000 construction workers and plans for about 5,000 caregivers to travel to Israel to fill in for jobs where Palestinian workers were terminated after the October 7 attacks. With Air India putting off flights to Tel Aviv for this week, and more travel advisories expected, the transfer of Indian workers may also be put on hold.

"India will want to issue any statement only after it carefully studies how it might impact ties with Israel, which are critical in certain security and military areas, and also Iran, where [India] has important, critical economic stakes involved," Ms. Aishwarya concluded.

Others said New Delhi may also be concerned about the impact of the tensions on two recent initiatives: the India-Middle East Europe Economic Corridor (IMEEC) launched last September, and the 10-year India-Iran MoU for additional development of Chabahar port signed in June this year.

While bilateral talks on the IMEEC plan with various partners, including the UAE, Jordan and Greece, have taken place, the steering committee of all IMEEC countries has been unable to meet due to West Asian tensions for nearly a year. Any conflict in the region, and the implementation of any U.S. sanctions will also impact India's plans for Chabahar port, including land connectivity to Afghanistan and Central Asia. In addition, the India-Israel-UAE-U.S. I2U2 initiative and plans to connect Indian cargo routes through the International North South Transport Corridor to Russia could also be affected.



WHY HAVE VIOLENT PROTESTS IN KENYA CONTINUED?

The story so far:

On June 25, protests turned violent in Kenya when lawmakers passed a controversial financial Bill. Although President William Ruto withdrew the Bill the next day, protests continued. According to the Kenya National Human Rights Commission (KNHRC), over 50 people have been killed and 628 were arrested in the violence.

What did the Bill entail?

The Bill was introduced in May and imposed a 16% Value-Added Tax (VAT) on bread, 25% excise duty on cooking oil, 5% tax on digital monetary transactions, an annual 2.5% tax on vehicles, an eco-tax on plastic goods, a 16% tax on goods and services for the construction and equipping of specialised hospitals and an increase in import tax from two to three per cent. The government dropped a few of them after the initial round of protests. The state's larger objective is to collect \$2.7 billion in taxes to pay off the debt of \$80 billion, which is 68% of Kenya's GDP. The Bill caused public distress due to the increasing cost of living.

Why are protests continuing?

Mr. Ruto withdrew the controversial Bill on June 26 following country-wide violent protests, and when his use of force and the death of the protesters drew global criticism. The protest has since then expanded on its causes, demands, geography and intensity.

The protests were an expression of long-standing discontent over Mr. Ruto's administration and financial management. For example, a month after coming to power, Mr. Ruto scrapped fuel subsidies. The July 2023 protests against another Bill, which introduced a 5% housing levy and a 16% tax on petroleum products, killed 23 people. And thus, the initial intentions behind the protests diverted after the President withdrew the Bill as the use of force, live ammunition and deaths angered the protesters. The second phase of protests was against police brutality. By the third week, it had evolved into anti-government protests over unaddressed public grievances, corruption, mis-governance, and a demand for Mr. Ruto's resignation.

Moreover, the immediate success of the protests encouraged Kenyans to join the masses against all public grievances. Mr. Ruto came to power in September 2022 promising to address unemployment and poverty. However, he failed to maintain the popularity he received during the elections. The trading economics website recorded Kenya's inflation rate at 5.1% in May. The World Bank reported that although Kenya is one of the most developing countries in Africa, a third of its 52 million people live in poverty and that 5.7% of the labour force is unemployed, which is the highest in East Africa.

According to Transparency International's Corruption Perceptions Index 2023, Kenya ranks 126 out of 180.

What next?

Mr. Ruto sacked his cabinet and announced a new one on July 19. While the inclusion of four opposition figures into the cabinet might hold the opposition party from joining the protests, it is less likely to slow down the protests. While the country plunges into a debt crisis, any further



financial reforms in the near future would trigger a similar response, implying that Mr. Ruto's administration is in crisis.

Several other African countries are also vulnerable to similar instabilities due to the debt crisis. According to the World Bank, nine African countries face a debt crisis in 2024, and 15 among them are at risk of distress. They depend on regular borrowing, doubling the total debt. The debt burden often forces the governments to either increase the taxes or wait for a debt reconstruction.

However, the Kenyan protests have influenced the African youth and their potential to mobilise the masses. Ugandan youth have followed Kenya, protesting against corruption on July 23. Several other illiberal democracies in Africa are likely to follow Kenya and Uganda. Chosen the same method, protests would trigger violence across the region.

SULTAN IBRAHIM ISKANDAR

— Sultan Ibrahim Iskandar, of the southern state of Johor, has been sworn in as the 17th king of Malaysia under a unique rotating monarchy system.

Nine ethnic Malay state rulers take turns as Malaysia's king for five-year terms under the world's only such system, which began when Malaysia gained independence from Britain in 1957.

The King is known as the Yang Di-Pertuan Agong, or He Who is Made Lord. The King is the nominal head of the government and armed forces and is highly regarded as the protector of Islam and Malay tradition.



DreamIAS



NATION

KARGIL, 25 YEARS LATER: AN INCOMPLETE VICTORY

A quarter of a century after the Kargil War ended, a serious reflection would suggest India's victory or "vijay" is incomplete. Pakistan's Kargil aggression in the spring of 1999, just weeks after Prime Minister Atal Bihari Vajpayee's peace mission to Lahore, highlighted three broad challenges in the domains of defence, deterrence, and diplomacy. On the defence front, the Kargil surprise exposed the multiple vulnerabilities of India's security. India did reverse the Pakistani ingress across the LoC, thanks to the extraordinary courage of officers and men. But sacrifice of its best men is no way of defending a nation's territory; what India needed was a root and branch overhaul of its higher defence organisation, modernisation of its armed forces, upgrading its rusty defence industrial infrastructure, revitalising its intelligence mechanisms, and restructuring the decision-making on national security. The Kargil Review Committee headed by K Subrahmanyam produced a series of defence reforms. Over the last 25 years, Delhi did seek to restructure the national security system. But these reforms have been incremental and sub-optimal. The intensification of the conflict on the China frontier has highlighted India's two-front challenge and the case for faster transformation.

The second was the challenge of countering Pakistan's pursuit of cross border terrorism under the shadow of its nuclear gun. After a period of hesitation, Delhi began to experiment with bolder efforts to raise the costs of Pakistan's terror policy. The 2016 "surgical strikes" across the LoC, and the 2019 air attacks on a terror camp in PoK following the Pulwama attacks demonstrated Delhi's new political will to enhance deterrence. Pakistan's successful riposte in 2019 that saw the downing of an Indian Air Force Mig-21 pointed to a stalemate. India needs a massive military superiority that can inflict decisive punishment on the Pakistan Army for effective deterrence — it is nowhere near achieving that kind of military edge.

Finally, military means alone will not bring the desired results. They need to be matched by diplomacy. The overall balance of power has indeed tilted in favour of India, thanks to Islamabad's economic failures since Kargil and Delhi's rapid growth. Many traditional friends of Pakistan, except for China and Turkey, now see India as a more valuable partner. Yet, Delhi should not delude itself that it can unilaterally define the terms of engagement on Kashmir and other disputes. The change in the constitutional status of Kashmir in 2019 and India's hard line on talks with Pakistan have not eliminated Rawalpindi's capacity to create trouble. The upsurge in cross-border terror attacks in Jammu offers evidence of Rawalpindi's capacity for mischief. Delhi must find ways to engage the political classes and civil society in Pakistan that can create the conditions for transcending the bitter legacies of Partition that were at the root of the Kargil war and continue to hobble the bilateral relationship.

VIETNAMESE PM BY HIS SIDE, MODI TAKES DIG AT CHINA: WE DON'T SUPPORT EXPANSIONISM

With an eye on Chinese aggression in the South China Sea, Prime Minister Narendra Modi and visiting Vietnamese PM Pham Minh Chinh Thursday underlined the importance of "non-militarisation and self-restraint in the conduct of all activities" to avoid the escalation of disputes in the region.



— More than 55 per cent of world trade crosses through the South China Sea and New Delhi is concerned about potential disruptions.

— “In our Act East policy and our Indo-Pacific vision, Vietnam is our important partner... We support development, not expansionism (Hum vistarbad nahi, vikasvad ka samarthan karte hain),” Modi said in Hindi in his statement.

— “Both leaders emphasised the legal framework set out by the UNCLOS within which all activities in the oceans and seas must be carried out, and that UNCLOS is the basis for determining maritime entitlements, sovereign rights, jurisdiction and legitimate interests over maritime zones,” the joint statement said.

For Your Information:

— Vietnam knows that peace with neighbours and cooperation with all is indispensable for creating a future of happiness for its people. “If the country is independent but its people don’t have happiness and freedom, then independence is meaningless”. These sage words of Ho Chi Minh, the father of the nation, serve as the guiding principle for the ruling communist party and its government.

— To secure peace, in 2019, it wisely adopted a defence policy of “Four Nos” — No to joining any military alliance; no to siding with one country to counter another; no to foreign military bases or use of Vietnam’s territory to counter a third country; and no to use of or threat of force in international relations.

— “The people and government of Vietnam are very happy that India is rising as a major power in Asia and the world. Yet, New Delhi seems more comfortable looking west than east. If it wants to reap the enormous opportunities Vietnam provides — and also if it wants to enlarge its influence in the wider Indo-China and ASEAN region — India should not only Act East, but also Act Fast.”

TIGHTROPE FROM MOSCOW TO TOKYO: DELHI JOINS QUAD ON UKRAINE WAR

Three weeks after Prime Minister Narendra Modi visited Russian President Vladimir Putin in Moscow, India joined the US, Australia and Japan in the Quad grouping Monday to express its “deepest concern” over the “war raging in Ukraine”, and flagged “respect for sovereignty and territorial integrity” — a clear reference to Russian invasion of Ukraine.

— As External Affairs Minister S Jaishankar met with US Secretary of State Antony J Blinken, Japanese Foreign Minister Yoko Kamikawa and Australia’s Penny Wong in Tokyo, the Quad reaffirmed its “steadfast commitment to a free and open Indo-Pacific, vowing to work towards a region where no country dominates others and each state is free from coercion in all its forms”. This was a veiled reference to China’s aggressive behaviour in the region.

— The Quad foreign ministers also said that they looked forward to India hosting the next Quad Leaders’ Summit later this year and to the US hosting the next Quad Foreign Ministers’ meeting in 2025.

— Divergences between India and the remaining Quad members US, Japan and Australia over Russia and bilateral differences over the Pannun assassination plot have cast a shadow on the



grouping. With Beijing as the principal challenge, Quad is trying to paper over the differences and make a case for cooperation.

For Your Information:

— QUAD is the informal strategic dialogue between India, USA, Japan and Australia. The four nations share a common objective to ensure and support a “free, open and prosperous” Indo-Pacific region.

— Unlike NATO, the Quad does not include provisions for collective defence, instead choosing to conduct joint military exercises as a show of unity and diplomatic cohesion.

MUIZZU THANKS DELHI

The Maldives has resumed using a Dornier aircraft and two helicopters gifted by India for medical evacuations after the two countries reached an understanding over the repatriation of Indian military personnel operating the three aviation platforms in the archipelagic nation, media reports said on Saturday.

— President Mohamed Muizzu, known for his pro-China stance, has thanked India for enabling the resumption of medical evacuation services with civilian aviation personnel from India.

For Your Information:

— Maldives’ proximity to the west coast of India, and its location at the hub of commercial sea lanes running through the Indian Ocean imbues it with significant strategic importance to India. The security scenario in India’s periphery in the Indian Ocean is very much linked to the maritime strength of Maldives.

— This is the reason why India invests on Maldives’ security by training its defence forces. Estimates suggest that almost 70 per cent of Maldives’ defence training is done by India...

— India is concerned at the expanding Chinese footprint there. So, from a purely strategic perspective, India needs Maldives on its side to secure its maritime periphery, keep an eye on the Indian Ocean, and check the influence of China in its neighbourhood.

WEAKEST FIRST

The jurisprudence of affirmative action has been evolving constantly. From a notion of formal equality rooted in a general principle of non-discrimination, it has reached a point where the aim is substantive equality. Reservation is no more seen as an exception to the equality norm, but as a deepening of the idea of equality by embracing diversity and accommodation of those suffering from historical and social disabilities. The latest Supreme Court judgment allowing States to classify Scheduled Castes (SC) into groups and give preferential treatment to the weaker and more backward among them is in line with this progression. By a majority of 6:1, the Court has rejected the idea that the SCs constitute a single homogenous class and that sub-classification will violate the equality rule. The verdict dislodges a 2005 Constitution Bench judgment (E.V. Chinniah vs AP) that had struck down an Andhra Pradesh law classifying SC communities into groups as unconstitutional. The Court had then ruled that once the President notifies the list of SCs under Article 341, Parliament alone could modify it by law, and that States were barred from “tinkering” with the list. This judgment was cited by the Punjab and Haryana High Court while quashing a



preferential sub-quota for Balmikis and Mazhabi Sikhs within the SC quota. When the matter came to the apex court, a Bench doubted the correctness of E.V. Chinnaiah and referred the question to a larger Bench.

The majority verdict is based on a clear recognition that SCs do not constitute a homogeneous class. Under the Presidential List, they have a common constitutional status, but it does not mean that there are no differences in the extent of backwardness among them. A history of untouchability is indeed a common feature among them, but there is historical and empirical evidence that the level of advancement is not uniform. States are empowered to further identify the weaker sections among SCs and extend beneficial treatment. Four judges have taken the view that excluding the “creamy layer” among the SCs from reservation benefits is necessary to give full effect to the principle that the weakest should get the benefits of affirmative action and not be elbowed out by those more advanced than them. Applying the ‘creamy layer’ concept, hitherto confined to OBCs may not be easy. Justice B.R. Gavai, who writes in support of the exclusion of the better-off among the SCs, also notes that the creamy layer norms cannot be the same as those prescribed for the OBCs. The exclusion of the more advanced sections among Dalits was not an issue before the Bench, and the opinions may be non-binding as of now. While excluding the creamy layer may happen some day, the focus should be on the marginalised among Dalits getting adequate representation.

Key takeaways:

— Article 341 of the Constitution allows the President, through a public notification, to list as SC “castes, races or tribes” that suffered from the historical injustice of untouchability. SC groups are jointly accorded 15% reservation in education and public employment.

— In earlier judgments, the court had held that any attempts to create a differentiation within the SC list would essentially amount to tinkering with it, for which the Constitution did not empower states. Article 341 only empowers the President to issue such a notification, and Parliament to make additions or deletions to the list. The court also said that sub-classifying SCs violates the right to equality under Article 14.

— The seven-judge Constitution Bench of the Supreme Court was formed to look into the following issues: (i) Are all castes in the SC list to be treated similarly? (ii) Can states ‘tinker’ with or sub-classify the Presidential list? (iii) What is the yardstick for sub-classification? (iv) Does the ‘creamy layer’ principle apply to Scheduled Caste?

— The court in E V Chinnaiah held that SC must be treated identically since the Constitution envisaged the same benefits for them, without taking into account their individual relative backwardness. In Thursday’s judgement, CJI Chandrachud rejected this premise, stating that “The inclusion [in the Presidential list] does not automatically lead to the formation of a uniform and internally homogenous class which cannot be further classified”.

— The CJI termed the Presidential list of SCs a “legal fiction” — something that does not exist in actuality but is “treated as real and existing for the purpose of law”.

— The court, in E V Chinnaiah, had held that the power under these articles was limited to providing quotas in education and public employment to the state’s backward classes. It held that once reservations have been provided to SCs as a whole, “it is not open to the State to sub-classify a class already recognised by the Constitution and allot a portion of the already reserved quota amongst the State created sub-class” within the SC list.



— On Thursday, the majority opinion held that “the State in exercise of its power under Articles 15 and 16 is free to identify the different degrees of social backwardness and provide special provisions (such as reservation) to achieve the specific degree of harm identified”.

— The majority opinion drew stringent redlines for states on how to work out the sub-quotas. States will have to demonstrate a need for wider protections, bring empirical evidence, and have a “reasonable” rationale for classifying sub-groups. This reasoning can be further be tested in court.

— Only the opinion of Justice Gavai bats for introducing the ‘creamy layer’ exception for SCs (and STs) that is already followed for Other Backward Classes (OBCs). This concept places an income ceiling on reservation eligibility, ensuring that the beneficiaries are those in a community that need quotas the most. Four of the seven judges — Justices Vikram Nath, Pankaj Mithal and Satish Chandra Sharma — agreed with Justice Gavai’s opinion on the matter.

For Your Information:

— Yogendra Yadav and Prannv Dhawan write: The judgment authored by Chief Justice D Y Chandrachud appreciates the import of distributive justice within the extremely heterogeneous Scheduled Castes. It affirms that equal protection of the law is not a rule that forbids both “the beggar and the king” from begging in the streets.

— By shedding the formal legalism that underlay E V Chinnaiah, the court has demonstrated sensitivity towards the most disadvantaged sections within the Scheduled Castes and charts the course for resolving their historic grievances.

— The landmark judgment like this is bound to be disputed both in legal and political circles. This might be seen as the thin end of the wedge that may lead to dilution of the affirmative-action regime. Politically, it may be seen as aiding the current regime’s designs to divide Dalits. Frankly, both these readings ignore the ground reality of internal differences and discrimination accompanied by political resentment among the most disadvantaged Dalit communities.

— Those committed to the policies and politics of social justice must not push such issues under the carpet. Instead, they should welcome this judgment and demand careful evidence-based identification of the most disadvantaged communities and provisions to ensure that the sub-division and the creamy layer do not become a route to divert SC/ST quota seats to non-reserved categories.

ON RESERVATIONS AND THE OBC CREAMY LAYER

The story so far:

The allotment of Indian Administrative Service (IAS) to Puja Khedkar as an Other Backward Class (OBC) Non-Creamy Layer (NCL) candidate coupled with multiple disabilities has raised issues surrounding the creamy layer in OBC reservation.

What is the history of reservation?

Articles 15 and 16 guarantee equality to all citizens in any policy of the government and public employment respectively. In order to achieve social justice, they also enable special provisions for the advancement of socially and educationally backward classes or OBC, Scheduled Castes (SC) and Scheduled Tribes (ST). Reservations for SC and ST are fixed at 15% and 7.5% respectively, in



jobs, educational institutions and public sector undertakings (PSU) at the central level. It was in 1990, when V. P. Singh was Prime Minister, that 27% reservation for OBC was implemented in central government employment based on Mandal Commission (1980) recommendations. Subsequently in 2005, reservation was enabled for OBC, SC and ST in educational institutions including private institutions. In 2019, 10% reservation was enabled for the Economically Weaker Sections (EWS) among the unreserved category.

What is the creamy layer?

The 27% reservation for OBC was upheld by the Supreme Court in the Indra Sawhney case (1992). It opined that caste is a determinant of class in the Indian context. However, in order to uphold the basic structure of equality, it fixed a cap of 50% for reservation unless there are exceptional circumstances. The court also provided for exclusion of creamy layer from OBC.

The criteria for identifying a person as part of the creamy layer is based on the recommendations of the Justice Ram Nandan Prasad Committee (1993). It is determined by the position/income of an applicant's parents alone. The criteria for belonging to creamy layer is parental income, excluding income from salary and agricultural income, being more than ₹8 lakh in each year in the last three consecutive financial years. Further, the following categories of applicants are also considered as belonging to creamy layer : (a) parents, either of whom entered government service (centre or State) as Group A/Class I officer or parents, both of whom entered as Group B/Class II officers or father, who was recruited in Group B/Class II post and promoted to Group A/Class I before 40 years of age; (b) either of the parents employed in a managerial position in PSUs; (c) either of the parents holding constitutional posts.

What are the issues?

The recent controversy has raised issues surrounding the inadequacies in the process. There are allegations that some applicants manage to obtain NCL or EWS certificate through dubious means. The same may also be true with respect to disability certificates in order to take benefit of the 4% of seats reserved for persons with disabilities in central government jobs. There are also allegations of applicants and their parents adopting strategies to get around the creamy layer exclusion like gifting of assets, taking premature retirement etc., since the applicant's or his/her spouse's income is not considered for such exclusion. Another contentious issue relates to concentration of reservation benefits. The Rohini Commission, that was set up for providing recommendation on sub-categorisation among OBC castes, has estimated that 97% of reserved jobs and seats in educational institutions have been garnered by just around 25% of the OBC castes/sub-castes at the central level. Close to 1,000 of around 2,600 communities under the OBC category had zero representation in jobs and educational institutes. Similar issue of concentration of reservation benefits persists in the SC and ST category as well. There is neither any exclusion based on 'creamy layer' for these communities.

The reservation at present stands at 60%, including the reservation for EWS. Considering societal realities, this higher percentage of reservation is required. It is pertinent to note that as per government replies in Parliament, 40-50% of seats reserved for OBC, SC and ST in the central government remain unfilled.



What can be the way forward?

The foremost requirement is to plug the loopholes in the issue of NCL, EWS and disability certificates. There must be thorough scrutiny to ensure that only eligible applicants obtain these benefits.

The vacancies for reserved communities should be filled without backlogs. Sub-categorisation of reservation may be essential to address the under representation or non-representation of various communities. Similarly, creamy layer exclusion in SC and ST category, at least for children of Group I/Class A government officials may be considered. These are sensitive matters in which for every argument in favour of such a proposal, there are valid counter arguments that can be advanced. Nevertheless, a discussion should begin on these aspects with all stakeholders to implement them. This would ensure that benefits of reservation reach the more marginalised among underprivileged in successive generations.

CREDIBILITY CRISIS

In 2026, it will be 100 years since the Union Public Service Commission (UPSC), which was known as the Federal Public Service Commission pre-Independence, came into existence.

To ensure “unbiased recruitment to Civil Services as also for protection of service interests”, the Constituent Assembly saw the need to accord “autonomous status” to the Commission under Article 315 of the Constitution. The primary role of the UPSC is to conduct examinations for appointment to the services of the Union, including the coveted All India Services (AIS).

After trainee IAS officer Puja Khedkar’s case came to the fore, questions are being raised about the UPSC’s method of selection of candidates. Ms. Khedkar allegedly forged identity documents and a people with benchmark disability (PwBD) certificate to secure the Indian Administrative Service (IAS), though service allocation is decided by the Department of Personnel and Training. The UPSC has registered a criminal case against Ms. Khedkar for “misrepresenting and falsifying facts to obtain extra attempts in CSE-2022, beyond the prescribed limit.” While Ms. Khedkar could bypass the UPSC’s gatekeeping by appearing in CSE 12 times, against nine attempts, there have been incidents when the UPSC detected malpractices by candidates. In 2021-22, eight cases of malpractices, which included suppression of information, submission of false information, fabricated documents, cheating and possession of mobile phones came to the notice of the Commission. Social media is abuzz with several cases where the candidates appear to have misused caste, disability and even Economically Weaker Section (EWS) certificates to avail quota benefits and get into the services.

Cases of fraud

Amitabh Kant, former NITI Aayog chief and India’s G-20 sherpa, wrote on July 20 on X, “Several cases of fraud through UPSC for entry to top Civil Services are being alleged. All such cases must be fully investigated and the sternest action taken. Selection on basis of competence and integrity should never get compromised.”

The UPSC, meanwhile has decided to revamp its examination system through technological solutions such as Aadhaar-based fingerprint authentication and facial recognition systems, and closed circuit television surveillance using artificial intelligence (AI).



According to a parliamentary committee report, around 32.39 lakh candidates applied for examinations conducted by the UPSC in 2022-23. However, only 16.82 lakh candidates, (51.95 %) appeared. For the CSE 2022, out of the 11.35 lakh candidates who applied, only 5.73 lakh candidates (50.51%) appeared for the examination.

The report said that during the years 2017-18 and 2022-23, the UPSC collected ₹142.92 crore as examination fee from candidates, whereas it spent ₹922.82 crore to conduct examinations and interviews. Women, PwBD candidates and those belonging to Scheduled Caste/Scheduled Tribe categories are exempted from payment of examination fee.

In 2015, an Expert Committee, chaired by B. S. Baswan, former Secretary, Ministry of Education, was constituted to comprehensively examine the various issues regarding CSE, which included high rate of absenteeism.

At least nine committees, including the Baswan Committee, have been formed in the past to suggest reforms. In 1976, the Kothari Committee observed that the practice of “allocating candidates to different services before they join the Foundation Course, has not only no advantage, but leads to unhealthy rivalry and complexes.”

While the UPSC is reeling from allegations of malpractices, its chairperson Manoj Soni quit the post due to “personal reasons”, five years before his term ends in 2029. Questioning the Government’s silence on the issue, the Congress party alleged that Mr. Soni has apparently been “nudged out” given the current controversy in which the Commission is involved. It is the first time in recent memory that the UPSC, considered an instrument of growth and social change by lakhs of aspirants, is facing questions around its credibility.

SUPREME COURT UPHOLDS VALIDITY OF TAMIL NADU’S ARUNTHATHIYAR QUOTA LAW

A majority judgment of the Supreme Court on Thursday has backed the constitutional validity of a Tamil Nadu law that offered preferential treatment among the Scheduled Castes (SCs) to socially and educationally backward Arunthathiyars. A seven-judge Bench, headed by Chief Justice of India D.Y. Chandrachud, in a 6:1 ratio, held that sub-categorisation within a class was a Constitutional requirement to secure substantive equality.

“The principle of sub-classification will be applicable to the SCs if the social positions of the constituents among the castes/groups is not comparable,” the judgment held. The Tamil Nadu government was represented by senior advocate Shekhar Naphade and advocates Purnima Krishna and M.F. Philip.

The Tamil Nadu State Legislature had enacted the Tamil Nadu Arunthathiyars Reservation Act, 2009, to provide the Arunthathiyars reservation in appointments or posts in State services on a preferential basis among the SCs.

Listed castes

The Act defined Arunthathiyars to include the castes — Arunthathiyar, Chakkiliyan, Madari, Madiga, Pagadi, Thoti, and Adi Andhra — from the list of 76 SCs notified by the President under Article 341 of the Constitution.

Section 3 of the Act stipulated that 16% of the seats reserved for the SCs in educational institutions should be offered to the Arunthathiyars, if available, having regard to the social and educational



backwardness of the community. Section 4 makes a similar provision for the Arunthathiyars in the recruitment to government posts.

The batch of matters challenging the Tamil Nadu Act was tagged with a batch challenging a similar law in Punjab, which gave preference to Balmikis and Mazhabi Sikhs among the SCs. A Constitution Bench of five judges referred the case to a Constitution Bench of seven judges in August 2020 for an authoritative pronouncement on the question whether States could sub-classify SCs “if the social positions of the constituents among the castes/groups is not comparable.”

AFTER SC DECISION ON BIHAR QUOTA HIKE, WHY NITISH KUMAR HAS A TRICKY ROAD AHEAD OF HIM

With the Supreme Court on Monday refusing to provide an interim stay on the Patna High Court’s June 20 order scrapping the Bihar government’s notifications raising the reservation cap from 50% to 65%, the Nitish Kumar-led government faces the politically challenging task of getting the Centre to include the quota hike in the Ninth Schedule of the Constitution to provide it legal immunity.

During the recently concluded Assembly session, Chief Minister Nitish Kumar told the House that he had requested Prime Minister Narendra Modi to include the quota hike decision in the Ninth Schedule, which includes a list of Central and state laws that cannot be challenged in courts. A Supreme Court Bench of Chief Justice of India D Y Chandrachud and Justices JB Pardiwala and Manoj Misra listed the case for final hearing in September, saying it will not grant any interim relief.

JD(U) advisor and national spokesperson K C Tyagi told The Indian Express, “We have little option left now on this count. The Centre should consider our demand of including it in the Ninth Schedule of the Constitution.” Asked if this then becomes an issue on which the JD(U) can keep the pressure on ally BJP, Tyagi said, “We do not believe in pressure politics. Let us judge things with a broader perspective. As many as 284 items are covered under the Ninth Schedule. Bihar’s case needs to be looked at carefully. There has been a new debate after the implementation of the quota on an economic basis (reservation for Economically Weaker Section). There has now been a demand to make the EWS caste-neutral.”

In a state such as Bihar, where caste politics plays an important role, the JD(U) has a political imperative to safeguard the quota hike. The Supreme Court decision comes at a time when the Rashtriya Janata Dal (RJD) has been pressuring the JD(U) to impress upon the BJP to provide the quota hike with the Ninth Schedule cover. The RJD has been pointing out that in the Lok Sabha, the BJP is dependent on the JD(U) as well as the Telugu Desam Party more than ever before. In the meantime, former poll strategist Prashant Kishor is scheduled to launch his party that, he has said, will provide proportional quota to all top five social groups: Scheduled Castes and Scheduled Tribes (SC-STs), Other Backward Classes (OBCs), Extremely Backward Classes (EBCs), Muslims, and general category.

“While we may well be dismissive of Prashant Kishor’s bid, his proportional representation bid in party structure can only hurt socialists’ core policy of focus on OBCs and EBCs,” said a JD(U) leader. “For the last 34 years, socialists have been leading the state and post-caste survey, raising quota cap was perhaps the last masterstroke we could have played. But now that it is caught in legal wrangles, we have to find ways to keep the issues alive for the longevity of our politics.”



The RJD said the state government would have to accept a large part of the blame for not pleading its case forcefully. “We are afraid the state government could put up the right arguments before the Supreme Court,” said RJD national spokesperson Subodh Kumar. “The same Indira Sawney case that talks about a 50% quota cap also leaves scope for discussion on giving special care to a state that has a very poor national average. For many years, Bihar has been in the 32nd position in terms of human development index. We could have played up this point.”

The RJD leader that the JD(U), given the leverage it enjoys in the ruling National Democratic Alliance (NDA), can ensure Ninth Schedule cover for the quota hike through “pulls and pressure” on the Narendra Modi government.

However, extracting this concession from the BJP-led Centre will be easier said than done for the JD(U). “It is true that we did support the caste survey and did not oppose the quota raise. But the demand for its inclusion in the Ninth Schedule could open Pandora’s Box as similar demands will start flooding from other states. It is a very tricky issue now,” said a BJP leader.

The Nitish Kumar-led state government raised the quota cap in November 2023 in the wake of findings of the Bihar Caste Survey 2022-2023. At the time, the JD(U) was part of the Opposition INDIA bloc for which a nationwide caste census was a major plank. Now back in the NDA, the JD(U) has been treading cautiously on the matter.

AS SC COURTROOMS TURN INTO LOK ADALATS, SPEEDY JUSTICE AND QUICK WIT

Marking its 75th year, the Supreme Court kicked off a week-long, first-of-its-kind Lok Adalat, a “mega settlement drive”, as part of which, over the next four days, nearly 6,700 cases will be heard and disposed quickly. These cases will be taken up post lunch in the first seven courtrooms.

— In a reply to the Lok Sabha, Union Law Minister Arjun Meghwal said that as of December 2023, the pendency in Supreme Court was 807,65 cases, nearly 35% up from 59,859 cases at the end of 2019.

— Lok Adalats are an alternative dispute redressal mechanism, where the aim is to settle or compromise cases amicably. While litigants get the benefit of swift justice and substantially reduced litigation costs, as per the Legal Services Authorities Act, 1987, the decision of the court is binding and it cannot be appealed against.

For Your Information:

— “According to the study done by PRS Legislative Research, the pendency across all the courts grew by 2.8 per cent annually between 2010 and 2020,” Justice D Y Chandrachud said.

— The data available indicates that more than 4.1 crore cases are pending in district and taluka courts and approximately 59 lakh cases are pending in different high courts, Justice Chandrachud said.

— “As of today, 71,000 cases are pending before the Supreme Court. In view of these numbers, the dispute resolution mechanism like mediation is an important tool in increasing access to justice by providing redress and settlement of disputes in a non-adversarial manner, free from the formalistic procedural practices of the law,” he said.



REFERRING TO ED CASE AGAINST KEJRIWAL, WHY A MUMBAI TRIAL COURT RELEASED AN ACCUSED IN A PMLA CASE

Citing the Supreme Court's order granting bail to Delhi Chief Minister Arvind Kejriwal, a Mumbai Special Court, last week, released an accused in a money laundering case on the grounds that the Enforcement Directorate (ED) did not supply him the "reasons to believe" that he could be arrested.

The accused, a businessman named Purushottam Mandhana, was arrested by the ED on July 19, on allegations of money laundering, linked to a Rs 975 crore alleged bank fraud.

What are the ED's "reasons to believe"?

Section 19 of the stringent Prevention of Money Laundering Act (PMLA) states that an ED officer, to make an arrest, must record his "reason to believe" based on the "material on record" that the accused is guilty of an offence under the PMLA. The provision also states that after the arrest, "as soon as maybe [possible], inform him of the grounds for such arrest."

These phrases and their precise meanings are crucial since the stringent framework of the PMLA makes grant of bail virtually impossible. A high threshold for bail, then, must be justified in scrupulously following the law while arresting an accused individual.

Section 45 of the PMLA bars courts from granting bail to an accused unless the court is satisfied that the accused is "not guilty" of the offence. Since this is a high bar for an accused to prove innocence even before a trial has begun, challenging the validity of an arrest itself is another legal route for ensuring release of the accused.

What did the SC rule in Kejriwal's case?

On July 12, when the SC granted bail to Kejriwal, it raised larger concerns over the ED's power to arrest. Kejriwal, challenging the legality of his arrest, argued that the ED had no sufficient grounds to arrest him. Essentially, this means challenging the ED's "reasons to believe" that Kejriwal was guilty of money laundering, and is liable to be arrested.

"Arrest, after all, cannot be made arbitrarily and on the whims and fancies of the authorities. It is to be made on the basis of the valid 'reasons to believe', meeting the parameters prescribed by the law. In fact, not to undertake judicial scrutiny when justified and necessary, would be an abdication and failure of constitutional and statutory duty placed on the court to ensure that the fundamental right to life and liberty is not violated," the SC had said.

While the ED argued that this is part of internal communication and cannot be scrutinised by court, the SC said that there can be a judicial review of whether an arrest was in accordance with law.

As a corollary, if an accused has to challenge his arrest, then obtaining the "reasons to believe" in writing would be crucial. This document, so far, has only been part of the official record but not shared mandatorily with the accused. The SC said that "it is difficult to accept that the 'reasons to believe', as recorded in writing, are not to be furnished."

While sharing the grounds for arrest with the accused in writing was made mandatory by a SC ruling in 2023, the mandate to also share the "reasons to believe" raises the bar for the agency to justify an arrest.



What are the grounds of arrest for an accused?

In 2023, in *Pankaj Bansal vs Union of India*, the SC ruled that disclosing the “grounds of arrest” to an accused, in writing, at the time of his arrest was mandatory.

Section 19 of the PMLA includes this requirement too. While the requirement could seem to merely be procedural but given that the stakes really go up for the agency after arrest, the SC said that it is critical that the grounds of arrest be shared within 24 hours of arrest. Usually, this is when a person is produced before a magistrate for remand (to direct him to formal custody of police or the judiciary).

The SC has extended this procedural shield even to the stringent anti-terror law — the Unlawful Activities Prevention Act, 1967. In May, the SC invalidated the arrest of NewsClick founder Prabir Purkayastha on the grounds that the Delhi Police failed to inform him of the grounds of his arrest before taking him into custody.

What is the significance of the trial court ruling?

These procedural safeguards emphasise due process and guard against arbitrary action by the state. These rulings are also significant since they mark a small but crucial retreat from the 2022 landmark Supreme Court ruling in *Vijay Madanlal Chaudhary vs Union of India*. This ruling upheld the constitutional validity of PMLA and reinforced its wide, sweeping powers.

The ruling had said that even the Enforcement Case Information Report (ECIR), akin to a First Information Report (FIR) is an internal document and it is not necessary to provide it to the accused.

QUID PRO QUO VIA POLL BONDS ARE ASSUMPTIONS FOR NOW: SC

The Supreme Court on Friday refused to set up a Special Investigation Team (SIT) headed by a former top court judge to probe the allegations of “quid pro quo” among political parties, public servants, companies and even officers of law enforcement agencies revealed through data made public on electoral bonds.

A three-judge Bench of Chief Justice of India D.Y. Chandrachud termed these allegations sheer “assumptions” at this stage and refused to embark on what it called a “roving and general inquiry”.

The Bench summarised that the petitions, including one by NGOs Common Cause and Centre for Public Interest Litigation, were based on primarily two assumptions.

One, that there was prima facie quid pro quo whenever the date of purchase of electoral bonds and donation to a ruling political party was proximate to change in policy or award of contracts. Secondly, the involvement of officers of investigative agencies in the corruption and quid pro quo did not guarantee a fair probe.

‘Accessories to graft’

The petitioners had argued that officers of the Central Bureau of Investigation, Enforcement Directorate, and Income Tax Department “appear to have become accessories to corruption”. They said data showed the purchase of bonds by accused persons had coincided with the sudden fading away of hotly pursued criminal prosecutions.



“But these are only assumptions at the present stage,” the Chief Justice Chandrachud said.

Besides, the court pointed out that the electoral bonds scheme was embodied within several enactments or amendments made by Parliament until it was found unconstitutional by a Constitution Bench in March.

“Donations were made to political parties through electoral bonds on the basis of laws enacted by Parliament,” the Chief Justice Chandrachud reasoned.

The court said if the petitioners suspected an “element of criminality” in any individual instance of proximity between the purchase of bonds and government largesse, they should first invoke the normal remedies available under the law of criminal procedure.

The petitioners could file writ petitions with the State High Court concerned under Article 226 if agencies refused to investigate or file a seemingly unfounded closure report.

The Bench said any writ petition filed under Article 32 in the Supreme Court must be preceded by the invocation of normal remedies. The court found it both “premature” and “inappropriate” to constitute an SIT. It would be premature as there were other remedies available in law. The petitioners had to test them first, and approach the apex court only when they had failed.

Again, it would be inappropriate to order an apex court-monitored probe by an SIT now as this would postulate that the normal criminal remedies were not efficacious, it said.

CAN STATES TAX MINING ACTIVITIES?

The story so far:

In a landmark ruling on July 25, the Supreme Court affirmed that States have the legislative authority to impose taxes on minerals in addition to the royalty levied by the Centre. Upholding the principles of federalism, the verdict clarified that the power of State legislatures to tax mineral activities within their respective territories is not constrained by Parliament’s Mines and Minerals (Development and Regulation) Act, 1957 (1957 Act). The case which has been pending for more than a quarter century was decided by an 8:1 ruling with Chief Justice of India (CJI) D.Y. Chandrachud authoring the majority opinion. Justice B.V. Nagarathna gave a dissenting opinion where she cautioned that allowing States to impose additional levies could hinder the development of the nation’s mineral resources and disproportionately advantage mineral-rich States.

What was the case?

Section 9 of the 1957 Act requires those who obtain leases to conduct mining activities to “pay royalty in respect of any mineral removed” to the individual or corporation who leased the land to them. The key question for consideration was whether the royalties paid by mine leaseholders to State governments under the 1957 Act should be classified as “tax.” Additionally, the court needed to determine whether the Centre could impose such charges or if the States possessed the sole authority to levy them within their jurisdictions.

The case has its genesis in a dispute between India Cement Ltd and the Tamil Nadu government which arose after the company secured a mining lease in Tamil Nadu. Although India Cement was already paying royalties, the government imposed a cess — an additional tax on land revenues, including royalties. The company challenged this in the Madras High Court contending that the



cess on royalties effectively constituted a tax on royalties, the imposition of which exceeded the State's legislative authority. In 1989, a seven-judge Bench of the Supreme Court in *India Cement Ltd. v. State of Tamil Nadu* decided in favour of India Cement by reasoning that States only have the power to collect royalties and not impose taxes on mining activities. It pointed out that the Union government exercises overriding authority over the "regulation of mines and mineral development" under Entry 54 of the Union List, as specified by law (in this case, the 1957 Act). Thus, States are not empowered to levy additional taxes on this subject.

Over a decade later, a five-judge Bench in 2004, while hearing a similar dispute between West Bengal and Kesoram Industries Ltd held that there was a typographical error in the India Cement decision and that the phrase "royalty is a tax" should be read as "cess on royalty is a tax". However, since the Bench was smaller than the one in the India Cement case, it was unable to overrule or amend the previous ruling.

In 2011, a three-judge Bench led by former Chief Justice S.H. Kapadia, while examining a challenge to a Bihar law imposing a cess on land revenue from mineral-bearing lands, recognised the conflicting precedents set by Kesoram Industries and India Cement. It accordingly referred the issue to a nine-judge Bench to definitively settle the legal position.

What is the difference between royalty and tax?

The majority ruling clarified the distinction between royalty and tax. It defined royalty as the "contractual consideration" paid by the mining lessee to the lessor (who may also be a private party) for the right to extract minerals. In contrast, a tax was characterised as an "imposition by a sovereign authority." The judges underscored that taxes are determined by law and can only be levied by public authorities to fund welfare schemes and public services. Meanwhile, royalties are paid to a lessor in exchange "for parting with their exclusive privileges in the minerals".

Can States tax mining activities?

Entry 50 of the State List under the seventh Schedule of the Constitution gives States the exclusive authority to make laws regarding "taxes on mineral rights", but this power is limited by any laws Parliament may pass concerning mineral development. On the other hand, Entry 54 of the Union List gives the Centre the power to regulate "mines and mineral development," especially when Parliament decides it is necessary in public interest. During the proceedings, the Centre argued that Entry 50 in the State List had allowed Parliament to impose "any limitations" on taxes on mineral rights through the promulgation of laws relating to mineral development — in this case, the 1957 Act.

However, the majority reasoned that since royalties could not be classified as a tax, they do not fall within the category of "taxes on mineral rights" as defined in Entry 50 of the State List. As a result, it was held that the 1957 Act merely provided States with another source of revenue through royalties, without interfering with their authority to levy taxes on mineral rights under Entry 50.

While the Centre is empowered to regulate mining development under Entry 54 of the Union List, the court clarified that this authority does not include the power to impose taxes, which is exclusively under the jurisdiction of the State legislatures. However, this express power, it said, is subject to "any limitations" that may be imposed by Parliament which could even include a "prohibition" against imposing taxes. This implies that if the Centre wanted to modify the existing



legislative framework under the 1957 Act to divest States of their power to levy a tax, it could do so.

The majority also held that States have the power to tax the land where mines and quarries are located by virtue of Article 246 read with Entry 49 (taxes on lands and buildings) of the State List. “In other words, mineral-bearing lands also fall within the description of lands under Entry 49 of List 2,” the CJI declared, adding that the income of the land yield can be adopted as a measure of tax.

Why did Justice Nagarathna dissent?

Disagreeing with the majority, Justice Nagarathna held that royalties paid under the 1957 Act should be considered as tax for developing the country’s mineral resources.

She pointed out that a central legislation, like the 1957 Act, was intended to promote mineral development and this objective could be severely undermined if States were allowed to impose levies and cesses (additional taxes) on top of the royalties they collect. The passage of the 1957 Act thus “denuded” States’ powers to levy taxes by entrusting the Centre with complete control over mineral development and limiting States to generating revenue solely through royalties, she underscored.

Elucidating upon the likely consequences of allowing States to tax mineral rights, the judge highlighted that this would lead to an “unhealthy competition between the States to derive additional revenue” resulting in a steep, uncoordinated, and uneven increase in the cost of minerals. Such a scenario, she warned, might exploit the national market for arbitrage, where differences in pricing could be manipulated for profit, disrupting the market’s stability.

What happens next?

On July 31, the court will consider whether the verdict should be applied retroactively or prospectively.

If applied retroactively, it could result in significant financial benefits for mineral-rich States such as West Bengal, Odisha, and Jharkhand, which have enacted local laws to impose additional taxes on mining lessees.

OPTION OR STRATAGEM?

The manner in which some Governors have been dealing with legislation passed by the State legislatures is a travesty of the Constitution. After the Supreme Court of India intervened in the case of Punjab and raised questions about the action or inaction of Governors in Tamil Nadu and Telangana, it was believed that incumbents in Raj Bhavans would end their deliberate inaction on Bills passed by the Assemblies. However, it appears that on finding that their supposed discretion to sit indefinitely on the Bills or withhold assent to them has been significantly curtailed, Governors have taken to the stratagem of sending Bills they disapprove of to the President for consideration. When the President refuses assent, based on the advice of the Union government, there is no recourse left for the State legislatures. This has given rise to the question whether the provision for reservation of some Bills for the President’s consideration is being misused for subverting federalism. In other words, the Centre is given a contrived veto over State laws — something not envisaged in the Constitution. This is precisely the question that Kerala has raised in its writ petition before the Court, challenging the Governor’s action in sending the Bills to the



President and the latter's refusal of assent. It is now quite an appropriate time for the Court to adjudicate the question and place limitations on the use of the option given to Governors.

It is worth recalling that in the Punjab case, the Court ruled that Governors do not have a veto over Bills, and that whenever they withheld assent, they were bound to return the Bills to Assembly; and if the Assembly adopted the Bills, with or without amendments, they were bound to grant assent. In the case of Telangana, the Court observed that Governors were expected to act on Bills "as soon as possible", underscoring that the phrase had significant constitutional content and that constitutional functionaries would have to bear this in mind. It is quite surprising that the Governors of West Bengal and Kerala have learnt nothing from these judgments and observations. Seven Bills from Kerala that may not normally require the President's assent were sent up to Rashtrapati Bhavan; four were refused assent without any reason being assigned. The inaction on these Bills range from 23 to 10 months. West Bengal has also challenged the inaction on some Bills, a few of which may have been referred to the President. The issue transcends the political considerations that may have inspired the action or inaction on the part of the Governor. At its core, it concerns the question whether the Constitution permits such indirect central intervention in the legislative domain of the States.

IN MIDNIGHT RESHUFFLE, PRESIDENT APPOINTS SIX NEW GOVERNORS

President Droupadi Murmu appointed six new Governors and reshuffled three others, a Rashtrapati Bhavan communique has said.

The communique was issued past Saturday midnight.

BJP veteran Om Mathur has been appointed Governor of Sikkim, and Manipur Governor Anusuiya Uikey has been replaced by Lakshman Prasad Acharya, who has been moved from Sikkim to Assam and given additional charge of Manipur.

Mr. Mathur's appointment comes amid speculation that he is a contender for the post of BJP president.

Another significant appointment is that of former IAS officer K. Kailashnathan — a close aide of PM Narendra Modi when he was the Chief Minister of Gujarat — as the Lieutenant-Governor of Puducherry. On June 30, Mr. Kailashnathan stepped down as the Chief Principal Secretary to the Gujarat Chief Minister.

The Rashtrapati Bhavan communique said the incumbent Governor of Assam, Gulab Chand Kataria, will now be the new Governor of Punjab as Banwarilal Purohit's resignation has been accepted. He has also been appointed Administrator of the Union Territory of Chandigarh.

Jharkhand Governor C.P. Radhakrishnan, who was also holding additional charge of Telangana, has been appointed Governor of Maharashtra.

Former Union Minister for Labour and Employment Santosh Kumar Gangwar will be the new Jharkhand Governor, while former Deputy Chief Minister of Tripura Jishnu Dev Varma will be the new Telangana Governor.

A former Lok Sabha member from Assam, Ramen Deka, has been appointed Governor of Chhattisgarh, while a former Lok Sabha member from Mysore in Karnataka, C.H. Vijayashankar,



will be the Meghalaya Governor. In Rajasthan, a BJP leader from Maharashtra, Haribhau Kisanrao Bagde, has been appointed Governor to succeed Kalraj Mishra.

“The above appointments will take effect from the dates they will assume charge of their respective offices,” a statement said.

ROW OVER EXPUNGING MP’S REMARK; PRIVILEGE NOTICE AGAINST PM FOR VIDEO

The Lok Sabha was adjourned on Wednesday amid an uproar by Opposition MPs over BJP MP Anurag Thakur’s remarks on caste made in the House during the debate on the Union Budget on Tuesday. Despite assurances, his remarks were not expunged from the parliamentary record.

This became clear after Congress MP and former Punjab Chief Minister Charanjit Singh Channi submitted a breach-of-privilege notice to the Lok Sabha Speaker against Prime Minister Narendra Modi for posting a link to Mr. Thakur’s speech on his X account. The Congress said the linked video included the “expunged” portions of the speech.

While Jagdambika Pal, who was in the Chair at the time the remarks were made, had said the remarks would be expunged, later releases by the Lok Sabha did not do so. The debates on the Lok Sabha’s website, however, show the assurance of expunging was present in the text of the proceedings.

Combative mood

The Opposition’s protests began as the Lok Sabha convened on Wednesday, with Congress MPs storming into the Well of the House, raising slogans like “shame, shame” against Mr. Thakur and the rest of the ruling party MPs.

The Treasury benches were also in a combative mood, with Parliamentary Affairs Minister Kiren Rijiju noting that the Opposition, including Leader of the Opposition Rahul Gandhi, “keep saying caste, caste, caste, but here they raise questions on asking about caste”. He accused the Congress of acting to weaken the country, by questioning the armed forces, and “incitement to violence”.

In his speech on Tuesday, Mr. Thakur said, without specifically naming anyone, that those who had no idea of their own caste were asking for a caste census. Mr. Gandhi had responded to the remarks by stating that though he had been insulted, he would press ahead with his claims for a caste census across the country. The spillover of this controversy into the next day saw protests erupting within the House, during which Speaker Om Birla adjourned the proceedings till noon.

Mr. Channi then submitted his breach-of-privilege notice against Mr. Modi. In his letter, he said, “It is, however, shocking to note that these expunged portions had been tweeted by the Prime Minister on X along with whole speech video.” Arguing that it was a violation of the laid-down rules and procedures of Parliament and a contempt of the House, Mr. Channi added, “I, therefore, contemplates to move a privilege motion against Prime Minister and request you to please admit my motion and permit me to move the same.”

The issue continued to rage for most of the day even outside Parliament. Attacking Mr. Thakur, Congress president Mallikarjun Kharge told the media, “In Parliament, one doesn’t ask about one’s caste. He [Mr. Thakur] knows which caste he [Mr. Gandhi] belongs to. This was done purposely to insult him. The comment was immature but what was needed for the Prime Minister to tweet this speech? I condemn such things.”



Congress general secretary Jairam Ramesh questioned why Sansad TV, which broadcasts the live proceedings from both Houses of Parliament, had uploaded the entire speech — including the expunged portions — on its website.

DURBAR HALL OF THE RASHTRAPATI BHAVAN

- The Durbar Hall of the Rashtrapati Bhavan has been renamed as ‘Ganatantra Mandap’ on July, 25.
- The hall hosts Civil and Defence Investiture Ceremonies, where the President confers honours to the recipients. Swearing-in ceremonies, like those of the Chief Justices of India, are also conducted here.
- Durbar Hall witnessed a historic moment in the swearing-in ceremony of independent India’s first government in 1947.

ASHOK HALL

- President Droupadi Murmu on July, 25 renamed the Ashok hall as ‘Ashok Mandap’.
- ‘Ashok Hall’ was originally a ballroom. It is now used for the presentation of credentials by Heads of Missions of foreign countries and as a formal place of introductions for the visiting and Indian delegations before the commencement of the State Banquets hosted by the President.

MEGHALAYA GROUPS TURN AWAY VEHICLES FROM OUTSIDE STATE

As some groups in Meghalaya continue to press for regulations on entry of non-natives into the state, 10 members of one of these groups were detained by police on Friday for stopping tourist vehicles entering the state from Assam.

- On Friday, members of the Hynniewtrep National Youth Federation set up a “check-point” at Umtyngngar, around 20 km from Shillong, and prevented vehicles with Assam registration numbers from moving towards tourist destinations such as Sohra and Dawki.
- Friday’s incidents happened after several weeks of different groups in the Khasi hills applying different pressure tactics to push for the introduction of an Inner Line Permit (ILP) system in the state to “safeguard and protect the rights of the people and the state”, Meghalaya Deputy CM and Home Minister Prestone Tynsong said.

For Your Information:

— An Inner Line Permit is a document that allows an Indian citizen to visit or stay in a state that is protected under the ILP system. The system is in force today in three Northeastern states — Arunachal Pradesh, Nagaland and Mizoram — and no Indian citizen can visit any of these states unless he or she belongs to that state, nor can he or she overstay beyond the period specified in the ILP. The concept comes from the colonial area. Under the Bengal Eastern Frontier Regulation Act, 1873, the British framed regulations restricting the entry and regulating the stay of outsiders in designated areas.



In 2013, the Home Ministry told Rajya Saha, “The main aim of ILP system is to prevent settlement of other Indian nationals in the States where ILP regime is prevalent, in order to protect the indigenous/tribal population.

PRIVATE CONSULTATION

The Ministry of Information and Broadcasting has reportedly been holding closed-door meetings with the broadcasting and entertainment industry regarding the Broadcasting Services (Regulation) Bill, 2023, and while a draft was circulated last year, subsequent editions are only being given to a few select stakeholders — under strict terms of confidentiality. Each copy of the newest draft has been provided with a unique watermark that can identify “leaks”, if any. Public consultations are an integral part of making laws that affect many Indians, a fact that was recognised by the government’s 2014 Pre-Legislative Consultation Policy, which recommends extensive public outreach before lawmaking. While the government circulated the earlier version of the Bill to the public, it seems to have insisted on withholding responses, and has chosen to take just a few stakeholders into confidence. This approach ignores online creators, large parts of the media industry, and civil society — the very stakeholders who have the most to be concerned about with media regulation. The Bill would expand an already comprehensive regulatory framework that has been criticised as having a chilling effect, discouraging free expression in a range of media spanning news and entertainment. This has been evident, for instance, in the toning down of OTT streaming platforms’ content since the passage of the IT Rules, 2021.

Cast in that light, the omission of meaningful public consultation — a growing problem in much of policymaking across Ministries — may be less a sin of omission and more a deliberate strategy of gatekeeping major policy changes, and deciding who gets to have a say in them. While the individual laws that are being deliberated in this way may be concerning, the process in and of itself is cause for significant alarm. When it comes to media regulation, for instance, the interests of established corporate stakeholders might not always coincide with those of the emerging crop of creators, independent commentators, social media users and independent journalists who are also likely to be impacted by the Broadcasting Bill. Without a right to know other stakeholders’ points of view — let alone respond to them — the quality and sincerity of this proposal can only be deeply suspect. The government must cease methods of policymaking that may be quick and unfussy, but diminish public trust in their intent. Meaningful public consultation does not constrain the ability of lawmakers to proceed with their intended course of action in any case; all it does is to put diverse points of view across. Hurried and gate-kept consultations may well end up begetting flawed and exclusionary legislation.

AI TO ENERGY WEAPONS: ARMY IDENTIFIES 16 TECH CLUSTERS TO STAY FUTURE-READY

In its efforts towards becoming a technologically-intensive force by induction as well as through absorption of new and emerging technologies for meeting the needs for future warfare, the Army has identified 16 tech clusters comprising subject specialists, officials privy to the matter told The Indian Express.

— As per officials, one of the planned tech clusters will be on certain emerging technologies which are at a conceptual stage, such as those concerning stealth and anti-stealth, sensing technology, energy and propulsion, nanotechnology, hypersonic and chemical, biological, radiological, and nuclear (CBRN).



— Deep research on some of these technologies are currently underway globally even as some global militaries have implemented some of these technologies.

— Other technology clusters would be on cyber, space, automation or digitisation, quantum, Internet of Things (IoT), along with 5G and 6G, Remotely Piloted Aircraft, directed energy weapons—which uses focused electromagnetic energy to take out enemy systems—among other counter unmanned aerial systems.

— The remaining tech clusters would be on artificial intelligence, machine learning, robotics, loitering munition system, mine detection and diffusion, camouflage and concealment and 3D printing infrastructure.

— Induction and absorption of niche technologies in the Army in line with the changing requirement of future warfare has been a priority for the top leadership of the force. This was among the key issues discussed in the Army Commanders Conference in April this year.

BALLISTIC MISSILE DEFENCE SYSTEM

— The Defence Research & Development Organisation (DRDO) has successfully flight-tested the Phase-II Ballistic Missile Defence (BMD) system off the Odisha coast.

— Phase II demonstrated the indigenous capability to defend against ballistic missiles of 5,000 km class. Phase-I is already deployed.

INS BRAHMAPUTRA

— The INS Brahmaputra guided missile frigate listed heavily towards its port side following the fire on July 21, and could not be uprighted.

— The INS Brahmaputra is the first of India's indigenously built Brahmaputra-class guided missile frigates.

— It was built by state-run Garden Reach Shipbuilders & Engineers Limited in Kolkata, and it was commissioned into the Navy in 2000.

— The INS Beas and INS Betwa are two other warships in this class.

DEFENCE ACQUISITION COUNCIL APPROVES AMENDMENT TO MQ-9B UAV DEAL WITH U.S.

The Defence Acquisition Council (DAC), chaired by Defence Minister Rajnath Singh, on Monday reviewed and approved amendments to the deal for procuring 31 MQ-9B High Altitude Long Endurance (HALE) Unmanned Aerial Vehicles (UAV) from General Atomics of the U.S., defence sources said. The DAC also gave approval to a proposal regarding the scheduled refit of aircraft carrier INS Vikramaditya later this year, sources said.

“The amendments approved are within the scope of the Acceptance of Necessity (AoN) that was granted for the MQ-9B deal. They are related to the indigenous content and related aspects,” a defence source said.



Official sources said the U.S. has completed the process from its end with the letter of offer and acceptance to India delivered early on March and it's now for India to complete the procedure before the deal can be signed. In the final step, the deal has to be approved by the Cabinet Committee on Security, before it can be inked. With the Quad leaders summit scheduled to be hosted by India in December, the MQ-9B deal and the GE-414 jet engine deal are expected to be concluded during the visit of the U.S. President to India.

India is looking to procure 31 MQ-9B UAVs —15 Sea Guardians for the Indian Navy and 16 Sky Guardians (eight each for the Indian Army and Air Force) — at an estimated cost of \$3.99 billion. As part of the deal, General Atomics is scheduled to establish a Global Maintenance, Repair and Overhaul (MRO) facility in India which would count towards offset obligations.

The DAC also accorded AoN, the first step of the procurement process, for procurement of Advanced Land Navigation System (ALNS) for Armoured Fighting Vehicles (AFVs) of the Army and 22 Interceptor Boats for the Coast Guard.

The ALNS Mk-II offers compatibility with defence series maps resulting in very high accuracy in navigational applications for AFVs. This equipment will be procured from Bharat Electronics Limited.

The second AoN is for procurement of 22 Interceptor Boats for the Coast Guard with latest state-of-art system capable of quick interception and shallow water operation in territorial waters, the Ministry said. "These boats will be used for coastal surveillance and patrolling, search & rescue operations, including medical evacuation," it added.

GAGANYAAN ASTRONAUT TO TRAVEL TO ISS IN MISSION WITH NASA

One of the four astronauts undergoing training for the Gaganyaan mission will travel to the International Space Station as part of a collaborative effort with NASA, Union Minister Jitendra Singh has informed the Lok Sabha.

In a written reply, Mr. Singh said NASA has identified Axiom Space, a private entity, while the ISRO had signed a space flight agreement with the U.S. firm for the joint mission to the International Space Station (ISS).

During Prime Minister Narendra Modi's visit to the U.S. last year, President Joe Biden announced that India and the U.S. were collaborating to send an Indian astronaut to the ISS in 2024.

India's Astronaut Selection Board had picked four astronauts from the group of test pilots from the Indian Air Force for the Gaganyaan mission, India's first manned space mission planned to take place next year. "All four astronauts have undergone training on a spaceflight basic module in Russia. Currently, astronauts are undergoing training at the ISRO's Astronauts Training Facility (ATF) in Bengaluru for the Gaganyaan Mission," Mr. Singh said.

The Minister said two out of three semesters of the Gaganyatri training programme have been completed while independent training simulators and static mock-up simulators have been realised.

Mission update

Sharing an update on the Gaganyaan mission, Mr. Singh said ground testing of propulsion systems stages, including solid, liquid and cryogenic, towards human rating of the launch vehicle has been

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



completed. Design and realisation of five types of crew escape system solid motors has been completed, he said.

The Union Minister said static testing of all five types of solid motors too has been completed. Also, the first Test Vehicle mission (TV-D1) for performance validation of crew escape system and parachute deployment has been successfully accomplished, he added.

He said characterisation of the Thermal Protection System was also complete.

BEHIND LEH FLIGHT CANCELLATIONS: HIGH TEMPERATURES, LOW AIR DENSITY

Sizzling day-time temperatures in Leh, Ladakh, led to many flight cancellations on Sunday and Monday. While the mercury peaked at 33.5 degree Celsius on Sunday, it touched 31.8 degree Celsius on Monday (July 29). "High ground temperatures and runway restrictions in #Leh have necessitated the cancellation of all flights for today," Indigo, posted on X on Monday.

Why did Leh's high temperatures lead to flight cancellations?

First, how do aircraft fly?

Aircraft wings are shaped such that their top is slightly more curved than the bottom. So when an aircraft begins to move, the air over the top of the wings moves faster than that under the bottom.

This faster-moving air then creates a lower pressure above the wing (as per Bernoulli's principle), when compared to the pressure under it. This difference in the pressure generates a force (called lift) underneath the wings that helps the aircraft take off.

How do higher temperatures affect an aircraft's flight?

Higher temperatures expand the air, making it less dense or thinner. In other words, they create more space between the air molecules which means that fewer molecules are available underneath the aircraft's wings to create enough lift to push the plane into the sky.

Aircraft usually get 1% less lift with every 3 degree Celsius of temperature rise, Paul Williams, a professor of atmospheric science at the University of Reading (UK), told CNN in an interview in 2023.

Thin air also affects the performance of an aircraft's engine. For instance, the combustion that creates an engine's power is severely impacted as there are fewer molecules of oxygen to mix with the fuel. The thrust — the force which moves an aircraft through the air — produced by the engines is also reduced due to thin air.

Consequently, higher temperatures mean that planes require longer runways and more powerful engines to take off. If an aircraft requires 6,500 feet of runway at 20 degree Celsius, it is going to require 8,200 feet at 40 degree Celsius, Williams said. In extreme situations, take off can become impossible.

Thinner air also makes landings more challenging. In addition to the brakes on the wheels, pilots use reverse thrust (literally, thrust in the opposite direction to the movement of the aircraft) to slow down the aircraft while landing. In case of thin air, the reverse thrust generated might not be enough to perform the task.



These aforementioned issues are particularly felt in airports located in higher altitudes (like the one in Leh), where the air is anyway thin and runways are often shorter.

What is the role of global warming?

The extreme heat which is affecting take-offs and landing of aircraft is a consequence of global warming. The global average temperature has increased by at least 1.1 degree Celsius since 1880. In India, annual mean temperatures have risen by about 0.7 degree Celsius compared to 1900 levels.

Studies have found that an increase in temperatures has already started to disrupt air travel. A 2020 paper, “The impacts of climate change on Greek airports”, analysed the performance of Airbus A320 — one of the most popular aircraft in the world — at 10 Greek airports between 1988 and 2017. The study revealed that with a warming of 0.75 degree Celsius per decade since the 1970s, the maximum take-off weight for Airbus A320 was reduced by 127 kg each year, roughly equivalent to the weight of one passenger and their suitcase. The weight of an aircraft is a crucial determinant of how much lift and thrust it needs to generate to take off.

This situation is expected to get worse. A 2023 study, “Decreased Aircraft Take-off Performance under Global Warming’, published by Multidisciplinary Digital Publishing Institute (MDPI), found that with rising temperatures, the take-off distance for a Boeing 737-800 aircraft will “increase by 6% on average during 2071-2080 compared to 1991-2000 for the low-altitude airports, calling for an additional 113-222 m take-off distance in future summers”.

Aircraft manufacturers are always working towards making their planes lighter and more efficient. But much of that progress has likely been already made.

As a result, in the short term, airports will need to schedule flights in cooler times, increase the runway lengths, and decrease the take-off weight to deal with climate change-induced disruptions.

However, in the long run, the best bet would be to radically curb the burning of fossil fuels that contribute to global warming.

WAS THE RECENT KATHMANDU PLANE CRASH CAUSED BY A ‘WING STALL’?

A Bombardier CRJ200 jet with 19 souls on board crashed shortly after takeoff at Kathmandu’s Tribhuvan International Airport on July 24. The pilot, Captain Manish Raj Shakya, was the sole survivor.

A five-member panel, led by Ratish Chandra Lal Suman, former Director General of the Civil Aviation Authority of Nepal (CAAN), has been set up to probe the crash. However, air crash investigations go on for months — even years — meaning that an official answer to what caused the crash will not be available any time soon.

That said, it is possible to make some informed conjecture based on video footage of the incident which has emerged over the week since it took place. The ill-fated aircraft is seen banked steeply to the right before ploughing into the ground. This excessive right bank, which may have been caused by a ‘wing stall’, put the plane in an ‘unusual attitude’.

Here is all you need to know.



Unusual attitude

'Attitude' refers to an aircraft's position relative to Earth's horizon — an aircraft flies straight and level (wings parallel to the horizon), climbs (nose above the horizon), descends (nose below the horizon), and banks right (right wing lower than the left wing) or left.

For passenger jets, straight and level flight, and climb, descent, and banks within stipulated limits are 'normal attitudes'. Any deviation from these — for instance, an excessive nose-high attitude, a steep dive, or an excessive right or left roll — is an 'unusual attitude', also known as a 'non-normal attitude' or an 'aerodynamic upset'.

Was the recent Kathmandu plane crash caused by a 'wing stall'? Concepts key to airplanes' flight.

The Pilot's Manual: Instrument Flying, published by the Aviation Supplies & Academics, Inc (ASA), describes an 'unusual attitude' as (a) bank angles in excess of 30 degrees; (b) nose-high attitudes with a decreasing airspeed; (c) nose-low attitudes with an increasing airspeed.

An 'unusual attitude' is usually followed by a 'stall' — an aircraft being unable to fly anymore, and beginning to literally fall out of the sky. Unless a pilot is able to quickly recover from a stall, and restore the aircraft to straight and level flight, the 'upset' can worsen and potentially turn fatal.

Angle of attack and stalls

Aircraft wings have a camber shape, the top surface is curved and the bottom flat. As air travels over and below the wings, the pressure difference produces 'lift', the aerodynamic force that sustains flight. But the wings generate 'lift' so long as the angle of attack (AOA) doesn't cross the critical limit.

AOA is the angle at which the wings meet the oncoming airflow — it is crucial for lift. At small angles of attack, the air travels smoothly from the wings' leading edge (front part) to the trailing edge, producing 'lift'. The air is thus 'attached' to the wing's surface.

But, once the AOA crosses a critical angle (say 14-15 degrees, this varies aircraft to aircraft), the oncoming air no longer travels smoothly along the wing's surface. The airflow becomes disturbed, it 'separates' from the wings. This is the onset of a stall, an aerodynamic condition when an aircraft stops flying as the wings no longer generate lift. The aircraft starts juddering, controls become sluggish. The nose drops and, if not arrested quickly, the aircraft stalls and can enter a possible spin.

While an excessive nose-high attitude is behind most stalls in passenger jets, an aircraft can stall in any attitude provided the critical AOA is exceeded. For example, fighter jets and aerobatic planes, which are designed to fly in a dive, can stall during such manoeuvre.

Recovery from a stall is simple: push the nose down to reduce the AOA, so that the wings start producing 'lift' again. Because the nose needs to be pushed down, any stall recovery results in a loss of altitude. So, an aircraft approaching a stall close to the ground can be potentially hazardous.

Fate is the hunter

Had the emergency struck when the aircraft was several thousand feet in the air, Capt Shakya probably would have succeeded in saving the aircraft and its occupants. He did not have the



advantage of altitude to recover from the 'upset', run the appropriate checklists and land back at the airport.

Perhaps, his next best option was to recover — which might have required pushing the nose down and losing altitude — from the 'upset' and crash-land straight ahead. But the plane was so low, he probably 'ran out of sky' in no time.

PROBLEM POWER

The Indian government is planning to team up with the private sector to study and test small modular reactors (SMRs). Nuclear energy is an important power source in the world's energy mix as it waits for the development and maturation of (other) renewable energy technologies while fossil-fuel-based sources, especially coal, continue to remain relevant and more affordable. Nuclear power offers a sufficiently high and sustainable power output, even if externalised costs like those of building safe and reliable reactors and handling spent nuclear fuel complicate this calculus. Indeed, cost and time estimates that expand to nearly twice as much as at the point of a project's commissioning are not unheard of. The nuclear power tariff is thus higher from 'younger' facilities, even if they also fill gaps that haunt power from renewable sources. SMRs, of 10 MWe-300 MWe each, are smaller versions of their conventional counterparts. They aspire to be safer without compromising commercial feasibility by leveraging the higher energy content of nuclear fuel, a modular design, a smaller operational surface area, and lower capital costs. But the challenge is to have this aspiration survive SMRs' external costs.

The government's privatisation of nuclear power generation will also increase the demand for regulatory safeguards against radioactive material being diverted for military use. The first-generation SMRs are expected to use low-enriched uranium in facilities assembled on-site with factory-made parts, to produce waste that can be handled using existing technologies and power that can be sold at economical rates. But the reactor will need frequent refuelling and will yield a consequential amount of plutonium; both outcomes will stress proliferation resistance. The IAEA has touted the use of 'safeguardable' reactor designs but such solutions will increase capital costs. Subsequent SMR generations may also require more enriched uranium, especially if their feasibility is pegged on longer periods of continuous generation, or more sophisticated systems to increase fuel-use efficiency, which would increase the operational surface area and the generation cost. In fact, nuclear reactors have a fixed baseline cost and safety expectations that do not change with energy output, which means SMR-based tariffs need not automatically be lower. This is why the Department of Atomic Energy increased its reactors' capacity from 220 MW to 700 MW. SMRs' ability to bolster the prospects of nuclear power in India will thus depend on their commercial viability — and in turn on the availability of less uncertain market conditions, stable grids, and opportunities to mass-produce parts — and the price of proliferation resistance.

THE RELEVANCE OF PUMPED STORAGE PROJECTS

The story so far:

The Union Budget for 2024-25 promised that "a policy for promoting pumped storage projects will be brought out for electricity storage and facilitating smooth integration of the growing share of renewable energy with its variable and intermittent nature."



Why is pumped storage important?

India has planned to create an ambitious 500GW of non-fossil fuel energy by 2030. In around two years, from 2021 to 2023, it created some 23GW of non-fossil generation capacity. Out of the total 10GW added in eight months in 2023-24, 7.5GW were from wind and solar energy, pointing to how renewables will account for most of the new power generation that will be added in India. The share of actual renewable power generation will increase in times to come, but this power will necessarily vary and will be “infirm”.

Indian policies have laid down that all the power that renewable sources generate should be used and their curtailment should be last priority. State-of-the-art forecasting techniques have helped to predict more accurately how much renewable power generation might vary in the course of a day. This has helped grid operators plan in advance how to increase or decrease power generation from other sources to provide steady power to the consumer. For example, hydro power generation can be quickly ramped up or down in a matter of seconds. However, coal and nuclear energy need hours of notice.

When the world’s attention turned to renewables and the problem of variable power generation, many solutions were proposed for storing energy and releasing it when wind and solar power generation are down. Until then, no electricity generated was stored at a large scale. Some of the proposed energy storage methods include scaling up batteries and pumping in compressed air into large caverns and then drawing on them to generate power when required. However, much of the energy storage adopted across the world today is pumped storage that uses water. These are like super large batteries but natural and use water.

Does India have pumped storage?

India has 3.3GW of pumped storage. Main ones are in Nagarjunasagar, Kadana, Kadamparai, Panchet and Bhira. China leads the world with 50GW of pumped storage supporting 1,300GW of wind and solar energy. India would need to ramp up its pumped storage capacity by several times if it wants to meet its renewable power generation targets.

Pumped storage is of two types: on river and off river. On-river is like any hydroelectric project supplied by a river. Off-river projects are those that have two reservoirs at two different levels to which the water can be pumped up or let down under gravity in a closed loop. When there is surplus power, water is pumped up from the lower reservoir to the upper, and when power is needed the water can flow down to turn the turbines and generate power. One such project is at Kadamparai, Tamil Nadu.

How does pumped storage at Kadamparai operate?

In Tamil Nadu, at noon on a typical day in July, wind and solar can generate half of all power. This is among the highest in the country. On a summer day, solar plants in Tamil Nadu currently produce some 5,000MW at noon. But that power dwindles and drops to zero at sunset. Wind also has its own vagaries. Tamil Nadu has peaks of around 17,000MW to 20,000MW on a daily basis. This year in July, maximum wind power generated reached 5,499MW and maximum solar reached 5,512MW. Wind and solar energy have must-run-status in the State which means whatever energy they produce must be taken.

The Kadamparai plant in Coimbatore district that came up some 37 years ago has four units, each 100 MW. The plant has a higher reservoir that is at a height of around 380m above a lower



reservoir. Each unit has a turbine generator set producing power when the water flows from the upper reservoir to the lower. The same unit can function as a pump consuming power when it pumps water from the lower to the higher reservoir. Power managers plan in advance for the next day on how much and when to operate each power plant in the State based on factors such as demand expected and forecast of wind and sunshine conditions. Typically, around noon, there is a power surplus coming from solar energy. That power is used to pump up the water at Kadamparai. Each unit needs 20% more power to operate as a pump than what it can produce as a generator. But since it is solar energy, no fuel is being burned to produce the required power.

When the Kadamparai plant is operating as a pump to store energy, it would need about an hour and a half to switch to generating mode. When stopped, it would need about half hour to start and generate a full load. When solar generation stops and the evening peak load begins after 6pm, the Kadamparai plant becomes a generator. It can produce 400MW of full power for three to four hours and help support evening peak loads. Sometimes the plant is operated at less than full load late into the night depending on the conditions. The upper reservoir has around 1 TMC feet of water. Leakages are marginal and are often replenished by natural rainfall.

SHOULD INDIA FOCUS ON NATURAL FARMING?

The story so far:

In her Budget proposals for 2024-25, Union Finance Minister Nirmala Sitharaman announced that in the next two years, one crore farmers across the country will be initiated into natural farming supported by certification and branding. Implementation will be through scientific institutions and gram panchayats, adding that 10,000 need-based bio-input resource centres will be established.

What is the mission?

As part of the National Mission on Natural Farming (NMNF), the government intends to motivate farmers to adopt chemical-free farming and draw them towards adopting natural farming willingly on the system's merit. The government believes that the success of the NMNF will require a behavioural change in farmers to shift from chemical-based inputs to cow-based, locally-produced inputs. The natural farming scheme under the 'Bharatiya Prakritik Krishi Paddhati' has a total outlay of ₹4,645.69 crore for six years (2019-20 to 2024-25).

What is natural farming?

In natural farming, no chemical fertilizers and pesticides are used. It promotes traditional indigenous practices which are largely based on on-farm biomass recycling with a stress on biomass mulching, use of on-farm cow dung-urine formulation; managing pests through diversity, on-farm botanical concoctions and exclusion of all synthetic chemical inputs directly or indirectly. The emphasis is on improving natural nutrient cycling and increasing organic matter in the soil. Grounded in agro-ecology, it is a diversified farming system that integrates crops, trees and livestock, allowing the optimum use of functional biodiversity. Those advocating natural farming believe that it holds the potential to enhance farmers' income while delivering many other benefits, such as restoration of soil fertility and environmental health, and mitigating and/or reducing greenhouse gas emissions.



What are the challenges and concerns?

Agriculture and food experts have their reservations surrounding a large-scale transition from chemical farming to natural farming in a country like India, which has a huge population. Catering to its food-growing needs isn't an easy task, they point out. Recently, an academic paper titled, 'Zero Budget Natural Farming (ZBNF): Implications for Sustainability, Profitability, and Food Security', published by the National Bank for Agriculture and Rural Development and the Indian Council for Research on International Economic Relations, pointed out the "sheer disparity" in the outcomes of the two different experiments surrounding ZBNF (now renamed as Bhartiya Prakritik Krishi Paddhati), one conducted by the Centre for Economic and Social Studies (CESS) and Institute for Development Studies Andhra Pradesh, and the other by the Indian Council of Agricultural Research (ICAR) and the Indian Institute of Farming Systems Research (IIFSR).

Sandip Das, Mahima Khurana and Ashok Gulati write in the paper the importance of long-term experimentation before declaring natural farming as a nationwide agriculture practice. The paper, which delves into the promising yet contentious realm of natural farming, navigates through contrasting findings from the two studies, revealing divergent perspectives on ZBNF. While Andhra Pradesh emerges as a forerunner in adopting ZBNF with encouraging results, the IIFSR study raises concerns about the sustainability and yield (productivity) potential of this farming method.

For instance, the paper notes the CESS study has found that in the case of a variety of crops, lower cost of biological inputs suggested under ZBNF has led to improved yields of crops and farmers' incomes, thus increasing the food and nutritional security of farmers practising ZBNF. However, findings of agro-scientists of the ICAR-IIFSR, a government institute, show a 59% decline in wheat yields and a 32% decline in basmati rice yield compared to integrated crop management, adversely impacting food supply.

What are the lessons from Sri Lanka?

It's vital that before launching a large-scale transition from chemical to natural cultivation, extensive studies and assessments are conducted. A couple of years ago, neighbouring Sri Lanka went through economic and political turmoil after it decided to turn completely organic, and banned the import of chemical fertilizers. The government's policy shift had severe consequences with farmers struggling to get natural fertilizers; they faced a reduction in yields of key crops including rice, the staple, putting the country's food security at risk. A sharp price escalation was witnessed in the country, resulting in huge protests and unrest.

What is the way forward?

Noted economist and former professor at the Ludhiana-based Punjab Agricultural University, M.S. Sidhu, asserts that natural farming could be beneficial at a localised level, but in a populous country like India, adopting natural farming at a large scale may not be a successful model. "Food security is a major concern. If we adopt natural farming for cereals, which are mostly staples, we shall be able to feed only around one-third of our population. Wheat and rice are our staple foods, growing these crops through natural farming could result in lower yields, and hence it's not advisable unless scientific studies are conducted on yields". Supplementary foodstuffs may be grown through natural farming, he points out. "Rigorous scientific tests of natural farming, especially surrounding the crop yields should be held before its nationwide implementation to fend off the fear of potential risk to national food security," says Prof. Sidhu.



KAMALA PUJARI

- Kamala Pujari, a 76-year-old tribal woman from Odisha, passed away on Saturday while undergoing treatment.
- She was celebrated for her contributions to organic farming and for preserving hundreds of indigenous varieties of paddy, which earned her the prestigious Padma Shri award in 2019.

FOR DIRECT-SEEDED RICE, ZERO-TILLAGE WHEAT, RICETEC & MAHYCO FORM JOINT VENTURE

Rice and wheat breeding-cum-research in India has traditionally been a virtual public sector monopoly. But now, two private sector seed majors – the Alvin (Texas)-headquartered RiceTec Inc. and Jalna (Maharashtra)-based Mahyco Pvt. Ltd – have come together to form a joint venture (JV) for making the rice-wheat cropping system “more climate-smart and sustainable”.

— Paryan Alliance Pvt. Ltd, as the 50:50 JV is called, will focus on technologies for farmers to grow rice by direct seeding (instead of transplanting and flooding of field) and wheat through zero tillage (without burning the leftover stubble from the paddy crop and ploughing the field before sowing).

— These include RiceTec’s proprietary ‘FullPage’ direct seeded rice (DSR) cropping solution and the ‘FreeHit’ zero tillage (ZT) technology that Mahyco has developed in collaboration with Geneshifters LLC, an agri-biotech company at Pullman (Washington), US.

— The rice hybrids of RiceTec/Savannah (‘Sava 134’ and ‘Sava 127’) and Mahyco’s wheat varieties (‘Goal’ and ‘Mukut’) contain a mutated gene, whose altered DNA sequence allows farmers to spray Imazethapyr, a herbicide that can control a range of broadleaf, grassy and sedge weeds.

— Imazethapyr can’t be used on normal rice or wheat, as the chemical does not distinguish between the crop and invasive plants. The mutated gene in the hybrids/varieties bred by Savannah and Mahyco enable their plants to “tolerate” the herbicide’s application, so that it only kills the weeds.

— Traditional rice cultivation is both water- and labour-intensive. It entails preparing nurseries, where the paddy seeds are first raised into young plants that are uprooted and re-planted around 30 days later in the main field. The field in which the seedlings are transplanted is “puddled” or tilled in standing water to churn the soil and make it soft. For the initial three weeks or so after transplanting, farmers have to irrigate every 1-2 days to maintain a water depth of 4-5 cm. This prevents the growth of weeds – such as Echinochloa colona (commonly called jangli chawal) and Cyperus rotundus (motha) – during the crop’s early stage.

— DSR saves roughly 30% water, by dispensing with puddling, transplanting and flooding. It replaces water (a natural herbicide) with Imazethapyr.

For Your Information:

— Direct Seeding of Rice (DSR) refers to the practice of cultivating rice from seeds put in the ground rather than transplanting seedlings from a nursery. It is also known as ‘tar-wattar’ technique.



FROM UJJAIN TO GREENWICH: A BRIEF HISTORY OF PRIME MERIDIANS

The NCERT's new social sciences textbook for Class 6 mentions an Indian prime meridian, predating the one in Greenwich. The chapter, titled 'Locating Places on the Earth', says the Greenwich Meridian "is not the first prime meridian" and that "many centuries before Europe, India had a prime meridian of its own" which passed through the city of Ujjain in Madhya Pradesh. This meridian became "a reference for calculations in all Indian astronomical texts," the textbook says. The first mention of the Ujjain prime meridian can be found in the ancient Sanskrit treatise Surya Siddhanta, composed between the 4th and 8th centuries CE.

ON THE ETHICS OF HUNGER STRIKES AS A MODE OF PROTEST

"It is far easier to die of a police bullet or by going to the gallows than perishing away 'iota by iota' in a hunger strike," freedom fighter Jatin Das is said to have told his fellow revolutionaries. His comment was made to dissuade those of weaker constitutions to refrain from engaging in a method of protest bound to drain their physical and mental being, and possibly much worse.

The human body is extremely adaptable; it nevertheless requires nutritional replenishment to operate optimally. During the initial stages of a hunger strike, the body will source its energy needs from stored glucose as well as body fat. After that, the body begins to cannibalise the muscle mass and vital organs for energy, eventually breaking bone tissue to stay alive. Since the brain is but a part of the body, the mind begins to experience states of confusion, anxiety, and even delirium, and eventually death.

Revolution by starvation

The idea of a militant hunger strike with a political or social objective behind it, finds its earliest development in the concluding parts of the 19th century. Russian political prisoners during Tsarist times engaged in hunger strikes or golodovka in Siberia, to protest against prison conditions. A young Leon Trotsky led a hunger strike with other prisoners in 1898. In 1909, imprisoned suffragette Marion Wallace Dunlop refused food until she was recognised as a political prisoner. Taking Ms. Dunlop's lead, her fellow suffragettes also protested in a similar fashion. The authorities changed their tactics, and thus began the pernicious policy of force-feeding which led to the deaths of many suffragettes.

However, it was the hunger strikes by Irish republicans that most impacted the development and popularisation of this method of protest. Terence MacSwiney died in 1920 after resisting being force-fed. His death was followed by the martyrdom of 20 other revolutionaries.

In India

With movements closer home, revolutionaries from across political and ideological lines starved themselves, often finding martyrdom as a reward for their trials. Pandit Ram Rakha, a Ghadarite, died after a hunger strike to protest the forcible removal of his janeu (sacred thread) by jail authorities. In contrast, Ghadar Party leader Sohan Singh Bhakna undertook a hunger strike to protest against the segregation of Mazhabi Sikhs, deemed as 'low caste', during his stint in the central jail at Lahore.

Even Vinayak Savarkar, who was opposed to hunger strikes, in a strange turn of events, engaged with the prospect of one. Nani Gopal Mukherjee, a young Bengali revolutionary, had undertaken a fast in protest of prison conditions for nearly 72 days. Fearing for Mukherjee's life but finding his

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



appeals to be abortive, Savarkar pledged to starve himself to death if Mukherjee did not disengage. Mukherjee consequently concluded his strike in December 1912.

The revolutionaries Bhagat Singh and Batukeshwar Dutt, whilst in prison, had protested against abysmal jail conditions by going on an indefinite hunger strike. Soon enough his comrades-in-arms also joined in. It is at this time the aforementioned “iota by iota” comment was made by Jatin Das. Two weeks into the hunger strike, the prison authorities attempted to force-feed the hunger strikers. In one such attempt, the tube pierced through Das’s lung. His body was paralysed soon after and after 63 days on hunger strike, the 24-year-old Das died on September 13, 1929; he was canonised as the “Indian Terence MacSwiney”.

Mahatma Gandhi, who was committed to non-violence, held a differing view on the virtue of hunger strikes; he preferred the term ‘fasting’. “Fasting can only be resorted to against a lover and not to extort rights but to reform him, as when a son fasts for a parent who drinks,” Gandhiji had told satyagrahis protesting against a temple which barred low-caste Hindus in Travancore. “Suffering even unto death and, therefore, even through a perpetual fast is the last weapon of the satyagrahi. That is the last duty which it is open to him to perform,” Gandhiji had said. After the Chauri Chaura incident in 1922, in which protestors set a police station ablaze, Gandhi fasted for three weeks, appealing to the public to end the violence. In September 1932, Gandhiji undertook another fast unto death, this time with the object of opposing the British government’s decision to reserve seats in provincial Indian legislatures for Dalits. Gandhiji’s decision was opposed by Dr. Ambedkar, who favoured direct political representation for the oppressed Dalits. In the end, Dr. Ambedkar had to acquiesce to Gandhiji’s protest. The bitter taste of this satyagraha likely remained with Dr. Ambedkar, who had later said, “...we must abandon the method of civil disobedience, non-cooperation and satyagraha.” Dr. Ambedkar felt that “constitutional methods” offered a constructive approach to solving the crises of society in contrast to “unconstitutional methods” which he deemed as the “grammar of anarchy”.

The varied nature of these hunger strikes reveal its efficacy as a tool of protest, for better and for worse.

Monopoly on violence

The first major fast-unto-death protest in independent India came in 1952 when Potti Sriramulu demanded a separate State of Andhra Pradesh. Sriramulu’s death after 58 days sparked violent protests and finally led to the creation of Andhra Pradesh. Another well-known protest is that of Irom Sharmila’s. In November 2000, after 10 civilians were allegedly gunned down by the 8th Assam Rifles in Manipur, Irom Sharmila began an indefinite hunger strike. Ms. Sharmila was arrested for attempted “suicide” and was put in police custody for 16 years where she continued her hunger strike.

Before India had achieved its freedom from British rule, those who had been martyred were freedom fighters in a struggle against an imperialist colonising force. However, the examples above reveal that even in the absence of an occupying foreign force, the state apparatus continues to wrest with hunger strikes. The suppression of the strike becomes the primary objective of the administration, and can be compounded by infuriated prison authorities resorting to violence in the hopes of breaking the strike. With a state monopoly on violence, such abuse can go ignored for a long time. Sometimes, state authorities simply divert the responsibility of a hunger striker’s death on to some other unrelated ailment. Mohan Kishore Namadas, a Bengali revolutionary who died in jail, was marked as having expired of “lobar pneumonia” with nary a mention of the nasal



force-feeding that preceded it. Achyut Ghatak, a fellow revolutionary, recounts how protesters would cough heavily to shift the catheter tube, used for force-feeding, away from their throat back into their mouths where they could bite down onto the tube's end to prevent food being pushed into their system.

It is not as if such excesses have gone unnoticed. In many of the aforementioned cases, many jail doctors as well as other prison personnel refused to participate in the abuse of a protesting individual. The state, in the final analysis, operates through individuals, and in the absence of their complicity the question of the protection of a prisoner's rights is nothing but much abstraction.

A social dilemma

It has been argued that a hunger striker who is fasting unto death is committing something akin to a suicide. Reflecting on this question, theologian Herbert McCabe had argued in 1981, that "the case for saying that Margaret Thatcher is a murderer is, as it seems to me, as strong and as weak as the case for saying that Bobby Sands was a suicide". The reference was to the death of Irish Republican Army activist Bobby Sands, who died 66 days into a hunger strike. Sands, who was devoutly Catholic, wrestled with this choice. "If I die, God will understand," he had reportedly said. Since their earliest usage, the practice of hunger-strikes has raised a series of complicated, and potentially irresolvable, moral questions. Is it appropriate to provide medicine or nutrition against the will of a person voluntarily on strike? Is force-feeding a dangerous, perhaps even life-threatening protocol? Are doctors who engage in force-feeding in conjunction with their Hippocratic oath?

Hunger strikes are a last-ditch attempt at resistance. It would be prudent that societies become more cognisant of their role in engaging with the demands of protesters who are on hunger strikes while also addressing the inequities of the state instrument in dealing with such strikers. A state machinery that does not recognise, and actively brutalises against the rights of strikers, who waste their own bodies to advance political or social demands, can only end in tragedy.

It is perhaps this sentiment that Yeats had hoped to capture in his *The King's Threshold*. "...if a man be wronged, or think that he is wronged, and starve upon another's threshold till he die," Yeats writes, "The Common People, for all time to come, will raise a heavy cry against that threshold, even though it be the King's." This hope is what has kept the method of hunger strikes as a protest alive; that their fellow human beings will witness the injustice and raise a heavy cry against it.

ERRATIC SNOWFALL BLURS WINTER, EARLY SUMMER IN FRAGILE HIMACHAL REGIONS

Himachal Pradesh has witnessed not only a reducing snow cover over the years but also a gradual shift in snowfall occurrence pattern from winter months towards early summer months, raising concern surrounding climate variability in the ecologically fragile Himalayas.

The decrease in the snow cover during the peak winter months of December and January is especially worrisome and alarming as it could affect the water availability during summer as the snow that occurs during these peak winters sustains for a long time and enhances the discharge dependability of the major river basins during summer.



Area under snow

A study conducted by the Centre on Climate Change of Himachal Pradesh Council for Science Technology-Environment (HIMCOSTE) has revealed that all the major river basins including the Satluj, the Ravi, the Chenab and the Beas in Himachal Pradesh have witnessed an overall decrease of 12.72% in area under snow in 2023-24 winters in comparison to 2022-23.

The study conducted using Advanced Wide Field Sensor (AWiFS) satellite data, also points out that during 2023-24, the early winter months of October-November were characterised by a decrease in snow cover area except the Ravi basin, which showed a marginal increase in the area under snow in October. Similarly, the peak winter months of December-January saw a negative trend in the area under snow. Notably, during the late winter months of February and March, the trend was positive with an increase in the area under snow in all basins against last year.

In fact, during April the snow cover area increased due to fresh snowfall in the early summer on higher mountain ranges in all the basins.

As per the study, from October to January, there was less area under snow in all basins and the worst affected was January month when all basins saw the most decrease in the area under snow, indicating there was no snowfall at even the higher reaches in the peak winter season.

Environmentalists and scientists are concerned over the shifting of snowfall patterns from winter months to early summer months in the Himalayan State.

S.S. Randhawa, a co-author of the study, said that the Centre has been assessing the spatial extent of seasonal snow cover in Himachal Pradesh since 2015-16, and it has been observed that by and large there has been a reducing trend in snowfall during the past decade.

WHEN RAINS BRING CITIES TO A STANDSTILL

For more than 15 years now, Indian cities have been failing the monsoon test. This year, several parts of Delhi have been submerged on more than one day, Guwahati has faced a crippling flood, and last week, torrential rains brought lives to a standstill in several parts of Maharashtra, including Pune and Mumbai. All these cities have distinct geographical features. However, there are at least three things that are common to their flood-related woes: Outdated drainage systems that cannot take the stress of more than normal rainfall, planning that does not account for local hydrology and civic agencies whose role seems limited to organising relief and rescue. Maximum casualties are caused by overflowing nullahs, incidents of wall or building collapse and electrocution. In Pune, for instance, three people lost their lives after receiving an electric shock in a waterlogged part of the city. On July 22, a 26-year-old civil services aspirant was electrocuted in an inundated street in the national capital — the National Human Rights Commission has asked Delhi's chief secretary, Commissioner of Police and the head of the city's power distribution company to submit a detailed report on the incident.

Climate change, it's now well known, has increased the intensity of extreme weather events. Pune and Mumbai received nearly 45 per cent excess rainfall on Thursday and Friday, last week. Maharashtra's capital does have a Climate Action Plan and a similar project is reportedly underway in the state's second largest city. The problem is that there has been very little conversation on institutional mechanisms to make Indian cities climate resilient. Mumbai's Climate Action Plan does mention the need for a collaborative mechanism involving the industry, academia and civil society organisations. However, the Brihanmumbai Municipal Corporation —

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



the plan's nodal agency — is yet to get its act going. The country's richest municipality, which administers a city whose climate vulnerabilities have been underlined by more than one IPCC report, has not had elections in the past two years. Manu Bhaker's winning shot at Paris Olympics

The success of India's first female shooting medalist caps an inspirational story of pushback against odds.

Flood-related damage can be reduced if early alert systems are in place. Flood prone Buenos Aires, for example, has installed sensors in over 30,000 stormwater drains to issue flood warnings much in advance. Indian cities will, of course, need to have their own mix of natural and technological solutions. They will need to start with the basics: Stormwater drain improvement projects in most Indian cities, including Mumbai and Pune, have progressed in fits and starts. The country's latest monsoon woes are a signal that such projects cannot be put off.

EXPLAINED: LEGAL CHALLENGES TO THE GREAT NICOBAR INFRASTRUCTURE PROJECT

The Central government's Rs 72,000 cr-Great Nicobar Island (GNI) infrastructure project will involve the construction of an airport for civilian and defence use, an international container transshipment terminal, and a township. However, it has also faced legal challenges in the National Green Tribunal (NGT) and the Calcutta High Court, which has jurisdiction over the Andaman and Nicobar Islands.

Last week, conclusions of a high-powered committee (HPC) formed by NGT in 2023 to revisit the project's green clearance were submitted in an affidavit to NGT's Kolkata bench by the Andaman and Nicobar Islands Integrated Development Corporation Limited (ANIIDCO). ANIIDCO is the project's implementing agency.

The HPC concluded that the proposed transshipment port does not fall in the Island Coastal Regulation Zone-IA (ICRZ-IA), where ports are prohibited.

What led the NGT to revisit the green clearance?

In 2022, environmental activist Ashish Kothari and Mumbai-based non-profit Conservation Action Trust (CAT) challenged the environmental and Coastal Regulation Zone clearances granted to the GNI project. Along with the submission before the eastern bench of the NGT, CAT filed a separate appeal challenging the forest clearance.

The Ministry of Environment, Forests & Climate Change (MoEFCC) grants these clearances to permit construction activities. The appeals before the NGT sought for them to be quashed.

The grounds for the appeals were similar, centred on irreversible damage that the project would cause to biodiversity, inadequate environmental impact studies and opacity in the clearance process. The appeals pointed out that GNI was a Biosphere Reserve, home to a "wide spectrum of ecosystems comprising wet evergreen forests".

Issues of inadequate assessment of the impact on Shompen and Nicobarese tribal communities and non-compliance with due process in granting statutory clearances were also flagged. The Shompens are hunter-gatherers, while the Nicobarese people's ancestral lands are likely to be affected by the project.

Both appeals said the challenge was not against defence projects but over permissions granted for ports and townships in prohibited areas, such as the Island Coastal Regulation Zone (ICRZ) – IA



area. The categorisation refers to “ecologically sensitive areas and the geomorphological features which play a role in maintaining the integrity of the coast.”

CAT also alleged a conflict of interest as the Secretary, Environment and Forests, of the UT of Andaman and Nicobar Islands, was also the Managing Director of the Andaman and Nicobar Islands Integrated Development Corporation Limited (ANIIDCO).

In total, the project will be spread over 166 sq km and involve the felling of 130.75 sq km of forests.

What orders did the NGT pass on these appeals?

While the appeals were filed before the eastern bench of NGT, a special six-member bench headed by then NGT chairperson Adarsh Kumar Goel penned the final order deciding them.

The special bench ruled it did not find any ground to interfere with the forest clearance. It said while the forest help tackle air pollution and climate change, development cannot be ignored. It added that there was hardly any development in GNI and there was a need not only for “economic development but also national security”.

The bench said that while the environmental impact assessment procedure is mandatory, it does not follow that “hyper technical approach should be adopted ignoring ground realities about the need of the country for development and national security.”

However, in its conclusion, it ruled that there were “unanswered deficiencies” on coral conservation, the port’s location in a prohibited area and limited baseline data collection. An HPC headed by the Secretary, MoEFCC, was thus formed and ordered to finalise a report within two months. The bench also said no irreversible work should happen till its submission.

Notably, apart from economic factors, the project has been linked to India’s strategic interests in the Indian Ocean. In recent years, as the Chinese People’s Liberation Army Navy has expanded its footprint across the region, India has had concerns about the build-up of its maritime forces at the Indo-Pacific choke points such as the Malacca Strait.

What petitions on the project are pending before the NGT?

In May this year, Kothari again filed two petitions before the NGT’s eastern bench. One was about the violation of the 2019 ICRZ notification. It said that the NGT should direct ANIIDCO to exclude parts of the project’s port, airport and township from ecologically sensitive coastal areas.

The plea pointed out that ANIIDCO and MoEFCC were not complying with the NGT’s April 3, 2023 order to exclude project areas falling in the ICRZ-IA classification.

The second plea argued that the MoEFCC was in contempt of the NGT’s April 2023 order, in which it had formed an HPC to revisit the GNI infrastructure project’s environmental clearance. The plea pointed out that MoEFCC had not communicated any details of the HPC’s proceedings and had not passed any order after revisiting the clearance, as directed by NGT.

On July 26, ANIIDCO filed a counter affidavit to these petitions, whereas MoEFCC sought more time to file their response.



And what about cases at the Calcutta High Court?

Last year, CAT filed a writ petition before the Kolkata High Court over the April 2023 order of the NGT special bench. The writ prayed to quash the statutory clearances.

CAT said the NGT special bench did not have jurisdiction in the case dealing with challenges against forest clearance. It has argued that the case should have been dealt with by the eastern zone, rather than a special bench.

Further, CAT said in its plea that its counsel was not heard duly even though the date when the final order was passed was reserved for the completion of pleadings.

The petition has said that the NGT failed to critically evaluate the project clearances, “blinded by the mention of strategic importance of the project”. It added that by forming an HPC to revisit the project’s environmental clearance, the NGT delegated its decision. The plea referred to the Supreme Court’s earlier orders, which have said that the NGT cannot “abdicate its judicial functions to an administrative expert committee”.

INDIA’S OPEN ECOSYSTEMS FACING AN UNUSUAL THREAT: ENCROACHING TREES

In a study published on June 5 in the journal *Global Change Biology*, scientists from the Universities of Witwatersrand, Cape Town, and Oxford reported that more trees in open ecosystems like savannahs and grasslands have substantially reduced the number of native grassland birds. In the African Savannah in particular, the population of grassland birds has declined by more than 20%.

Many become one

Grasslands and savannahs are biodiverse habitats in tropical and temperate regions throughout the world. They cover nearly 40% of the earth’s total landmass and are home to many endemic and at-risk species of plants and animals. From megaherbivores like elephants, rhinoceroses, and buffaloes in Africa and Asia to grassland birds like the bustards, floricans, and grouse of the Himalayan grasslands and American prairies, open ecosystems have it all. However, we are rapidly losing them.

Activities threatening them include the conversion of grasslands, intensive agriculture, loss due to erosion, large-scale development projects, and overgrazing. But lurking among these usual suspects is also a highly unusual one: trees.

The increase in tree and shrub cover is called woody encroachment — and it is widespread across most ecosystems. Woody encroachment entails the conversion of open habitats to habitats with greater tree cover and/or shrub density. The end result is the homogenisation of an ecosystem, meaning a diverse, multi-layered ecosystem turns into a uniform layer of woody plants.

This is a dire prospect because open ecosystems are characterised by a grassy understory and a scattering of native tree species. They are generally maintained by certain natural as well as human activities like grazing and fire, which are called disturbance regimes because they work in tandem to limit the growth of tree species. But once these regimes are disrupted, trees have the calm they need to establish themselves and start woody encroachment.



When trees have ill-effects

A higher concentration of carbon dioxide in the air due to ongoing climate change also encourages deep-rooted woody plants in grasslands to proliferate.

“Increased atmospheric CO₂ is likely to promote trees over grasses because the C₃ photosynthetic pathway used by trees is preferred under high CO₂ conditions,” Jayashree Ratnam, programme director, Wildlife Biology and Conservation at the National Centre for Biological Sciences (NCBS), Bengaluru, said. “Once trees become dominant in a system, they may further suppress grasses through shading and fire suppression.”

Woody encroachment is widespread worldwide. Many studies have unearthed evidence of different drivers of encroachment on different continents. Fire suppression and fragmentation dominate in the South American grasslands, whereas more carbon dioxide and variations in rainfall do so in Australia and Africa.

Inside and outside parks

Closer home, in India, grasslands occur across different climatic regimes: the country’s west sports arid grasslands; floodplain grasslands dot the Himalayan landscape; and the high-altitude Shola grasslands crown the Western Ghats, to name a few. In the Himalayan foothills, the tall, wet grasslands are biodiverse habitats inhabited by iconic species such as Indian one-horned rhinoceroses, swamp deer, Bengal floricans, swamp grass babbler, and some other endemic species.

These grasslands are highly threatened, not least because previous damage has broken them up into fragmented patches in a sea of forests, agriculture, and other human-derived habitats. Such fragmentation leaves these patches even more vulnerable than before.

Most of today’s wet grasslands occur inside protected areas such as national parks and sanctuaries. Yet woody encroachment is rampant inside these parks as well, as a February 2023 study by researchers from the Indian Institute of Science Education and Research (IISER), Kolkata; Hainan University in China; and the Durrell Conservation Trust in the U.K. reported. Using data from remote-sensing satellites, they uncovered overwhelmingly high woody encroachment in several national parks in India and Nepal over the last three decades. The cover of grassland habitats had shrunk by 34%, while tree cover in these places had increased by 8.7%.

The human hand

Woody encroachment is a direct result of human-driven factors that are changing the disturbance regimes open ecosystems need to thrive. The suppression of the practices grasslands need to thrive stems from colonial conservation and management policies. Colonial officers in tropical countries were known to regard open ecosystems as “wastelands” because they took up space in which trees could grow instead and provide timber. The classification allowed these habitats to be converted to plantations as well as provided ground for the colonial government to criminalise communities that practised grazing and fire management.

A different colonialism threatens open ecosystems today: instead of timber, many see trees as providers of carbon sequestration potential and open ecosystems as encroachments that deprive humans of access to this potential.



Refusing to acknowledge the historical presence of grasslands and savannahs has also led to the ongoing failure to protect them. Woody encroachment in open ecosystems has altered biodiversity in myriad ways. There has been a big decline in grassland birds due to woody encroachment.

In the southern African countries of South Africa, Eswatini, and Lesotho, scientists used citizen science data from the ‘South African Bird Atlas Project 2’ to find a dramatic decline in the population of open ecosystem birds. Of the 191 species they analysed from 2007 to 2016, declining population trends prevailed in 121. Of these, the decline of 34 species was correlated with woody encroachment.

“Succession of woody species changes the soil conditions, which changes the grass species and faunal association. Woody species invite increased predation, especially of the specialist birds’ nests,” Hem Sagar Baral, a noted ornithologist and former head of the Zoological Society of London (Nepal chapter), said.

For similar reasons, woody encroachment brought down the population of grassland specialist rodents in the Banni grasslands of Kutch. These species also incurred a survivability penalty: the grass allowed them to hide from predators, but as trees cropped up, they spent more time keeping vigil and less time feeding.

An invasion by trees

Woody encroachment in grasslands has also received a leg-up from large-scale tree plantation programmes. In the Banni grasslands, studies have found that the spread of the invasive species *Prosopis juliflora* — which the Gujarat Forest Department planted in 1961 to combat desertification and provide firewood to communities — has since transformed swaths of the grasslands into a *Prosopis* woodland.

In fact, most of India’s open ecosystems have stories to tell of ruin led by artificially introduced plants. In the Shola grasslands, eucalyptus plantations have run amok, whereas the Malabar silk-cotton tree has been running riot in the wet Terai grasslands of the Himalaya.

To combat the increasing threat of woody encroachment on grasslands, it is imperative that we first develop more evidence of their impact. Many studies have revealed the adverse effects of woody encroachment on biodiversity in grasslands, yet they are also the tip of the proverbial iceberg.

We also need long-term ecological monitoring in open ecosystems because it provides valuable fine-scale information. “A lot more science is needed before actions and policy-changes,” Ashish Nerlekar, a presidential postdoctoral fellow at Michigan State University who studies the ecology and conservation of open ecosystems in India, said.

In India itself, we also need to dismantle colonial terminologies like “wastelands,” which perpetuate the misclassification of open ecosystems and passively promote activities that convert them to use for other purposes.



CITES EASES NORMS FOR AGARWOOD EXPORT; MOVE TO BENEFIT LAKHS OF FARMERS FROM THE NORTHEAST

India has successfully prevented the inclusion of agarwood (*Aquilaria malaccensis*) in the Review of Significant Trade (RST) of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The CITES also notified a new export quota of the highly valuable and aromatic resinous wood and oil of the tree from India from April 2024.

Since agarwood is cultivated in different parts of India, especially in the northeastern States, this development is going to benefit lakhs of farmers in certain districts of Assam, Manipur, Nagaland, and Tripura.

Aquilaria malaccensis was listed in Appendix II of the CITES (a category of species that are not necessarily threatened but whose trade must be controlled) for the first time in 1995 based on India's proposal at CoP9 in 1994.

The removal of India from the RST for *Aquilaria malaccensis* was achieved based on a non-detriment findings (NDFs) study of the plant species by the Botanical Survey of India (BSI) and the Ministry of Environment Forest and Climate Change (MoEFCC).

The NDF prepared by the BSI suggested that the harvest of plants should be allowed from home, community gardens, plantations on leased/patta lands, private or community plantations, or any other types of small-scale or large-scale plantations.

However, the NDF added that "harvesting of plants or collection of seeds/seedlings/saplings and other propagules should not be allowed from the existing wild populations or plants in the protected areas and reserve forests".

The export quota recommended by the NDF for 2024–2027 for agarwood chips and powder/sawdust is 1,51,080 kg a year and agarwood oil is 7,050 kg a year.

"The absence of an export quota for a long period and other trade-related restrictions in India caused an increase in informal trade/export of agar chips, oil, powder etc. to the Middle East and other foreign countries. It also caused an increase in costs of agarwood chips and oil in the global market as India is a major agarwood trading nation with which most importing countries have long trade records," the NDF report said.

Despite the export ban, the illegal trade of agarwood and its derivatives has continued in India, with more than 1.25 tonne of chips and six litres of oil/derivatives reportedly seized in six States between 2017 and 2021, a report by TRAFFIC, an NGO, said.

PROJECT TIGER WILL DISPLACE 5.5 LAKH TRIBALS: REPORT

Project Tiger will displace at least 5.5 lakh Scheduled Tribes and other forest dwellers, a report released by a New Delhi-based rights group on Global Tiger Day on Monday said.

The number of people displaced from 50 tiger reserves before 2021 was 2,54,794, which worked out to about 5,000 per protected area.



The average number of people to be displaced from six tiger reserves since 2021 is 48,333, a 967% increase in displacement over the pre-2021 period, the report titled “India’s Tiger Reserves: Tribals Get Out, Tourists Welcome” said.

According to the report by the Rights and Risks Analysis Group, some 1,60,000 people out of about 2,90,000 people to be displaced in the post-2021 period would be from the Kumbhalgarh Wildlife Sanctuary in Rajasthan, followed by 72,772 people from the Nauradehi Wildlife Sanctuary in Madhya Pradesh, and 45,000 from the Ranipur Tiger Reserve in Uttar Pradesh.

The report also highlighted forced evictions through massive human rights violations.

HOW DOES HEAT AFFECT MEDICINES AND THOSE TAKING THEM?

The world just experienced the hottest day on record, and prolonged heat waves have become more common due to climate change and other conditions that can alter medications and their effects on patients taking them.

Medications for common conditions can increase patients’ sensitivity to heat by impairing the body’s response to high temperatures, including the ability to sweat and the rate of blood flow.

How does heat alter medicines?

When sweat evaporates, it removes heat from the skin. Not being able to sweat can cause the body to rapidly accumulate deadly levels of heat. Heat waves also increase the risk of deterioration for nearly all medications, whether capsules, sprays, tablets, syrups, or some other form, if they are not kept within a certain temperature range. The heat-related effects of medications can vary based on individual health status, dosage, and environmental conditions.

Patients should consult their physicians about potentially adjusting doses or scheduling in hot weather.

Drugs that increase sensitivity to heat

Blood pressure and heart failure medications: Angiotensin converting enzyme (ACE) inhibitors suppress thirst, making it harder to know when to drink more water and increasing the risk of dehydration. Calcium channel blockers can cause mineral imbalances, making it harder for the body to regulate its temperature, while beta blockers can make it harder to sweat and keep the body cool. Diuretics, or water pills, can also cause dehydration and mineral imbalances.

Allergy medications: Some over-the-counter antihistamines reduce sweating and can impair temperature regulation.

Psychiatric medications: Certain antipsychotic medications limit ability to sweat. Some antidepressants have the opposite effect, increasing sweating and repressing thirst. Stimulants such as amphetamines and other drugs may interact with the central nervous system to raise body temperature.

Thyroid medications: Thyroid hormone pills can also raise temperature, impair temperature regulation, and cause excessive sweating.



Safe temperature for storage

Extreme heat (and extreme cold) can significantly alter the effectiveness of prescription and over-the-counter drugs. Some medications can tolerate temperatures up to 30 degrees C. However, in general, they should be stored at 15–77 degrees C in a cool, dry place, away from sunlight. Temperature storage guidelines for specific drugs can be found on manufacturers' websites. It's hard to predict the extent to which a medication will degrade in extreme temperatures because each drug is different, said Amy Bachyrycz, a pharmacy faculty member at the University of New Mexico in Albuquerque.

Medicines should not be left in hot cars or for hours in hot mail boxes.

CONTESTED HARVEST

India's torturous saga on the fate of genetically modified food crop made another pit stop last week with a two-judge Bench, of Justices B.V. Nagarathna and Sanjay Karol of the Supreme Court of India, delivering a split verdict on the question of allowing genetically modified (GM) mustard in farmer fields. As of today, the only GM seed permissible in India is cotton. The gain in cotton yield had prompted agricultural institutions, private and public, to develop GM seeds in food crops such as rice, wheat, tomato, brinjal and mustard though none has been released. These issues underpin the story of DMH-11, or Dhara Mustard Hybrid-11, that was developed under a publicly funded project at the Delhi University's biotechnology department. The genes used in the plant make the crop suitable and lucrative to private seed companies for making newer hybrid varieties. For crops to be approved under India's agricultural system, they must be sown over three seasons in different agro-climatic zones and prove themselves to be consistently better than their existing comparators. Trials conducted over three years by the Indian Council of Agricultural Research suggest that DMH-11 passed these metrics. This led the GEAC, the scientific advisory body led by the Ministry of Environment and Forests, to approve DMH-11 in October 2022, subject to certain tests. On the other hand, environmentalist groups have said that the DMH-11 is a 'herbicide tolerant' crop. It is genetically coded in a way that effectively forces farmers to use certain kinds of pesticide, with destructive environmental consequences; the allegations are that the developers were not transparent with this information. These findings, and the GEAC approval, have been contested in the Court by Aruna Rodrigues and the organisation, Gene Campaign.

The judges disagreed among themselves whether the GEAC was correct. Justice Nagarathna said that the GEAC had violated the 'precautionary principle', under which any new organism or modifying technology should, by default, be caged in unless its consequences are deliberated upon. Justice Karol, however, appeared to be satisfied by the process. Therefore, the case passes on to a larger Bench led by the Chief Justice of India. However, the most significant decision was a Court order to the Centre to evolve a policy on GM crops. The dispute over GM crops is fundamentally ideological and less on the traditional agricultural yardsticks of yield and farm economics. This is amplified by India's agricultural history where a panacea from yesteryears, hybrid seeds and synthetic fertilizer, while improving yields and productivity, have unleashed environmental harm. In their decisions, the Court and the government must remember that the good ought not to be seen as the enemy of the perfect.

UNNATURAL DISASTER

Climate change can encourage unprecedented weather, precipitating natural disasters of magnitudes that may surprise local responders. The calamitous landslides in Wayanad district in

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



Kerala on July 30 are not necessarily such disasters. Parts of Kerala have been bearing the brunt of heavy rains during the southwest monsoon and landslides are a yearly affair. But deadly landslides are new. This week, heavy rains triggered multiple landslides that have killed 200 people and laid waste to a few villages. The region is a tourist destination and incentivises infrastructure development to maximise revenue potential. The Chaliyar river here springs from an altitude of around 2 km and flows in a sheer path down towards Vellarmala, bringing fast waters that also sweep relatively more sediment downstream. The rains this year further increased the river's volume and force, which swept up debris and deposited it in the villages settled on less steep land where many of the deaths have been reported. But the tragedy is compounded by the fact that heavy rains here in 2020 had caused the Chaliyar to strip swaths of its upstream areas of plant cover, leaving more rocks and humus vulnerable to being displaced.

The geographical peculiarities of landslide-prone Idukki, Kottayam, Malappuram, and Wayanad have been evident for years; they also feature prominently on landslide risk maps. Blame for the landslides' deadly recurrence must thus be shared by climate change and a State that has been repeatedly caught off-guard. A recurring issue is an abject lack of advance warning and emergency preparedness. Landslides are more common in ecologically fragile areas. The monsoons have been producing more short bursts of intense rain, resulting in some soil types becoming easier to dislodge while quarrying; linear infrastructure development, construction activities, and monocropping have compromised ecosystems' ability to cope with changing natural conditions. For these reasons, patterns of land use must not change and the State must restore denuded flora and rehabilitate people in these areas to ensure they have other opportunities for their welfare. As recommended by the Western Ghats Ecology Expert Panel, Kerala must also decline engineering projects in ecologically sensitive areas and their surroundings, and constitute, equip, staff, and empower expert committees that deliberate the feasibility of other projects here. Indeed, the panel's recommendations were designed to tame the effects of unpredictable weather without also denting economic growth, but Kerala today is sliding past the point of having an option to balance development needs with environmental concerns.

A WAYANAD STORY

At 6 am, on August 9, 2018, one of us (Unny) received a frantic call from their mother informing that their house in Palakkad is getting flooded and that the water level in the canal adjoining the Kalpathy river is rapidly increasing. Later that day, the shutters of the Malampuzha Dam were opened, further raising the water level in the canal. The flood that ensued sank the family's car and damaged appliances and furniture, and with it, the ability to enjoy the rain.

— Kerala is a state whose resilience has been tested time and time again. Monsoons are now welcomed with a great deal of caution and worry. Homes, livelihoods, and a feeling of peace and safety are lost every year.

— Since 2018, there have been five severe landslides — in Kozhikode, Palakkad, Wayanad and Malappuram districts — in which a total of 160 people have been reported dead. According to the central government data, Kerala faced the highest number of landslides between 2015 and 2022. Out of the 3,782 landslides reported in the country, 2,239 were reported from Kerala.

— Kerala's annual landslide problem has again put the spotlight on the reports of the Madhav Gadgil Committee (2011) and the K Kasturirangan-led High Level Working Group (2013), as well as the resistance to their recommendations.



— The areas of Wayanad that have been devastated by the landslide were among those that were recommended to be demarcated as Ecologically Sensitive Areas by the Gadgil Committee. These areas were, in turn, graded into three categories based on their environmental fragility.

— According to the Gadgil Committee Report, in the Ecologically Sensitive Area-1, no forest land could be changed to non-forest land and agricultural land could not be changed to non-agricultural land.

— The report also highlighted the importance of involving local communities in any conservation effort and ensuring that their livelihoods are not adversely affected by these policies.

— It also recommended that tourism in the region be regulated to ensure that it remains environmentally sustainable and does not disrupt the region's fragile ecological balance.

— The recommendation to prohibit change of land-use subsequently led to a group of farmers protesting in the hilly regions... Both the Gadgil and Kasturirangan Committee reports were also criticised by various sections as being too "environmentally forward" and not being people-centric enough.

— It is said that the only thing natural about a natural disaster is the event itself... In a way, some of the course of the disaster is predictable.

— Wayanad's story tells us that environmental conservation cannot be a top-down endeavour. Adoption of conservation measures requires the support and participation of the people. This means that the policies must also strive to overcome the binary of environment versus development.

For Your Information:

— The Ecologically Sensitive Areas (ESAs) are areas in which human activities, including construction and industries, are sought to be regulated because of the fragile ecology and special provisions are invoked to protect the environment.

— The first draft notification on Western Ghats that had demarcated over 57,000 sq km across Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Goa in 2013 is yet to be notified as consensus has been elusive.

UNSCIENTIFIC WORK BY NHAI LED TO SHIRUR LANDSLIDE: REPORT

A preliminary report by a technical team looking into the causes of the July 16 landslide in coastal Karnataka's Uttara Kannada district has listed "unscientific" construction of National Highway (NH) 66 by the National Highway Authority of India (NHAI), combined with heavy rainfall in a short span of time, among factors responsible for the disaster.

— At 8.30 am on July 16, a massive landslide brought down a torrent of mud and debris at Shirur village in Akola, destroying the Karwar-Mangaluru portion of the 1,640-km highway, which connects Maharashtra's Panvel with Kanyakumari in Tamil Nadu.

— The picturesque two-lane highway has the hills of the Western Ghats on one side and the Gangavali river on the other. According to the NHAI, road building company IRB Infrastructure was in 2013 picked as the concessionaire to build the highway. Construction was completed in 2020 and the same year, NHAI started collecting tolls.



— In its preliminary report submitted to the NHAI and state government, a team from the Geological Survey of India (GSI) has, while assessing the landslide, pointed to the “unscientific” work done by the NHAI on this stretch.

— The report states that natural drainage flows were disturbed when slope modifications were carried out to build the highway. “The steep gradient of the cut slope, presence of highly weathered rock, thick debris, saturation due to rainfall and lack of toe support (the distance between the edge of the highway and the beginning of the slope, a key factor while designing stable slopes along highways) are the primary causative factors of the debris flow.

— Intense rainfall acted as the trigger for the landslide. The high relief and overburden material in the hill slope suggest that retrogression of the slide is probable during prolonged rainfall,” states the report.

— In the report, the GSI team has suggested both immediate and long-term measures to prevent further damage, including that no further modification should be carried out to the hill slope and a comprehensive geotechnical investigation to determine appropriate slope stabilisation strategies for the Shirur site.

For Your Information:

— Environmentalists say Uttara Kannada’s coastal areas and ghats receive a high 3,500-4,000 mm of rain per annum, making it a challenge to execute infrastructure projects. Given these difficulties, they believe it is imperative for government agencies to assess terrain conditions before executing road projects.

WHAT IS THE STORY OF ABHIMANYU AND THE CHAKRAVYUH, INVOKED BY RAHUL GANDHI IN PARLIAMENT

Early on Friday (August 2), Leader of Opposition in Lok Sabha Rahul Gandhi posted on X that he had inside information that the Enforcement Directorate was planning to raid him because “apparently, 2 in 1 didn’t like my Chakravayuh speech”.

Criticising the Budget in Parliament, Rahul had said that a “lotus shaped chakravayuh” controlled by six men had trapped India’s people in the same way that Abhimanyu, Arjuna’s young son, had been trapped and killed by the Kauravas in a chakravayuh or padmavyuh on the battlefield of Kurukshetra. We explain.

Drona’s chakravayuh

Following the fall of Bhishma on the tenth day of the great war, Dronacharya took over the reins of the Kaurava army. After an uninspiring performance in the next two days, Duryodhana, the oldest Kaurava, castigated Drona, reminding him of his vow to vanquish the Pandavas. Drona, embarrassed, decided to deploy the feared military formation of the chakravayuh.

Both sides in the war devised and deployed soldiers in various vyuh or military formations. The vyuh were intended to place the most powerful warriors in positions from where they could inflict the most damage, or to meet specific aims of battle. Each formation had specific counters which the other side had to know in order to break through.

The chakravayuh was considered the most difficult of such formations because very few warriors knew how to neutralise it. On the Pandava side, only Krishna, Arjuna, and Abhimanyu, the son of



Arjuna and Subhadra, knew how to penetrate the chakravyuh. When Drona deployed the chakravyuh, he ensured that the attentions of Arjuna and his charioteer Krishna were diverted elsewhere.

Tragedy of Abhimanyu

This left the 16-year-old Abhimanyu as the only one on the Pandava side who could penetrate the chakravyuh. However, Abhimanyu only knew how to get inside the formation, not how to get out.

This was because Abhimanyu had learnt how to enter the chakravyuh while he was in his mother's womb — Arjuna was telling his wife about it, but because Subhadra fell asleep halfway through the narration, Abhimanyu could hear only how to get in, not how to get out.

Abhimanyu was as accomplished as a warrior as he was brave — he is often referred to as 'Janmavira', one who is brave from birth, in the Mahabharata. So, as the chakravyuh swept across the battlefield, ensnaring the Pandava troops in its clutches, Abhimanyu charged into the multi-layered, disc-like formation and managed to reach its centre. The plan was for other Pandava warriors to follow him, and wreak havoc inside the formation. But that did not happen — stiff resistance by the Kauravas, primarily Jayadratha, and some shrewd planning by Drona meant that the likes of Yudhishtira and Bhima were successfully held off while Abhimanyu was trapped inside, alone.

The young warrior fought like a lion, killing many Kauravas, including Duryodhana's son Lakshmana, and gravely injured Duryodhana and Dushasana. Finally, six Kaurava warriors attacked Abhimanyu all at once, breaking the rules of ethical war. Outnumbered and exhausted, Abhimanyu succumbed.



DreamIAS



BUSINESS & ECONOMICS

US FED HOLDS RATES, SIGNALS POSSIBLE CUT IN SEPTEMBER

In its July meeting, the US Federal Reserve decided, in line with expectations, to keep interest rates steady. The federal funds rate remains at 5.25 to 5.5 per cent. However, the change in the tone of the accompanying commentary indicates the possibility of a policy pivot in the near term. Federal Reserve chairman Jerome Powell said that if inflation moves in line with expectations, “a reduction in our policy rate could be on the table” in the September meeting. The Dow Jones index rose with markets seeing greater visibility on interest rate cuts. Other central banks in developed economies have already embarked on the path of easing policy rates. In its June meeting, the European Central Bank had cut interest rates as price pressures weakened in the Euro region. In July, the Bank of Canada had also reduced interest rates, its second straight rate cut. And on Thursday, the Bank of England also lowered interest rates by 25 basis points to 5 per cent.

The Fed’s policy statement noted that that has been “some further progress” towards achieving the 2 per cent inflation target. In June, inflation, based on the personal consumption expenditure index, rose 2.5 per cent. There is also the indication of the committee shifting focus from being solely fixated on inflation to being “attentive to the risks to both sides of its dual mandate” — inflation and employment. The unemployment rate in the US has risen to 4.1 per cent. With many in the market now pencilling in the first rate cut in September, attention will now turn to the quantum of cuts in the near term. This could have implications for emerging economies. As the International Monetary Fund had noted in the July update of the World Economic Outlook, “a number of central banks in emerging market economies remain cautious in regard to cutting rates owing to external risks triggered by changes in interest rate differentials and associated depreciation of those economies’ currencies against the dollar.”

In its last meeting, the RBI’s monetary policy committee had voted in favour of maintaining the status quo on interest rates. While two members on the committee — Ashima Goyal and Jayanth Varma — voted in favour of reducing interest rates and changing the policy stance, RBI Governor Shaktikanta Das has recently restated his position, saying that “it is too premature to talk about interest rate cuts”. In the coming months, as greater clarity emerges on the trajectory of food inflation, the path of interest rates will become clearer.

IMPORT OF TUR DAL FROM MOZAMBIQUE RESUMES AFTER CENTRE’S INTERVENTION

The shipments of Tur/Pigeon peas from Nacala Port in Mozambique, disrupted by an “anti-India” group, have resumed after the Ministry of Consumer Affairs raised the issue with the Ministry of External Affairs and the Indian High Commissioner there persuaded the matter with the local authorities, The Indian Express has learnt.

— India is the world’s largest producer of pulses, but it is still dependent on imports to meet its domestic demand. The country imports about a dozen types of pulses from different countries, in which Mozambique is its main source for Tur/Pigeon pea imports.

— During 2023-24, India imported 7.71 lakh tons of Tur/Pigeon pea, of which one-third (2.64 lakh tons) came from Mozambique. The figure was even higher in 2022-23 when half (4.6 lakh tons) of India’s total Tur/Pigeon pea imports (8.94 lakh tons) were from Mozambique.



— Malawi, the fourth largest Tur/Pigeon peas supplier to India, shipped a quantity of 52,773 tons during the last financial year, recording a drop of 12 per cent as compared to 60,463 tons in the previous year.

— The sources attributed this drop in imports from these two countries during the last year to a “series of hurdles” in Mozambique which had impeded the smooth flow of trade.

— Mozambique had entered into an MoU with India to supply 2 lakh tons of Tur/Pigeon peas till 2025-26.

— As per the pact, India provides assured market access to Mozambique. A similar MoU has been signed with Malawi for supply of 0.50 lakh tons of Tur/Pigeon Pea to India annually.

— India imports about a dozen pulses from different countries. During 2023-24, India’s pulses imports rose to a record high of 47.38 lakh tons, almost double to the level of 24.96 lakh tons in 2022-23.

For Your Information:

— In April 2024, the consumer price index for cereals was 8.63% higher than that in April 2023.

— The main reason is the El Niño-induced patchy monsoon and winter rain, causing a decline in domestic pulses production from 27.30 million tonnes (mt) in 2021-22 and 26.06 mt in 2022-23 to 23.44 mt in 2023-24, as per the Agriculture Ministry’s estimates.

AS INDIA RAMPS UP FTAS, A NEW SYSTEM IN THE WORKS TO STOP CONCESSIONS MISUSE

The Finance Ministry is developing a new risk management system to prevent foreign exporters from claiming duty concessions under a Free Trade Agreement (FTA) by rerouting goods from a third country, thereby breaching value addition norms, Central Board of Indirect Taxes & Customs (CBIC) Chairman Sanjay Kumar Agarwal told The Indian Express.

The risk assessment system will be crucial as India is increasingly signing FTAs, with annual exemptions worth Rs 75,000 crore to Rs 80,000 crore on the anvil, alongside major deregulation of customs procedures by providing an option of self-certification for the proof of origin of products imported from an FTA partner.

The government has proposed an amendment to Section 28DA of the Customs Act, 1962, in the Union Budget 2024-2025, replacing ‘certificate’ of origin with ‘proof’ of origin, allowing self-declaration. While the amendment could facilitate trade agreements with developed nations such as the UK and EU, which favour liberal customs norms, it could also increase the risk of breaches, experts said.

“The world is moving in one direction. In FTAs, self-certification is increasingly being incorporated, so we must move in the same direction. Countries that accept self-certification rely on their risk management systems to identify cases requiring verification. We are also working on this to ensure authenticity,” Agarwal said.

“In certain cases, we may also verify the value addition by referring the case to the country of export. If there is doubt, we can consult the exporting country based on risk assessment, but not in all cases,” he said.



He emphasised that the certificate of origin or self-declaration must be furnished as stated in the trade agreement which means that all FTA partners will not have the option of self-declaration and that trade negotiators would decide which geography would this norm be extended to.

The rules of origin ensure that importers provide adequate proof that goods claiming FTA tariff concessions meet all criteria. However, these rules impose additional conditions beyond the FTA agreement, Global Trade Research Initiative (GTRI) Founder Ajay Srivastava said.

“For example, the FTA text places responsibility on the certificate issuing authority to verify production details and value addition. However, the CAROTAR Rules require importers to have sufficient information about regional value content and product-specific criteria. Importers must provide this information as required by the CAROTAR rules or risk losing FTA tariff concessions. The rules state that having a certificate of origin from an Issuing Authority does not relieve importers of the responsibility to exercise reasonable care,” Srivastava said.

Experts point out that cumbersome procedures to meet value addition norms often lead exporters to forgo FTA concessions, resulting in low FTA utilization rates. Conversely, India has seen breaches of rules of origin, particularly in the India-ASEAN trade agreement.

The proposed deregulation in customs norms requires high integrity from exporters in the FTA nation, and that concessions worth Rs 75,000 crore to Rs 80,000 crore are given annually and that customs need to ensure benefits are correctly availed, MD-Price Waterhouse & Co LLP and former CBIC Chairman S Ramesh said.

He said that India insisted on authority to sign a certificate of origin because goods were being diverted from China and other countries through Indonesia and Vietnam. However, self-declarations are increasingly being adopted, and India cannot remain isolated.

A GTRI report highlighted a nearly 60-fold increase in silver imports last financial year from the United Arab Emirates (UAE), which is unusual since the country does not produce silver. This import surge may indicate a breach in the rule of origin finalised by India and the UAE under the FTA.

ARE ENOUGH FORMAL JOBS BEING CREATED?

The story so far:

The Union Budget for 2024-25 made it clear that employment was a major priority of the government, with the word getting 23 mentions in the Finance Minister's speech. With many voters expressing their disenchantment with rising unemployment in the recent election, Prime Minister Narendra Modi has lent his title to a package of schemes on employment.

What is the current state of employment?

According to the Economic Survey, India's workforce was estimated to be nearly 56.5 crore in 2022-23, of which more than 45% is employed in agriculture, 11.4% in manufacturing, 28.9% in services, and 13% in construction. Officially, the unemployment rate was just 3.2% in that period, but economists note that these statistics do not reflect ground reality, given the large number of underemployed people in the country and the fact that many job seekers continue to work on farms or the unorganised retail sector or as casual labourers. A person is categorised as employed if he pursued any economic activity for at least 30 days in the preceding year.



Almost one in five people in the workforce (18.3%), mostly women, do not receive any wages for their labour, as they are unpaid workers in household enterprises. The urban unemployment rate for the quarter ending March 2024 stood at 6.7%, while youth unemployment stood at 10% in 2022-23. The percentage of people in regular salaried work has dropped from 22.8% in 2017-18 to 20.9% five years later, despite policy efforts to formalise the workforce; many salaried workers do not have access to contracts or social security benefits that usually define a formal worker. The government cites enrolment in the Employees Provident Fund Organisation (EPFO) as evidence of formalisation. The EPFO has 7.3 crore contributing subscribers, though total accounts are 30 crore, including inoperative accounts and multiple accounts held by individuals.

What were specific schemes in the package?

Three of the schemes provide employment-linked incentives. The first scheme is meant to support the hiring of first-time employees, with a wage subsidy of up to ₹15,000 paid to the employee, and is expected to cover one crore people. The second is aimed at the hiring of first-time employees, specifically in the manufacturing sector, with wage subsidies to be paid to both employees and employers for four years, with a maximum incentive of 24% of a ₹25,000 monthly wage. The third supports employers who hire new workers, not necessarily first-timers, by reimbursing up to ₹3,000 of their monthly EPFO contribution. In fact, all three schemes are dependent on employees being registered with the EPFO. The fourth scheme aims to upgrade Industrial Training Institutes and boost skilling efforts, with 20 lakh students expected to benefit. The final scheme, which garnered headlines partly because of its similarities to a proposal in the Congress's manifesto, is aimed at on-the-job skilling, with an ambitious target of one crore youth to be given internships in India's top companies with a monthly allowance of ₹5,000 for one year, with the companies bearing training costs and 10% of the allowance.

What is in the fine print?

Economists and small industrialists say the conditions and procedures built into these schemes may create obstacles for effective implementation. For instance, the incentive scheme for first-time employees, which offers a ₹15,000 subsidy is paid out in three instalments; the second instalment is only payable if the employee undergoes a compulsory online financial literacy course. "This is impractical. Why should employees in every unrelated sector be expected to do this? And why should this be a condition for this incentive?" asks Himanshu, who teaches at Centre for Economic Studies and Planning, Jawaharlal Nehru University (JNU).

More worrying is the clause stating that the subsidy is "to be refunded by the employer if the employment to the first timer ends within 12 months of recruitment." If the employee switches jobs in 10 months, he has already received the benefit of the scheme, but the employer is required to bear the costs; labour experts say few small employers will be willing to take that risk. The scheme for creating jobs in manufacturing has a minimum requirement of hiring 50 people or 25% of their existing strength, which is a significant number of people to be hired at one go for any firm in return for marginal benefits.

How effective are these schemes likely to be?

These schemes essentially attempt to encourage hiring by reducing the cost of new hires. However, economists note that this is not the main constraint preventing employers from hiring new workers. Anamitra Roychowdhury, a labour economist at JNU, notes that India is already a low wage economy, with real monthly incomes falling over the last five years for the majority of



the workforce. “Wage costs are a redundant constraint,” he says, adding that while skilling is certainly needed, it is not the central issue preventing hiring either.

“There is a bigger structural reason why the economy is not able to create jobs, and that is due to insufficient demand, caused by low consumption... and the lack of private investment. And if that comes up, then these costs won’t matter,” notes Amit Basole, professor at Azim Premji University. He adds that these schemes need to be pitched to the niche group of employers for whom such costs do matter, usually small firms with small margins. In fact, Finance Secretary T.V. Somanathan indicated in an interview with The Hindu that this may have been the government’s intention behind the scheme, noting that “fiscal incentives have a role at the margin”.

With regard to formalisation of the workforce, Mr. Basole points out that apart from new people entering the workforce, there are also large numbers seeking to leave agriculture, petty trade, unorganised retail and domestic service. The need is to create formal jobs to keep up with the pace of the supply, which is not happening, as evidenced by the fact that the proportion of salaried workers has actually dropped slightly over the last five years.

What else is needed to create jobs?

“When we think of where we need to create jobs, it should not be in the top 500 companies which are largely capital intensive, but in the MSME (micro, small and medium enterprises) sector, in labour intensive sectors, in small towns. The need is to raise wages there, infuse money into MSMEs, which will have a multiplier effect,” says Mr. Himanshu, recommending a bottoms-up approach. If the urgent requirement is to stimulate demand by increasing consumption, another step could be to raise wages in MGNREGA, the rural jobs scheme, and create a similar employment guarantee scheme for urban workers, says Mr. Roychowdhury. “This would be the more direct approach to kickstart consumption,” he says, noting that the Centre has instead curbed MGNREGA funding.

THE NOT YOUNG

Much of the public discourse on Indian demographics focuses on the youth bulge and the challenge of utilising the “demographic dividend”. What does not get equal attention is that India is also ageing, given rising life expectancy, which has implications for social security for older persons. It is estimated that the proportion of older persons in the total population will increase from 8.6 percent in 2011 to 20.8 percent in 2050. Inter-state variations are reflected in the age structure of the population, including the ageing experience.

— Most states in the southern region and select northern states such as Himachal Pradesh and Punjab reported a higher share of elderly population than the national average in 2021. This gap is expected to widen by 2036.

— A significant feature of East and South Asian societies is the rapidity of ageing compared to the experience of Western countries. The magnitude of the increase in the proportion of older persons witnessed over a hundred years in the West has occurred in a mere 20-30 years in South and East Asia.

— The rapidity of this movement in middle and low-middle-income countries is especially challenging given the inadequate social protection for the elderly, including pensions, access to health and social-care services.



— The needs of older persons do not have a similar level of visibility or policy priority in India. Unlike the East and South East Asian countries, India does not have a universal public pension scheme, health insurance or social-care provisioning, with some health insurance and social welfare schemes targeted only at older persons below the poverty line.

— There is a need to understand older persons' felt needs from the demand side of the equation. Based on this, one would have to assess the supply side in terms of social protection, insurance schemes, and health and social-care institutions.

— According to the Longitudinal Ageing Survey in India (LASI), those above 60 years suffer from multiple morbidities due to non-communicable diseases that include diabetes, hypertension and cardiovascular conditions...

— The Helpage India Report 2024, 'Ageing in India: Exploring Preparedness and Response to Care Challenges', carried out across 10 states and 20 cities, highlights the gaps in access to financial security, health and social care. The cross-sectional survey covered Tier I and Tier II cities. Its findings highlight the poor coverage of social pensions, which were largely skewed to the middle classes in government service.

— At this stage, the elderly require both physical and emotional support that is mostly provided by family members. Given the changes in family structure in urban areas, the stress of caregiving falls on women in the household. In households where adult children have migrated for work, older persons often live on their own.

— Public policy must unpackage the multiple axes of inequalities in access to financial security, health and social care of older persons. As India becomes an ageing society there are significant gaps in access to pensions, health services and social care for older persons that need to be addressed.

For Your Information:

— The number of persons above 60 years is set to more than double from 100 million in 2011 to 230 million in 2036, making up nearly 15 per cent of the total population. This is projected to further rise to 319 million by 2050, nearly one-fifth of the total population.

— Households with smaller families and a growing number of older people, who may suffer from chronic illnesses, call for a reset of the health and social care system. Care for seniors at home is a growing concern as it oscillates between social care and health care, often blurring lines between the two. The changing family structure is paving the way for external assistance in caring for older people at home.

ON DISCARDING INDEXATION FOR LTCG

The story so far:

Finance Minister Nirmala Sitharaman's announcement in the Union Budget about doing away with indexation for computing long-term capital gains (LTCG) tax has not drawn much enthusiasm. She had proposed that long-term gains on all financial and non-financial assets would now be taxed at 12.5% instead of a tiered structure, albeit abandoning indexation. A memorandum explaining the provisions of the Finance Bill (2024), stated that this was to "ease computation of capital gains for the taxpayer and tax administration".



What purpose does indexation serve?

Imagine, an individual buys a house for ₹10 lakh in 2001. For reasons such as inflation and/or a vibrant property market, they are able to sell the same property in 2021 at ₹75 lakh. Here, it may appear that they gained ₹65 lakh and should be taxed accordingly.

However, the figure does not consider the price levels prevailing at the time of sale with that of purchase. This is where the Cost Inflation Index (CII) comes in. Indexation ensures that taxpayers are taxed on real gains than gains at prevailing prices, which are a result of general increase in prices, and not economic growth, during the course.

In the stated example, the CII for 2021 (that is, 317) would be divided by that for the base year 2001 (100) to derive a number. It would then be multiplied with the purchase price (that is, ₹10 lakh). Thus, the indexed cost becomes ₹31.7 lakhs and the individual's taxable gain is revised downwards to ₹43.3 lakhs. At the erstwhile 20% rate, they would now be required to pay a long-term capital gains tax of approximately ₹8.7 lakhs. With the new system however, the ₹65 lakh would be taxed at a lower 12.5%. Thus, a tax liability of ₹8.13 lakh.

What is the issue?

Abhijit Mukhopadhyay, consulting economist at the Secretariat explained to The Hindu that the eventual tax liability is broadly determined by two factors, that is, the rate on return and the subjected time-period.

In this light, it is essential to note that not all assets may experience the same exponential growth as in the example above. This could be because of a flat market or a temporary period of slump. This is primarily where the indexation turns out to be more favourable. To illustrate, let us say that in 2021 instead of ₹75 lakh, the house is sold for ₹40 lakh. When adjusted with indexation, the tax liability is ₹1.66 lakh against ₹3.75 lakh without indexation.

Furthermore, a BankBazaar study, basing an assessment from the RBI's House Price Index, observed that without indexation, LTCG tax went up about three times on properties purchased after 2010. Keeping its base year as FY 2010-11, the study noted a "severe loss of tax savings" especially in the years from 2016-17. "From zero tax liability across the board, we see significant liabilities arising for these years (since 2016-17)," the study found. The Income Tax department, however, estimates that real estate returns (12-16% per annum) are much higher than indexation for inflation (4-5%), depending on the period of holding. Therefore, it predicts "substantial tax savings" to a "vast majority" of taxpayers.

According to Mr Mukhopadhyay, an individual stands to benefit more from the revised provisions if they sell the assets expeditiously (say, 3-4 years) instead of holding it for a longer-time period (say, 10 years or more). Furthermore, he explained that with the change, real-estate investment trusts (REITs) and infrastructure funds stand to suffer because they "do not have the same high rate of returns as an equity market". With respect to bonds, Anil Talreja, Partner at Deloitte India, held that feedback has been "a bit muted" given the lack of indexation. "Hence this may impact the popularity of the instrument," he said.

What does this mean for assets?

According to Mr. Talreja, whilst the removal of indexation is "adding dampness" to the overall sentiment, the reduction of the base rate of tax was providing "balance to the dampness". He explains, "A lot depends on the nature of the asset, the time when the asset was purchased (during



the price boom or otherwise). Based on this, it would continue to lead to different reactions from various sections of the society.”

For real estate, Mr Mukhopadhyay observes that those looking to buy a second house for the purpose of investment may potentially refrain from doing so. “They would have to sell if off quickly to profit from the revised provisions,” he explains. The paradigm however is potentially minimised, according to him, for those who intend to buy a house to reside themselves. Pertinent to note here, the Income Tax department clarified that for assets acquired before April 1, 2001, the individual would have the option to choose between fair market value as on that date (April 1, 2001) and the actual cost of acquiring the asset as the basis to compute the capital gain on sale. This paves the way for an indexation cushion for pre-2001 acquisitions.

The other set of concerns as also pointed out by AAP MP Raghav Chadha in the Rajya Sabha, entail potential sale of properties at circle rates (minimum price at which a real estate is to be sold) only. Undervaluing the real estate helps furbish lower capital gains, thus, lesser taxation. Further, Mr Chadha also warned about increased black money transactions in the sector — another means to hide gains.

SPLIT & PAY TAKING OFF: COMBINE PAYMENT METHODS FOR SEAMLESS HIGH-VALUE BILLS

A fintech innovation called ‘split & pay’ concept — where an individual can use various payment methods like credit cards, debit cards, net banking, UPI and reward points in one swipe to complete a single high value transaction – is slowly taking off.

In this system, all that the customers need to do is a single swipe using the split & pay option on the digital payment checkout page.

Payment gateway providers like Phi Commerce have launched this product to their enterprise clients, while similar providers like Cashfree Payments provide split payments in collections. Three more payment providers are toying with their plan to launch split & pay concept, industry sources said. Using this concept, a customer can pay a single bill of Rs 6 lakh or Rs 10 lakh using different debit or credit cards in one swipe instead of using several cards one after another.

“Although for the front end, which is the customer interface it might be a single transaction, several reconciliations occur at the back-end real time with multiple payment gateway providers and respective banks. Enterprise clients using these methods have already started seeing the benefits of this innovation with higher uptick on high-value transactions... and more merchants are getting onboard,” said an official of a fintech firm.

Split & pay comes handy on several occasions, especially during a medical emergency or the kid’s college fees or any other unexpected high value payment. Since most individuals do not keep a large amount in their bank account, they will have to take out all their credit and debit cards and do some mental accounting before proceeding to the payment counter, fintechs say. Payment providers see good scope in these areas as, according to RBI data, credit transfer-retail transactions were Rs 674 lakh crore and payment through cards (including credit and debit) was Rs 24.23 lakh crore in FY24.

And it is not a futuristic solution any more as scores of HDFC Life customers are already using the split & pay option to pay their large premium payouts.



“Also, there are quite a few smart-shoppers who use this facility to maximise their rewards points using loyalty programmes attached to plastic money,” fintech circles said.

“Split & pay is a robust payment solution designed to facilitate high-value transactions and group transactions by enabling customers to use multiple payment instruments for a single purchase. This system goes beyond traditional collection methods, offering a seamless experience for both customers and businesses,” said Rajesh Londhe, Co-founder, and Head of Payments at Phi Commerce, an omnichannel payment platforms provider for large enterprises. The company has just launched this product as the first omni channel payment platform provider in the countr

Further, a group of people can make a payment using their cards or net banking or UPI in one swipe with this concept. “With group booking and split payment options, everyone can use their own payment method, eliminating the need for one person to cover the entire cost upfront. All split transactions are reconciled in a single process, simplifying the accounting and financial management for businesses,” the fintech official said.

According to tech analysts, as fintechs are exploring newer methods of payment, this innovation would soon start to find more traction to such a point that every large payment checkout page would start finding this option.

DIGITALISATION CAN EXPOSE CONSUMERS TO IMPULSIVE SPENDING, DATA BREACHES: RBI REPORT

While digitalisation improves accessibility and convenience of financial services, it can expose consumers to impulsive spending, herd behaviour and data breaches, the Reserve Bank of India (RBI) said in a report.

In the Report on Currency and Finance (RCF) for 2023-24, released on Monday, the RBI said digitalisation-induced changes in the behaviour of consumers and financial intermediaries can have implications for monetary policy.

Digitalisation can also create a more complex and interconnected financial system with implications for financial stability.

“While improving accessibility and convenience of financial services for customers, digitalisation raises concerns related to impulsive spending, herd behaviour and data security,” the report said.

Digital platforms enable quick dissemination of financial trends and choices, allowing information about investments, spending habits, and financial products to spread rapidly across social networks, it said.

When customers observe large groups engaging in certain financial activities, such as mass buying or selling of stocks during a market frenzy, they are more likely to follow the crowd.

Similarly, driven by herd behaviour, depositors may withdraw their money from banks, leading to potential bank runs or failures, the survey said.

Project Nexus

The RBI has joined Project Nexus, a multilateral international initiative to enable instant cross-border retail payments by interlinking domestic Fast Payments System (FPS). As part of the



project, the country's Unified Payments Interface (UPI) and FPSs of Malaysia, Philippines, Singapore and Thailand will be interlinked through Nexus.

In terms of data breaches, the survey said that the average cost of data breaches in India stood at \$2.18 million in 2023, a 28 per cent increase since 2020 albeit less than the global average cost of data breach. The most common attacks in India are phishing (22 per cent), followed by stolen or compromised credentials (16 per cent), the report said.

The report said that digitalisation can impact inflation and output dynamics, and monetary policy transmission in diverse manners and the overall impact could vary over time given the fast pace of developments.

The monetary policy impact could be dampened if digitalisation leads to shifting of credit supply from banks to less-regulated / unregulated nonbanks, or by offsetting reductions in bank deposits

"In this environment, central banks would need to incorporate digitalisation aspects comprehensively into their models for the continued efficacy of monetary policy and the achievement of their price and financial stability goals," the report said.

The RBI has been undertaking proactive policy measures to harness the benefits of digitalisation while mitigating the emerging risks of digitisation in the financial sector.

The report, however, said that digitalisation can provide a strong boost to India's external trade in goods and services, given the country's relative comparative advantage in modern services exports, which are not conditional upon the geographical proximity of the trading partners.

Digitalisation in international payment systems has the potential to reduce the cost of receiving remittances, thereby leading to higher remittances and income or savings for the recipients.

Earlier this month, the RBI joined Project Nexus, a multilateral international initiative to enable instant cross-border retail payments by interlinking domestic Fast Payments System (FPS). As part of the project, the country's Unified Payments Interface (UPI) and FPSs of Malaysia, the Philippines, Singapore and Thailand will be interlinked through Nexus.

Last year, the country's real-time retail payment system Unified Payments Interface (UPI) and its equivalent network in Singapore PayNow got integrated, to enable faster remittances between the two countries at a competitive rate. The RBI and the Central Bank of UAE (CBUAE) had also signed a memorandum of understanding (MoU) for cooperation for interlinking UPI of India with Instant Payment Platform (IPP) of UAE.

The RBI's report further said that cross-border digital trade policies would play a crucial role in harnessing new opportunities, building trust, and facilitating coordination on regulatory aspects like data security and cybersecurity. The internationalisation of the rupee is also progressing backed by a comprehensive and integrated policy approach, it said.

The report said that the UPI has seen a tenfold increase in volume over the past four years, increasing from 12.5 billion transactions in 2019-20 to 131 billion transactions in 2023-24 – 80 per cent of all digital payment volumes. Currently, the UPI is recording nearly 14 billion transactions a month, buoyed by 424 million unique users in June 2024.



WHAT'S THE BUDGET PUSH FOR INFRASTRUCTURE?

The story so far:

In her Budget proposals for 2024-25, Finance Minister Nirmala Sitharaman has set aside ₹11 lakh crore for capital expenditure, comprising 3.4% of the GDP. With the aim to push States to spend on infrastructure, she said ₹1.5 lakh crore was being made available to them in the form of long-term interest free loans.

Which are the sectors on the radar?

According to an analysis by The Hindu's data team, the government has sustained its expenditure as a share of the total Budget on infrastructure which was at 13.9% (as compared to 14.3% in FY2024 RE). The transport sector formed the bulk of the expenditure in FY25BE (Budget estimates) at 11.29%. However, transport's share in the total Budget has come down by 0.4% points from last year. Allocations to the power sector has improved marginally from last year. The Ministry of Roads, Transport and Highways received an allocation of ₹2.78 lakh crore for 2024-25. In FY25BE, the outlay for the Railways continues to be over the 5% mark. It received a record allocation of over ₹2.55 lakh crore. Allocations for signalling and telecom work, under which the KAVACH (automatic train protection system) is included, has increased compared with FY24RE (revised estimates). The allocation for the Ministry of Civil Aviation at ₹2,357 crore saw a decline of 20% from last year. With an allocation of ₹2,377 crore, the outlay for shipping has stagnated. The regional connectivity scheme will receive ₹502 crore.

What is the progress on roads?

According to the Economic Survey 2024, national highways have grown by 1.6 times from 2014 to 2024. The Bharatmala Pariyojana has significantly expanded the national highway network, increasing the length of high-speed corridors by 12 times and 4-lane roads by 2.6 times between 2014 and 2024. The government is developing 11 industrial corridor projects in a phased manner. In order to attract private investment, the Ministry of Road Transport and Highways has made a slew of changes to the model concession agreement for Build-Operate-Transfer, including construction support, to ensure timely completion of the projects. But industry says the profitability of the new agreements need to be tested. With many projects nearing completion, the focus also needs to shift from asset creation to asset management as well as maintenance and safety, say experts. The industry seeks standard operating procedures for construction of bridges and tunnels to avoid safety incidents such as the Silkyara tunnel collapse in Uttarakhand in 2023.

What are the challenges in Railways?

The capital expenditure for Indian Railways with a network of over 68,584 route km has increased by 77% over the past five years (₹2.62 lakh crore in FY24) with investments in the construction of new lines, gauge conversion, and doubling. Yet, many challenges remain. According to Afaq Hussain, Director, Bureau of Research on Industry and Economic Fundamentals (BRIEF), the skewed freight movement share in favour of roads has to be amended. Long-haul freight transportation through roads is approximately 25-30% costlier than railways for distances less than 500 km, he pointed out. Other issues such as uncertainty in rake supply, delay in providing adequate infrastructure and sharing of lines by passenger and freight trains also need to be dealt with. Smooth entry and exit of freight vehicles is necessary for efficient loading and unloading operations.



What about shipping and airports?

Under the Sagarmala national programme launched in 2015, a total of 839 projects worth ₹5.8 lakh crore have been undertaken across five key areas including fresh development. Till date, 262 projects worth ₹1.4 lakh crore have been completed. Mr. Hussain explains that though there are more than 230 maritime ports, two ports at JNPT and Mundra handle nearly 40% of export, import cargo. Therefore, there is a need to develop a plan for the remaining ports. As for airports, under the second phase of privatisation in 2019, six AAI airports were privatised. There is a plan to privatise 25 more airports.

What about attracting private investments?

According to CRISIL's Infrastructure Yearbook 2023, between FY2019 and 2023, the Centre contributed 49% of the total investments on infrastructure and State governments 29%, leaving the balance to be covered by the private sector. Jaganarayan Padmanabhan, Senior Director at CRISIL, explains that the private sector has been shying away because of the market risks experienced due to delays in completion of projects which impacts returns.

PLANNING BETTER

With 10 State and Union Territory representatives skipping the ninth Governing Council meeting of the NITI Aayog chaired by Prime Minister Narendra Modi — seven of them boycotted it — the think tank's role has been called into question. The Chief Ministers of Tamil Nadu, Kerala, Karnataka, Telangana, Punjab, Himachal Pradesh and Jharkhand did so because of concerns with the perceived lack of allocations and projects to their States in the Union Budget. But the boycott and, later, the walkout by West Bengal Chief Minister Mamata Banerjee, suggest that the role of the think tank, limiting itself to an advisory body to the Union Government, has led to disenchantment among States, even if the protests were limited to leaders belonging to the political opposition. Constituted by the NDA government in its first term, the NITI Aayog was to replace the Planning Commission, doing away with the "top-down" approach of the earlier body, and to focus on "cooperative federalism". But by limiting itself to an advisory body without any powers of resource distribution or allocation to States and other bodies and focusing on creating indices to evaluate States, it has led to the unintended consequence of "competitive federalism"; while the Finance Ministry has unfettered powers to decide on grants to States. In contrast, the Planning Commission, which too had its detractors, at least allowed for consultations with States in such matters.

It has not helped matters that the Bharatiya Janata Party has sought to seek votes in State elections on the basis of providing "double engine" governments, leading to complaints by Opposition-ruled States that the Centre has favoured those ruled by the BJP for investment projects. The fact that the NDA government now is crucially dependent upon the support of parties that rule Bihar and Andhra Pradesh — States that suffer varying developmental deficits — and the express intention of Finance Minister Nirmala Sitharaman to address their demands specifically in the Budget have not been lost on the government's detractors. Irrespective of the merit in this contention, the fact is that consultations with States on grants and projects have become limited after the end of the Planning Commission. While the 16th Finance Commission is tasked with the removal of a horizontal imbalance among States and the Finance Ministry's focus is on macro-economic stability and the financial system, the need to address growth through infrastructure and capital investments in States is something that requires institutional backing at the Centre as well. The



NITI Aayog must be re-envisioned to bring back some of the responsibilities that the Planning Commission had for States for a truer “cooperative federalism”.

BENGAL, ODISHA CMS MEET AS POTATO CRISIS HITS BOTH STATES

West Bengal, one of the largest potato-growing States in the country, is reeling from a spike in potato prices. The crisis has inflicted collateral damage on neighbouring Odisha, with trucks ferrying the tuber from West Bengal stopped at the border and instructed on Friday to head back.

On Saturday, Odisha Chief Minister Mohan Charan Majhi met his West Bengal counterpart Mamata Banerjee in New Delhi and sought her intervention to resolve the crisis. The two CMs were in the national capital to attend the Governing Council meeting of NITI Aayog.

Retail prices in Kolkata had touched ₹40 a kg but dropped to ₹32 on Saturday after the curbs on sale outside the State, said Kamal Dey, a city-based potato dealer. While wholesalers and cold storage owners fear losses, consumers are a happy lot.

ETHANOL USED IN PETROL NOW MORE FROM MAIZE, DAMAGED FOODGRAINS THAN SUGAR

CEREAL GRAINS have overtaken sugarcane as the primary feedstock for the production of ethanol used in blending with petrol.

In the current supply year (November 2023-October 2024), sugar mills and distilleries supplied 401 crore litres of ethanol to oil marketing companies till June 30. Of that, 211 crore litres or 52.7% was ethanol produced using maize and damaged foodgrains (mainly broken/ old rice not fit for human consumption), while sugarcane-based feedstocks (molasses and whole juice/ syrup) accounted for the remaining 190 crore litres.

This is the first time that the contribution of grains to India’s ethanol production has surpassed 50% — from 27.1% in 2022-23, 16.7% in 2021-22, 13.6% in 2020-21, 9.2% in 2019-20, 5% in 2018-19 and zero in 2017-18.

Ethanol is 99.9% pure alcohol that can be blended with petrol. This is unlike the 96% extra neutral alcohol that goes to make potable liquor or the 94% rectified spirit used in paints, cosmetics, pharmaceuticals and other industrial products.

The Narendra Modi-led government has targeted 20% ethanol blending in petrol by 2025. That ratio for all-India averaged 13% this supply year till June, as against 12.1% in 2022-23, 10% in 2021-22 and only 1.6% in 2013-14.

Ethanol used in petrol now more from maize, damaged foodgrains than sugar

In 2023-24 itself, there’s been a steady monthly rise: 10.2% in November, 11.2% in December, 12.2% in January, 12.9% in February, 12.8% in March, 12.7% in April, 15.4% in May and 15.9% in June.

Alcohol production involves fermentation of sugar using yeast. In cane juice or molasses, sugar is present in the form of sucrose that is broken down into glucose and fructose. Grains contain starch, a carbohydrate that has to first be extracted and converted into sucrose and simpler sugars, before their further fermentation, distillation and dehydration to ethanol.



Till 2017-18, ethanol was being produced only from so-called C-heavy molasses, the dense dark brown liquid byproduct containing sucrose that mills cannot economically recover and crystallise into sugar.

The ethanol blended petrol (EBP) programme received a boost in 2018-19, when the Modi government enabled mills to produce it from an earlier 'B-heavy' stage molasses (leaving less sugar available for crystallisation and more for fermentation) and directly from whole cane juice/syrup. Mills were paid higher prices for the ethanol produced through these routes to compensate them for revenues foregone from reduced/nil production of sugar.

A further fillip to the programme came when mills started using grains as supplementary feedstock. Companies such as Triveni Engineering & Industries Ltd (TEIL), DCM Shriram, Dhampur Sugar Mills, Balrampur Chini, EID Parry and Nirani Sugars installed multi-feedstock distilleries that could run on molasses and juice/syrup during the crushing season (November-April) and on grain in the off-season (May-October), when cane wasn't available.

The grains were mostly surplus and broken/ damaged rice sourced from the Food Corporation of India's (FCI) stocks and the open market. But with the Modi government stopping the supply of FCI rice (from July 2023) and restricting the use of cane juice and B-heavy molasses for ethanol production (from December 2023) — on concerns over cereal and sugar inflation — maize has emerged as the top ethanol feedstock.

That has also been incentivised by the government fixing an ex-distillery price of Rs 71.86 per litre for ethanol produced from maize. This is higher than the per-litre prices payable by oil companies for ethanol from other feedstocks: C-heavy molasses (Rs 56.28), B-heavy molasses (Rs 60.73), cane juice/syrup (Rs 65.61), FCI rice (Rs 58.50) and damaged foodgrains (Rs 64).

"The EBP programme has envisioned using a variety of feedstocks that are in ample surplus nationwide to meet the substantial ethanol demand. All our new distilleries have the flexibility to operate on multiple feedstocks," said Tarun Sawhney, vice chairman and managing director of TEIL, which has a distillation capacity of 860 kilo-litres-per-day (KLPD), including 400 KLPD of multi-feed.

However, while ethanol-driven demand is good news for maize farmers in major growing states like Karnataka, Madhya Pradesh, Maharashtra and Bihar, not everyone is happy.

The All India Poultry Breeders Association and Compound Livestock Feed Manufacturers Association have written to the government, claiming shortage in domestic availability of maize. They have estimated the country's production at 36 million tonnes (mt), as against the requirement of 41 mt, including for ethanol blending.

The Centre, on June 26, permitted 0.5 mt of maize imports at 15% concessional duty, routed through the National Agricultural Cooperative Marketing Federation of India. The poultry and feed industry has sought imports of up to 5 mt to be allowed by "actual users" at zero duty.

NO BUYERS FOR J&K'S LITHIUM

— This comes nearly 18 months after then Mines Secretary Vivek Bharadwaj announced the discovery of an inferred deposit of 5.9 million tonnes of lithium ore, pitched as among the largest deposits in the world, in Reasi last February.



— Mining industry experts told The Indian Express that difficulties around extracting and processing lithium from hard rock pegmatite deposits — like the ones found in Reasi — combined with underdeveloped mineral reporting standards used in tender documents played a significant role in deterring investors.

— According to experts, India's current resource classification rules largely based on the United Nations Framework Classification for Resources (UNFC) do not provide sufficient information to determine the economic viability of mining a mineral block.

— Clarity on the economic viability of mining lithium is especially important as the extraction process is expensive, and with global lithium prices falling significantly over the past few months, miners are increasingly eager to maintain their margins.

— Most mining companies, stock exchanges, and regulatory bodies across the world adhere to the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) template, instead of the UNFC one, which requires the reporting of economically viable reserves with high geological confidence confirmed through studies to at least a pre-feasibility level.

— Mining experts say that to attract private investment in the sector, India should adopt CRIRSCO-aligned internationally-compliant mineral reporting standards.

— National Committee for Reporting Mineral Resources and Reserves in India (NACRI) has developed and maintained the Indian Mineral Industry Code (IMIC) since 2019, which CRIRSCO recognises as a compliant code.

For Your Information:

— Lithium is a soft, silvery-white alkali metal, which is a vital ingredient of rechargeable lithium-ion batteries that power electric vehicles, laptops, and mobile phones. India currently imports all the lithium it needs.

— Last month, the Mines Ministry successfully auctioned off India's first lithium block in Chhattisgarh's Korba district. The bid was won by Kolkata-based Maiki South Mining Pvt Ltd on June 24 for an auction premium (a percentage additional charge on the hammer price) of 76.05%.

PLASTIC MESS

India, like other large economies, faces a significant plastic waste problem. According to a 2020-21 report by the Central Pollution Control Board (CPCB), four million tonnes of plastic waste are generated annually. Unfortunately, only a quarter of this waste is recycled or treated, with the rest ending up in landfills or being disposed of unsustainably. Since 2016, the Plastic Waste Management Rules have mandated that users of plastics are responsible for collecting and recycling their waste. These requirements, or the Extended Producer Responsibility (EPR) rules, were initially voluntary but are now enforced through an online EPR trading platform. The EPR system involves packagers, importers, and large industrial users of plastic packaging, as well as professional recyclers, registering with the CPCB. Recyclers, who have networks to collect plastic waste, recycle the waste and receive validated certificates for each tonne recycled. These certificates can be uploaded to a dedicated CPCB portal and purchased by plastic packaging companies that fall short of their annual recycling targets. In 2022-23, the CPCB estimated that certificates for nearly 3.7 million tonnes of recycled plastic were generated. However, it was discovered that not all of these certificates were legitimate — there were approximately 6,00,000



fraudulent certificates. Additionally, hackers reportedly stole several thousand certificates last year and sold them to companies. A criminal investigation is ongoing, and it remains unclear how much of the claimed 3.7 million tonnes was genuinely recycled.

In response, the CPCB has taken two significant actions. First, it commissioned an audit of nearly 800 firms, representing almost a fourth of the 2,300 registered recyclers who had traded certificates. Second, it undertook a comprehensive overhaul of the security features on the EPR trading platform, although this has delayed the process of filing returns for 2023-24 by several months. The CPCB has described these problems as “teething issues” associated with implementing a large-scale electronic system. While the audit is necessary, it should be a one-time initiative to avoid undermining trust in the system with annual, lengthy investigations. Although the CPCB has the authority to impose heavy fines, the process is lengthy and fraught with legal challenges. A market-driven approach to solving plastic waste has a significant but limited effect. Greater efforts must be made to curb plastic production and promote sustainable alternatives. Addressing the root causes of plastic waste and enhancing the effectiveness of recycling systems are crucial in mitigating India’s plastic waste problem.

TOWARDS DISPUTE IRRESOLUTION

In an office memorandum dated June 3, the government outlined new guidelines for arbitration and mediation in contracts related to domestic public procurement. While the memorandum ostensibly promotes mediation, it explicitly signals a shift away from arbitration for government undertakings.

— This decision will have significant negative repercussions for private litigants, both individuals and companies, for India’s ranking in the “Ease of Doing Business” index, for Foreign Direct Investment (FDI), and for the legal system as a whole.

— This decision will put additional pressure on the already overburdened courts, likely causing delays in final outcomes and increasing court interference.

— The landmark 2015 amendments were aimed at establishing India as an international arbitration hub. The energy in the legal market, both domestic and international, was palpable. Until 2018, the market remained upbeat. With minimal judicial interference, India seemed well on its way... Legislatively, the baffling regression of reforms was evident with each subsequent amendment in 2018, 2019, and 2021, culminating in the present setback of the 2024 memorandum.

— Curiously, at the heart of these amendments is the concern that matters are being resolved too quickly. The main objective of the 2015 amendments was to reduce the time taken in courts. It is baffling that the very reform that improved India’s “Ease of Doing Business” ranking would be reversed for being too successful!

— The real issue, which no one is willing to address, is that one party often pays their lawyers poorly which ends up facing a highly qualified team of lawyers on the other side. Arbitrations are not lost because of corrupt arbitrators; they are lost due to bad facts and poor-quality legal representation.

— With the government’s exit from arbitration, the market is fast spiralling towards doom. Large domestic private parties will opt for a foreign seat, leaving smaller disputes between private parties to be arbitrated in India.



— While this paints a bleak picture, there may be a slim ray of hope: An increase in commercial court litigation.

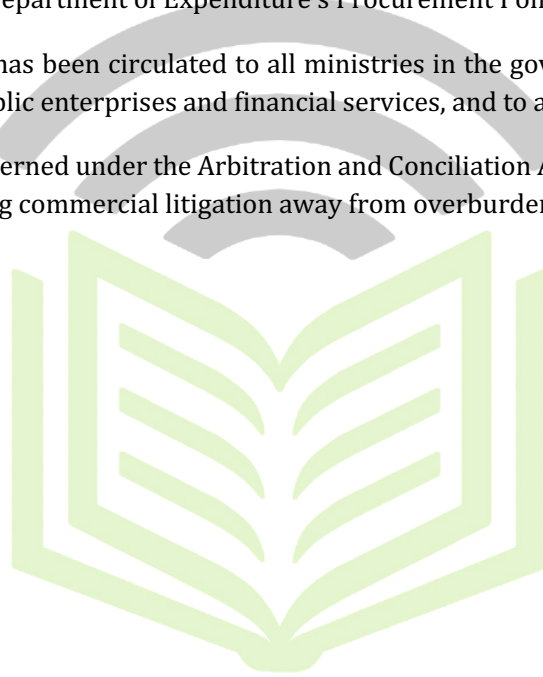
— The increased volume of commercial litigation will also create a demand for skilled trial lawyers adept in litigation, damages, and cross-examination, ultimately strengthening the overall legal ecosystem. All of this will, of course, require substantial investment by the Government of India.

For Your Information:

— “Arbitration as a method of dispute resolution should not be routinely or automatically included in procurement contracts/ tenders, especially in large contracts,” said a June 3 office memorandum by the Department of Expenditure’s Procurement Policy Division.

— The memorandum has been circulated to all ministries in the government of India, including the departments of public enterprises and financial services, and to all states as well.

— Arbitrations are governed under the Arbitration and Conciliation Act, 1996 which was enacted as a solution for moving commercial litigation away from overburdened courts.



DreamIAS



LIFE & SCIENCE

ARIEL: ANOTHER WATERY MOON?

WHAT IS IT?

The Solar System has many mysteries. We don't know why the Sun's corona is so hot. We don't know why Saturn's moon, Titan, has such a significant atmosphere. We don't know why Triton rotates in the direction opposite to its host planet, Neptune, although a recent study found an answer: Triton and Pluto had a common origin before Neptune pulled Triton to itself.

Another mystery in the Solar System may be coming to a similar close. Astronomers have been curious why the surface of Uranus's moon Ariel has frozen carbon dioxide (CO₂). At that distance from the Sun, the CO₂ should have already vaporised into space — yet the ice covers the moon's surface. On July 24, NASA's James Webb Space Telescope (JWST) reported evidence of a liquid ocean buried under Ariel's surface, supplying CO₂ to the world above.

The people behind the finding came to this conclusion when they found carbon monoxide. If Ariel has to have this compound, it has to have a surface temperature around 18 degrees C less than what it is, or it could have a subsurface ocean producing carbon oxides. One side of Ariel has cracks and grooves through which icy slop and these compounds could be gushing out to the surface. JWST also found signs of carbonite minerals, which could be formed when water interacts with rocks.

More studies and space missions will be needed to confirm these details. If there are, we'll have yet another water-bearing moon out there.

SURPRISING 'DARK OXYGEN' DISCOVERY COULD ENSNARE DEEP-SEA MINING

An unknown process is producing oxygen deep in the world's oceans, where it is too dark for photosynthesis, scientists reported on July 22 in the journal Nature Geoscience. The finding has important implications because oxygen helps support life and the discovery implies the existence of previously unknown ecosystems.

Many governments are also bound to take notice since one explanation for the oxygen is that polymetallic nodules are transporting electric charges that split water molecules around them, releasing oxygen. Polymetallic nodules are lumps of iron, manganese hydroxides, and rock partially submerged in many parts of the ocean floor. If their concentration exceeds 10 kg per square metre, mining them is considered to be economically feasible — and many countries are planning to do so as a new resource.

On July 22, Reuters reported an unnamed "top government scientist" saying India is planning to "apply for licences to explore for deep-sea minerals in the Pacific Ocean". India's Ministry of Earth Sciences is also currently building a submersible vehicle that will look for and mine similar resources in the Indian Ocean as part of its 'Deep Ocean Mission'.

Where was the study conducted?

The oxygen discovery raises questions about how deep-sea mining to extract polymetallic nodules will affect marine ecosystems.



The scientists behind the study, from Germany, the U.K., and the U.S., were studying the Clarion-Clipperton Zone, a part of the ocean floor off Mexico's west coast. Covering an area larger than India, the Zone is considered to have the world's highest concentration of polymetallic nodules, including 6 billion tonnes of manganese and more than 200 million tonnes each of copper and nickel.

When the scientists were conducting experiments at a depth of 4 km, they noticed the oxygen concentration in some places rapidly increased instead of decreasing. They conducted follow-up studies in 2020 and 2021. In each case, they released a device from the surface that would land on the ocean floor, where it would isolate a small volume of the floor along with some sea water and measure the oxygen levels.

This underwater region is called the abyssal zone. It receives too little sunlight for photosynthesis to be feasible. Instead, life-forms here get oxygen from water carried in by a global circulation called the 'Great Conveyor Belt'. Still, the amount of oxygen is low and without any local production, the device should have measured the oxygen levels dropping as small animals consumed it. But the scientists found the opposite: it increased, sometimes tripling in just two days.

They double-checked the finding by recreating the conditions on the ocean floor in their lab, and found the oxygen levels to increase up to a point before dropping.

What is the source?

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

Andrew Sweetman, an ecologist with the Scottish Association for Marine Science in the U.K. and a coauthor of the study, told Nature, "We have another source of oxygen on the planet, other than photosynthesis." His team is calling it 'dark oxygen'.

Oxygen sources are valuable because they allow life to survive. But as the lab experiment indicated, the nodules could only produce oxygen as long as they could muster a sufficient voltage. The nodules' own energy source is also not clear.

What is deep-sea mining?

Given the quantity of polymetallic nodules on the ocean floor, deep-sea mining is expected to be a major marine resource extraction activity in the coming decades. The International Seabed Authority has established 15-year contracts with at least 22 contractors — including the Government of India — to look for polymetallic nodules, polymetallic sulphides, and cobalt-rich ferromanganese crusts in the deep seabed. China alone is expected to mine 17% of the Clarion-Clipperton Zone.

The new finding raises the possibility of such mining damaging ecosystems that require 'dark oxygen' to survive. Experts have found deep-sea mining itself could be harmful to the marine environment, 'dark oxygen' or not.

In 1989-1996, scientists from Germany conducted the Disturbance and Recolonisation (DISCOL) Experiment in the Peru Basin as the world's "first large-scale impact assessment" to assess the "environmental impacts originating from the mining of polymetallic nodules". They built a device



that disturbed the sea floor like a deep-sea mining exercise might have and collected data about how the disturbances changed local oceanographic and sedimentological profiles, among other things.

A 2019 study in the journal Scientific Reports reported that “the effects of simulated mining impacts induced during the DISCOL [Experiment] were still evident in the megabenthos of the Peru Basin after 26 years.”

The affect on deep-sea mining

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

In November 2023, Nature reported based on a paper published then that deep-sea mining “for minerals could harm deep-sea jellyfish, according to the first study of mining impacts on animals living in the water column.”

Scientists also know less about ecosystems in the abyssal zone than they do about many of those aboveground, which means the models scientists use to predict their fate and their role in global climate processes could be unreliable. With these and other issues in mind, on July 20, three major European insurance companies said they would exclude deep-sea mining from their underwriting portfolios.

‘Dark oxygen’ adds to these challenges. If deep-sea mining doesn’t find sustainable ways to respond to them, it may be rendered altogether infeasible.

IN PAINSTAKING STEPS, SCIENTISTS PIECE THE NEUTRINO UNIVERSE TOGETHER

Neutrinos are a type of subatomic particle. They don’t have an electric charge, have a small mass, and are left-handed (a physics term meaning the direction of its spin is opposite to the direction of its motion). And they are flooding the universe. They are the second-most abundant particles after photons (particles of light) and the most abundant among particles that make up matter.

The study of neutrinos is an area of immense current interest among particle physicists and astrophysicists. These particles are produced when particles called leptons interact with matter. For example, when a type of lepton called a muon interacts with matter, the interaction produces a muon-neutrino. The same goes for electrons (electron-neutrino) and tauons (tau-neutrino). However, the neutrinos themselves interact with matter very, very rarely to produce a corresponding muon, electron, or tauon.

This small interaction rate makes studying neutrinos difficult. For example, a muon-neutrino will scatter off an atom’s nucleus only once out of a million times or so, producing a muon and a proton. So to study them, physicists have built detectors with very fine tracking capabilities. They are also large to maximise the number of interactions between the neutrinos and the detectors’ matter.

New data from NOvA

One such experiment is NovA, an acronym for ‘NuMI Off-axis e Appearance’, in Minnesota in the U.S. It creates a beam of neutrinos that fly towards a 14,000-tonne detector located 800 km away. NOvA is managed by the Fermi National Accelerator Laboratory.



Scientists presented the latest results from the NOvA collaboration at a conference in Italy on June 17. They said the collaboration had acquired twice as much data as it had during NOvA's previous run, four years ago. The new results complemented the previous ones with greater precision.

NOvA was designed to determine the role of neutrinos in the evolution of the cosmos. It does this by trying to understand which neutrino type has the most mass and which type has the least. This is an important detail because neutrinos may get their mass through a different mechanism from other matter particles. Unravelling it could answer many open questions in physics.

In pursuit of this goal, on July 11, a study at the Large Hadron Collider in Europe also reported observing electron-neutrinos at a particle collider for the first time.

The surprise of mass

Physicists first detected extraterrestrial neutrinos coming from a supernova in 1987, when a star exploded around 150,000 light years away. Three hours before light from the explosion reached the earth, three underground detectors in Japan, Russia, and the U.S. recorded a spike in the number of neutrinos coming from the explosion. This event was the birth of neutrino astronomy.

For almost 50 years, physicists thought neutrinos were massless particles, like photons. According to the special theory of relativity, a massive particle can't travel at the speed of light (in vacuum). So a light signal could overtake the neutrino, and it would appear right-handed when viewed in the opposite direction, i.e., with its directions of motion and spin aligned with each other. However, physicists had never detected right-handed neutrinos, so they concluded neutrinos are massless.

But from the late 1990s, scientists in Japan and Canada found evidence to overturn this view and prove neutrinos actually have mass. They found that when neutrinos travel through space, they can change from one type to another, which massless particles can't do.

The existing theory of how particles behave and their properties, called the Standard Model of particle physics, doesn't predict massive neutrinos. Incorporating them in the Standard Model will require far-reaching changes that physicists are still working out.

Ordering the neutrinos

This is why physicists study how neutrinos (and their antimatter counterparts, antineutrinos) change their type as they travel large distances. This quantum mechanical phenomenon is called neutrino oscillation. For example, all neutrinos from the Sun are electron-neutrinos, yet we receive a big chunk of them on the earth as muon-neutrinos.

Theoretical models predict two possible solutions for the neutrino mass hierarchy problem, called normal and inverted. The normal order proposes that one of the three types is much heavier and that the other two have comparable lower masses. In the inverted order, one of the neutrino types is lighter and the other two have comparable heavier masses.

The new NOvA data favours the normal order, but not conclusively.

Cracking the hierarchy problem is closely related to the universe's evolution. Their low interaction rate means neutrinos are excellent carriers of information from the universe's past, from sources like exploding stars and black holes. We can't otherwise access a lot of this information today.



Supernovae are known to release 99% of their radiant energy in a short, 10-second burst of neutrinos.

Studying these neutrinos can reveal how light or radio waves from the explosion diffuse after travelling a certain distance.

The best information carriers

Indeed, because neutrinos pass through most matter untouched, they can carry information across large distances. Humans currently use electromagnetic waves to do this job because they are easier to transmit and to detect. But in some situations, they don't work well.

For example, seawater is opaque to electromagnetic radiation of shorter wavelength, which impedes the transmission of waves of certain frequencies to submarines. Neutrinos on the other hand can easily pass through 1,000 light years (9,400 million million km) of lead, so an ocean will hardly be a barrier.

We only need to find a way to transmit and capture them, which is tied to understanding them fully. If this happens, it wouldn't be far-fetched to say we can replace electromagnetic waves in communication channels with neutrino beams within a few decades.

Eyes on the neutrino universe

Given all these advantages, the world's more scientifically endowed countries are racing to study neutrinos.

A few of the experiments involved are the Super-K III in Japan; the Sudbury Neutrino Observatory (in its new SNO+ avatar) in Canada; the MiniBOONE, the MicroBOONE, and NOvA in the U.S.; the Double CHOOZ in France; the Jiangmen Underground Neutrino Observatory in China; the OPERA experiment in Switzerland; and the IceCube Neutrino Observatory in Antarctica.

India's own India-based Neutrino Observatory, funded by the Department of Atomic Energy, was supposed to come up in Tamil Nadu but currently faces an uncertain future over procedural lapses and lack of political support.

Just as more matter increases the number of interactions with neutrinos, a large number of experiments increase the chances of cracking the mass hierarchy and other problems, and bring us closer to a complete picture of the universe.

WHAT IS A PC EMULATOR, AND WHY DID APPLE ALLOW IT ON THE APP STORE?

The story so far:

Apple approved a PC emulator for iOS for the first time this week. The move will allow users to run classic software, mostly games on iOS, iPadOS and visionOS. Earlier this year, Apple updated its App Store guidelines to allow retro game console emulators, mini games, and HTML5 mini apps on iPhones.

What is an emulator in PC?

An emulator, as the name suggests, is a software that allows a computer device to emulate another software. The difference in how a device operates allows it to run and use software designed for other, previously, incompatible devices.

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



For example, software designed for a Windows PC will have to be redesigned to run on macOS. This redesign will have to be done by developers, who may choose to not include all the functionalities available on Windows to Mac users.

An emulator can be used in this scenario to run software designed for Windows on macOS by emulating the design architecture of Windows. Emulators are commonly used to run applications designed for different operating systems, play video games from older consoles, and test software across different platforms.

Why did Apple allow emulators?

Apple, in the past, did not allow emulators on its platform. The Cupertino-based tech giant approved UTM SE, an app for emulating a computer, to run classic software and games. The move came weeks after the company rejected it and barred it from being notarised for third-party app stores in the European Union. The move may be an attempt by the company to shake off anti-trust allegations in the U.S. for operating as a monopoly and restricting certain gaming apps on its App Store and preventing competition.

Allowing emulators on its App Store could help the iPhone-maker ensure users do not use third-party app stores in the EU to download emulators.

Are PC emulators legal?

Emulators come in handy when testing and designing software, and they do not use proprietary codes. So, they are considered legal to use. However, sharing copyrighted ROMs (Read Only Memory) online is illegal.

But, as most emulators are used to running software not originally meant for a particular device, the question of legality becomes complicated.

Using an emulator is considered legal if users own the software they are running on the emulator. However, if they use the emulator to run pirated copies of a software or use the emulator to distribute or download ROMs of software they do not own, it is considered illegal.

Are emulators risky?

Unlike proprietary software, which receives timely updates to ensure smooth and secure functions, using an emulator can be a risky proposition. Especially, if the emulator is downloaded from unofficial sources. These can contain malware that can compromise the security of a system.

Additionally, depending on the software users choose to emulate, they may inadvertently end up violating licensing agreements or copyright laws. This can result in refusal by the Original Equipment Manufacturer (OEM) to provide maintenance, or technical support and even lead to users being penalised for using proprietary ROMs.

Emulators can also impact the performance of a device. They are resource-intensive and may lead to decreased CPU performance, overheating, and potential damage to the battery. Additionally, poorly designed and untested emulators may lead to data corruption, especially if the emulator crashes or if there are compatibility issues with the ROMs or software being used.



Are emulators banned?

Due to their ability to help developers use different operating ecosystems for testing purposes without having to switch hardware or the underlying software, emulators are not typically banned in any country. However, the legal status of emulators depends on specific laws in each country, and on how they are used in that jurisdiction.

Are emulators legal in India?

In India, the laws do not specifically ban the use of emulators. However, their use is subject to copyright and intellectual property laws.

While it is legal to use and distribute emulators in India, users may land in trouble if they use emulators to run software such as games, operating systems, or applications without the proper licences or ownership. Distributing ROMs without proper ownership can be problematic.

Additionally, the concept of fair use applies if users own an original copy of the software and are using the emulator as a backup.

WHY AI'S PRESENT AND FUTURE BRING SOME SERIOUS ENVIRONMENTAL CONCERNS

In its annual environment report released earlier this month, Google reported a 13% increase in its emissions footprint in 2023 compared with the previous year. The rise was attributed mainly to the increased electricity consumption in its data centres and supply chains. Google said its data centres consumed 17% more electricity in 2023, and added that this trend was expected to continue in the coming years because of greater deployment and usage of its artificial intelligence (AI) tools.

Power guzzling intelligence

AI, which is expected to enable transformative changes across several domains, including attempts to find solutions to climate change, has a very heavy emissions footprint, the scale of which is becoming evident only now.

Studies have shown that a simple AI query, like the ones posted to OpenAI's chatbot ChatGPT, could be using between 10 and 33 times more energy than a regular Google search. Image-based AI searches could be using even more energy.

Why emissions are higher

AI models typically work much more than a simple Google search even when the same question is addressed to both. They sift through much more data while processing and formulating appropriate responses. More work means a greater number of electrical signals are required when the computer is processing, storing, or retrieving data.

More work also generates and releases more heat, which then requires more powerful air-conditioning or other forms of cooling in the data centres.

A worrying prognosis

As AI tools are deployed more widely, their impact on energy consumption worldwide is expected to rise sharply. Already, data centres account for between 1% and 1.3% of the global electricity demand. This could double (become between 1.5% and 3%) by 2026, according to recent



projections of the International Energy Agency (IEA). By contrast, despite the large number of electric vehicles on the road, their share of global electricity consumption was just about 0.5%, the IEA said.

At the level of countries, the electricity consumption of data centres as a share of the national demand has already crossed double digits in several regions.

In Ireland, which has a disproportionately large number of data centres because of the tax breaks and incentives it offers, this share has reached 18%, IEA numbers show. In the United States, the country with the largest number of data centres, this number was estimated to be between 1.3% and 4.5%. The numbers for India were not available.

Scenario for India

Saurabh Rai, CEO of Arahast Technologies, which works in the sustainability space, said the situation in India, at least in the next few years, was not likely to change much, and the huge environmental toll of AI and data centres would become evident very soon.

“It is not just about electricity consumption. There is an increased demand on water resources as well, required for cooling of data centres. There is inadequate data on water consumption of data centres but the centre that serves OpenAI’s GPT-4 model in Iowa (US) is reported to have consumed 6% of the district’s water supply in July 2022,” Rai said.

Rai said these had implications for India, where the deployment of AI and data centres is expected to increase rapidly in the coming years.

“AI is revolutionary technology, and we will see it being used widely in India. But the emerging trends about its environmental impact means that we should plan its expansion in a manner that minimises the adverse impacts. Simultaneously, we need to make sure that the companies running these data centres take every measure to make their processes efficient and minimise the emissions footprint,” he said.

Alternative view

Other estimates suggest that the large scale deployment of AI could help in significant reductions of emissions globally. A recent study by the Boston Consulting Group found that application of AI to corporate and industrial practices could result in a 5-10% reduction in global emissions by 2030, while generating a value worth \$1.3 trillion to \$2.6 trillion through additional revenues or cost savings.

Emissions reductions can happen if AI is deployed to monitor and predict emissions in existing processes, and optimise these to eliminate wastage or inefficiencies.

JAMES C SCOTT SHOWED NEW WAYS OF STUDYING RESISTANCE

In the late 1950s, when a young doctoral researcher at Yale University left for fieldwork in a Malaysian village of 70 families, several of his friends and teachers warned that the “unglamorous” move could prove detrimental to his career. About three decades later, the experience would provide James C Scott the basis for his groundbreaking work, *The Weapons of the Weak*. It explored the techniques used by peasants to resist state power and launched Scott as one of the leading figures of resistance studies. Scott, who died on July 19 aged 87, often described the book that explored the non-ideological ways in which the farmers opposed authorities — food

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dragging, evasion, gossip — as a piece of work that gave him the most satisfaction. “The greatest emancipatory value for human freedom and the promise for liberty,” he was to write in one of his last works, *Two Cheers for Anarchism*, “have not been the result of orderly institutional procedures, but disorderly spontaneous action cracking open the society”.

Scott’s work has been a major influence on scholars — practitioners of the Subaltern Studies school, for instance — who believe that most resistances do not speak their name. It made social scientists realise that by paying attention only to formal organisations and public protests, they had pushed away a lot of resistance from their radar. *Weapons of the Weak* gave a new lens to examine acts such as jaywalking, army desertions — as opposed to mutinies — as struggles for citizenship rights. It nudged sociologists and economists to examine assembly-line slowdowns as a form of resistance against factory elites.

Other works — *Seeing Like the State* and *The Art of Not Being Governed* — placed Scott amongst the ranks of seminal critics of the hyper rationalism and overconfidence of the modern state. Ironically, as a student on field work, the anthropologist had given information to US intelligence on his Southeast Asian respondents. Scott has written about this experience as a matter of fact, and it is not known if he ever regretted his actions. What is well known, however, is his support for “open democratic politics as a process of gradual education”.

WHY RIVER SEINE’S WATER QUALITY POSES A CHALLENGE FOR THE PARIS OLYMPICS

The swimming leg of the men’s triathlon event in the ongoing Paris Olympics was postponed on Tuesday, over concerns regarding River Seine’s water quality. In the run-up to the Games, organisers had spent over a billion dollars to improve the river’s condition. The Seine has long been polluted, so much so, that swimming in the Seine had been banned since 1923.

Old drains, E. coli threats

Paris’ aged sewage system is designed such that rainwater and wastewater flow through the same pipes. During heavy rain, these pipes reach their capacity and overflow, leading to untreated sewage being directly discharged into the Seine instead of first going to a treatment plant.

Moreover, rains also lead the Seine to be inundated with wildlife like rodents. “When it rains a lot, all of that from those animals can end up in the Seine,” Dr Nicole Iovine, an infectious disease specialist at the University of Florida Health in Gainesville, told the Associated Press.

A major issue is the concentration of the bacteria *E. coli* in the river. Found in the faecal waste of humans and other animals, some strains of the bacteria can cause severe illness, including gastrointestinal and urinary tract infections (UTIs). *E. coli* concentration levels are measured in colony-forming units (cfu). Up to 900 cfu per 100 ml of water is considered safe for competitions, per standards set by the European Union and the World Triathlon Federation. Following heavy rains, the Seine’s *E. coli* levels often exceeded this threshold, sometimes by a factor of two.

A billion-dollar plan

To fix the Seine’s pollution problem, Paris has spent 1.4 billion euros (\$1.53 billion). In fact, key to Paris’ winning bid for the 2024 Games was a major environmental overhaul of the city. This included a promise to ensure that Olympic athletes could swim in the iconic river, much like they had done in 1900 — the last time Paris hosted the Olympics.



Central to the city's efforts to fix the Seine was the creation of a giant underground rainwater storage tank in southeastern Paris, capable of holding enough water to fill 20 Olympic-size swimming pools. Planners believed this would hold runoff water during heavy rains, the sewage system from getting overwhelmed.

The city also attempted to renovate the sewage system and upgrade its water treatment plants. But heavy rains can still overwhelm the system and contaminate the river — as we see now.

The alternatives

The triathlon swimming events were scheduled for July 30 and 31, and August 5, while the marathon swimming events (also to be held in the Seine) are to be held on August 8 and 9. Water quality tests are mandatory 48 hours before each race. Reserve days have been kept for the water quality to improve.

For marathon swimming, the Vaires-sur-Marne Nautical Stadium near Paris has been kept as an alternative venue. If the Seine remains, the swimming leg of the triathlons may be cancelled.

PARIS OLYMPICS OPENING CEREMONY

— PV Sindhu and Sharath Kamal were India's flag-bearers, and a total of 78 athletes and officials from 12 disciplines represented India.

The mascot of the Paris 2024 Olympic Games is Phryge. Inspired by the traditional Phrygian hats, this mascot embodies a deep-seated symbol of freedom, according to an article on the Olympics website. These caps stand for "freedom, identity and spirit in France", the article said.

— The slogan of Paris 2024 is "Games wide open".

— Paris has hosted two Olympic Games in the past: the first one in 1900 (the second modern Olympics held in history) and one in 1924, exactly 100 years ago. This means it will join London as the only two cities to host the Olympic Games three times.

— Indian athletes have won 35 medals so far at the Olympic Games. India first participated at the Olympic Games in 1900, with a lone athlete, Norman Pritchard, winning two medals — both silver — in athletics and became the first Asian nation to win an Olympic medal.

— Olympic medal-winning rifle shooter Gagan Narang is the Chef-de-Mission of India's Paris 2024 Olympics contingent. He replaced boxing legend Mary Kom.

— Three sports are being dropped from the Paris Olympics, which were there at the Tokyo Olympics in 2021: baseball, softball, and karate.

— Breaking, commonly known as breakdancing, is included at the Olympics for the first time in Paris.

— The 2028 Olympics will be held in Los Angeles.



PARIS OLYMPICS: IN IMANE KHELIF VS ANGELA CARINI BOXING CONTROVERSY, WHY ISSUE OF GENDER TOOK CENTRE STAGE

Italy's Angela Carini withdrew from her Round of 16 boxing bout against Algeria's Imane Khelif after only 46 seconds and a couple of punches to her face on Thursday (August 1), triggering the Olympics' biggest controversy yet.

Since her victory, Khelif has been the target of a wave of abuse, with many calling her a "biological man" who had an "unfair advantage" over Carini. Some people also wrongly identified Khelif as a transgender woman.

The participation of trans women, and women having certain "masculine" biological characteristics like higher testosterone levels, in women's sports has long been a subject of polarising debate. Here is a look at the ongoing controversy, in the context of the larger debate on the matter.

Why did Imane Khelif's win spark a controversy?

In 2023, Khelif and Chinese Taipei boxer Lin Yu-ting were banned from competing in the International Boxing Association's (IBA's) World Championship in New Delhi after failing a "gender eligibility" test, the details of which remain confidential. The IBA, in a statement on Thursday, said that the two boxers did not "meet eligibility criteria to compete within the female category".

However, both are now competing at the Paris Olympics. This is because the IBA was derecognised by the International Olympic Committee (IOC) last June over governance and financial issues. In Paris, the IOC-appointed unit which is governing the competition has set very different rules. The only determinant for eligibility is the gender stated in an athlete's passport — Khelif's passport says she is female.

Following Khelif's win, and the subsequent abuse, the IOC said in a statement that all boxers in the Olympics had complied with "the competition's eligibility and entry regulations", and that both Khelif and Lin have participated in women's competitions for many years, including in the Tokyo 2020 Games. It also said that IBA's "arbitrary decision" to ban the two women had been taken without following proper procedure.

It added that "misleading information" was being reported "about two female athletes", and that the IOC was "saddened by the abuse that the two athletes are currently receiving," it said.

Why is gender eligibility a contentious issue in women's sports?

Modern sports are organised on the basis of sex, with men and women competing in different categories. This is because men, on average, have certain physiological advantages over women.

Sex is determined based on chromosomes, which carry genes. Humans have 23 pairs of chromosomes — 22 are identical in men and women; one, the sex chromosome, is different. The XX sex chromosomes result in the development of female sex organs, and XY in male sex organs.

The SRY gene, found on the Y chromosome, is responsible for testosterone production. Multiple studies have attempted to decode the impact that this hormone has on physical characteristics. A 2017 paper ('Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic



Performance') published in the journal *Endocrine Reviews* supported the link between testosterone and athletic performance.

"The available, albeit incomplete, evidence makes it highly likely that the sex difference in circulating testosterone of adults explains most, if not all, the sex differences in sporting performance," it said. This is due to the effect of testosterone in increasing "muscle mass and strength, bone size and strength (density), and circulating haemoglobin". Other studies also note that data on the matter is inadequate at present.

Crucially, some people born with female reproductive organs may also carry the XY chromosome, in what is known as Swyer syndrome, one of many "Disorders of Sex Development", or DSDs.

This is at the heart of the debate surrounding gender eligibility in women's sports. Many argue that in order to prevent some athletes from having an unfair advantage in women's sports, women with DSDs which facilitate greater testosterone production, and other consequent athletic advantages, must not be allowed to compete with other women.

How do sports federations deal with this matter?

Such cases are not the first of their kind. In 2021 the IOC decided to leave it to international sports federations to develop their own set of eligibility rules, based on an "evidence-based approach" keeping in mind principles of "fairness", "inclusion", "non-discrimination", "no presumption of advantage", and "prevention of harm". Previously, it used to take into account testosterone levels — below 10 nanomoles per litre (nmol/L) for women athletes who had transitioned from male to female.

The eligibility regulations of World Athletics still use testosterone levels as an eligibility determinant. DSD athletes need to keep their testosterone level below 2.5 nmol/L for at least 24 months before they become eligible to participate in any event. This is stricter than what it was before 2023, when there was a 5 nmols/L restriction for events ranging from 400 metres to a mile, and no restrictions on other events.

FINA, the world swimming body, the International Cycling Union, and the International Rugby Union have all instituted varying degrees of bans on trans women athletes, again linking it to testosterone levels. The need for such bans across sports has been questioned, given the different sets of skills required. An "open category", specifically for trans athletes, has also been suggested but may have difficulties given the small number of elite-level trans athletes.

Many have described the debate as a battle between inclusion (of all women, no matter their biological differences) and fairness (towards women who do not have high levels of testosterone). It has garnered further attention as issues related to diverse gender and sexual identities have become ideological battlegrounds in politics in recent years.

At the end of the day, there is still a lot that is not known about the impact of testosterone on sporting performance. Many question if the case of women who are born with higher levels of testosterone is any different from that of people with other genetic advantages — like LeBron James' height or Michael Phelps' massive fin-like hands.



WHAT ARE PUBERTY BLOCKERS AND WHY ARE THEY PRESCRIBED FOR TRANSGENDER AND GENDER-DIVERSE TEENS?

Tesla and SpaceX CEO Elon Musk has alleged that his transgender child was (figuratively) “killed by the woke mind virus” after he was “tricked” into consenting to the use of “puberty blockers”. The child, whom Musk named Xavier, was born in 2004. In 2022, she legally changed her gender identity to female and her name to Vivian Jenna Wilson, and legally distanced herself from her father. Vivian has told NBC News that Musk was lying, and that he was a “cold, uncaring, and narcissistic” father.

What are puberty blockers?

These are drugs that can delay the changes of puberty in transgender and gender-diverse teens. During puberty, a child’s body goes through physical changes in the process of becoming an adult capable of sexual reproduction. This is initiated by hormonal signals from the brain to the gonads: ovaries in a female, testicles in a male.

“When a teen has **gender dysphoria**, a condition in which they are conflicted between the gender assigned at birth and the gender they want to assume, the medication is prescribed to pause sex hormones,”.

The biological changes may add to the anxieties of adolescents who are not comfortable about their identity, Dr Wangnoo said. “They might feel that their bodies are betraying them because the developmental changes they’re experiencing don’t line up with how they identify. That’s why doctors halt physiological processes that act as stressors and threaten their mental health,” he said.

How do these drugs work?

The medicines are called gonadotropin-releasing hormone (GnRH) analogues, which stop the body from making sex hormones. In people assigned male at birth, these slow the growth of facial and body hair, prevent voice deepening, and limit the growth of the penis, scrotum, and testicles. In people assigned female at birth, the drugs limit or stop breast development, and stop menstruation, Dr Wangnoo said.

Puberty blockers are also used in cases of precocious puberty, a condition in which a child’s body begins changing too soon, before the age of eight for girls and before the age of nine in boys.

Are puberty blockers commonly prescribed in India?

They are prescribed mostly for precocious puberty in India, Dr Wangnoo said. They are also prescribed for those who seek gender reassignment surgery, but those are not conducted before the age of 18, he said.

How are puberty blockers administered?

A shot has to be given monthly, or every three months, or every six months. The medication may be given also through an implant placed under the skin of the upper arm. The implant usually needs to be replaced every 12 months, Dr Wangnoo said.



Side effects include insomnia, weight gain, muscle aches, fatigue, mood shifts, changes in breast tissue, and irregular periods or spotting in women. They may also cause depression or self-harm tendencies.

WHY INCLUSION OF GAZA'S TELL UMM AMER IN THE WORLD HERITAGE SITE LIST MATTERS

The World Heritage Committee (WHC) on Friday decided to include the Palestinian site of Tell Umm Amer in both the UNESCO World Heritage Site List and the Lost of World Heritage in Danger during its 46th session in New Delhi.

Also known as the 'Monastery of Saint Hilarion', the site lies in the Gaza Strip which continues to reel under Israel's relentless assault. Here is the historical significance of Tell Umm Amer, and what the World Heritage inclusions might mean for it.

Fourth century monastery

Situated on the coastal dunes of the Nuseirat Municipality, just 10 km south of Gaza city, the ancient Christian monastery was founded in the fourth century by Hilarion the Great (291-371 CE), considered by some to be the father of Palestinian monasticism.

Born in Tabatha, close to where his monastery would eventually come up, Hilarion became a monk at the age of 15. As his fame grew, and people began coming to him for miracles, his small hermitage went on to become a thriving monastery, which attracted followers from all over, many of whom would choose Hilarion's mendicant lifestyle.

The present-day archaeological remains of the site span more than four centuries, from the time of Hilarion to the Umayyad period. The ruins comprise "five successive churches, bath and sanctuary complexes, geometric mosaics, and an expansive crypt" making the monastery "one of the largest in the Middle East", according to The World Monuments Fund, an independent organisation which facilitates the preservation of "the world's most treasured places". The UNICEF listing of the site refers to Tell Umm Amer as "the first monastic community in the Holy Land", and "a hub of religious, cultural, and economic interchange".

The monastery was likely abandoned after a seventh century earthquake, only to be uncovered by local archaeologists in 1999.

Much-needed protection

With Israel's ongoing onslaught reducing much of the Gaza strip to rubble, monuments and sites of cultural significance have not been spared either.

According to Mahmoud Hawari of the Institute of Palestinian Studies, as of February this year, "207 archaeological sites and buildings of cultural and historical significance...have been reduced to rubble or severely damaged. These include old mosques, churches, cemeteries, museums, libraries, and archives". The site of Tell Umm Amer was also "damaged", Hawari wrote in "Israel Destroys Palestinian Cultural Heritage Sites in Gaza" (February 28, 2024).

This is why Tell Umm Amer's inclusion in the aforementioned UNESCO lists matters. The World Heritage Convention of 1972, of which Israel is a party to, sets out duties for identifying, protecting, and preserving World Heritage sites. Crucially, states cannot take any deliberate measures which are likely to cause direct or indirect damage to this site.



In December 2023, UNESCO's Intergovernmental Committee for the Protection of Cultural Property in the Event of Armed Conflict had already decided to grant 'provisional enhanced protection' to the monastery under the 1954 Hague Convention and its Second Protocol.

The inclusion on the list of World Heritage in Danger automatically opens the door to enhanced international technical and financial assistance mechanisms to guarantee the protection of the property and, if necessary, to help facilitate its rehabilitation, the UNESCO statement on Friday said.

WHAT ARE 'ROGUE WAVES' AND HOW CAN AI HELP PREDICT THEM?

Rogue waves — unusually large waves compared to ones which come before and after — pose a threat to ships, coastal and offshore infrastructure, and human lives. Unfortunately, there has existed no method to forecast rogue waves — until now.

Using billions of data points collected by a network of 172 ocean buoys, University of Maryland mathematicians Thomas Breunung and Balakumar Balachandran have trained an artificial intelligence programme to distinguish wave patterns that preceded rogue waves, up to five minutes in advance.

Deadly surprises

In oceanography, sea state refers to the condition of the surface of a large body of water at a certain location, at a certain point of time. The World Meteorological Organization (WMO) sea state code characterises sea state based on wave height on a scale of 0 (no waves) to 9 (waves over 14 m).

Rogue waves defy the average sea state, and are twice the size of surrounding waves, according to the US National Oceanic and Atmospheric Administration (NOAA). Such waves often form when swells — which occur not due to local winds, but distant weather systems — converge to raise a single, amplified wave. They may also form when ocean currents compress swells to create strong billows.

While scientists have long known rogue waves are not altogether unpredictable, the lack of a real-time forecasting method has had deadly consequences. According to oceanographer E G Didenkulova, between 2011 and 2018, rogue waves killed at least 386 people and sank 24 ships ("Catalogue of rogue waves occurred in the World Ocean from 2011 to 2018 reported by mass media sources", 2020).

Promise of AI

Breunung and Balachandran considered 20-minute long samples recorded by ocean buoys. For samples containing rogue waves (as defined by NOAA), the recording ends at the point when the rogue waves occur. The rogue wave samples were then compared to all other samples (in which rogue waves did not occur) to train the AI programme.

This programme was subsequently able to predict about 75% rogue waves one minute in advance. Roughly 73% rogue waves could be predicted five minutes in advance. Crucially, the researchers demonstrated that the tool could be used to predict the emergence of rogue waves near two buoys at widely different depths not included within the data sets used for training the AI — suggesting that the tool may have universal predictive capabilities.



The accuracy and advance warning time of the AI's forecasts could be further improved by incorporating physical quantities such as water depths, wind speeds, and buoy locations, the researchers said. Breunung hinted that harnessing more powerful AI architectures alongside more data may even lead to near-perfect predictions in the future.

The study, "Prediction of freak waves from buoy measurements", was published on July 18 in the journal Scientific Reports.

MAKE MORE FRIENDS AND LIVE LONG? IT'S NOT THAT SIMPLE

To live a long and healthy life, eat fish and vegetables. Move. Don't smoke or snack. Get your full eight hours of sleep. And, above all, make friends. Because, it turns out, people's social connections — the density of their network, the nature and strength of these relationships — are the key to longevity. This is the conclusion arrived at by a new book on the subject, *The Laws of Connection* by David Robson, which puts together the growing scientific evidence for why community is one of the top indicators for human health and wellbeing, and holds loneliness responsible for a range of ailments from depression to heart disease.

Intuitively, most people would agree with these findings. There is nothing quite like the heartache of being friendless, of being, as Olivia Laing, author of *The Lonely City*, put it, "... hungry when everyone around you is readying for a feast." It can be physically and mentally debilitating, especially among vulnerable populations like persons with disabilities and the elderly. This is why governments and institutions around the world are rushing to address a problem that seems to have acquired epidemic proportions — from the WHO Commission on Social Connection, which was set up late last year, to the ministries of loneliness established by the UK and Japan in recent years.

In the digital age, as more people choose to work from home, have food and other essentials delivered to their doorstep and even access services like banking and healthcare through gadgets, it is all too easy to become unmoored from one's community. This is where the root of the trouble lies, because the way humans live now — atomised and connected primarily through technology, instead of conversations and shared experiences — is so much at odds with how humans have evolved to live — in communities. Reconciling the two would require a new imagination of what it means to be human and be connected.

KETAMINE PILL OFFERS HOPE, AND RISKS, FOR TREATMENT-RESISTANT DEPRESSION

A new tablet that slowly releases the drug ketamine can ease treatment-resistant depression, offering an alternative to cumbersome clinic-based treatments for people with the condition, researchers have found in a clinical trial.

Ketamine, sometimes called a "party drug", blocks the receptor for an excitatory neurotransmitter — those that cause neurons fire and send messages — called glutamate. It was originally used as an anaesthetic but researchers found that it had rapid antidepressant effects, acting within hours.

As such, health workers routinely prescribe ketamine to people with treatment-resistant depression, where antidepressants don't improve symptoms, and with suicidal ideation.



Slipping past side-effects

It is most commonly administered intravenously (i.e. by injecting into the blood), and can also be delivered via an intranasal spray. However, in these routes ketamine can have many side effects, including headache, nausea, and drowsiness, and serious ones like increased blood pressure, loss of focus or dissociation from reality.

As a result, clinicians monitor patients who have been given ketamine for two hours while the side effects subside. This means an in-clinic treatment protocol that those suffering from depressive symptoms have said are inconvenient and render the drug more inaccessible.

Previous reports have suggested that tablets that release ketamine slowly can improve symptoms of depression with fewer side effects. Based on these reports, a team led by Paul Glue at the University of Otago, in New Zealand, proposed that patients could dose themselves safely at home using slow-release ketamine tablets.

“If ketamine is formulated as an extended-release tablet where it takes about 10 hours to release, most ketamine is broken down in the liver before it can get into the blood,” Dr. Glue told The Hindu in an email. Ketamine’s metabolites – the compounds formed when the liver breaks ketamine down – are the main drivers of its antidepressant effects, he explained. “However, the lower blood ketamine levels mean patients experience few or no side effects.”

An enriched clinical trial

Dr. Glue’s team developed an extended-release ketamine pill called R-107. To test its effects, they administered it to 231 volunteers recruited from 20 psychiatric clinics in New Zealand, Australia, Singapore, and Taiwan. All the participants had a major depressive disorder and whose symptoms hadn’t shown any improvement despite being treated with at least two antidepressants.

In the first stage of the study, the researchers treated all the participants with 120 mg of R-107 every day for five days. They assessed the participants’ depression symptoms after eight days. Those whose symptoms had not improved left the study at this point, leaving 168 people to proceed to the second stage of the trial.

Many clinical trials use this sort of stepped intervention — called an enrichment phase — to exclude people who don’t respond to acute treatment in the first stage. Only those who respond to the treatment proceed to the next stage, which is double-blind, meaning neither the participants nor the researchers know which participant has received the actual treatment and which a placebo.

According to Dr. Glue, “Normally, depression treatment studies have a high failure rate of about 50%,” where there is no visible difference in responses between those treated with the drug and those treated with the placebo. “The risk of study failure drops to about 20% by using this two-stage design.”

‘Very satisfying to see the results’

The 168 people recruited to the double-blind stage received either placebo tablets or one of four R-107 doses — 30, 60, 120 or 180 mg — twice a week for three months. The participants reported experiencing minimal side effects, including headache, nausea, and anxiety. Very few reported symptoms of dissociation. While some people reported more dire side effects such as severe



headache, chest pain, and suicidal ideations, the researchers were able to determine them to be unrelated to the treatment.

After the trial period, more participants treated with the tablets showed improved depression symptoms compared to those who had received placebo (as measured using a standard clinical scale to assess symptom severity). Those treated with 180 mg of ketamine reported the most signs of improvement. And compared to 43% of those who received the highest ketamine dose, 71% of those taking placebo relapsed and suffered from symptoms of depression.

These results didn't surprise Dr. Glue, since previous early clinical data had revealed rapid antidepressant response to ketamine. "However, antidepressant drug trials can be unpredictable, so it was very satisfying to see the results," he added.

Rishabh Bajaj, a psychiatrist at Asha Hospital in Hyderabad, also said the results, described in the journal Nature Medicine on June 24, were to be expected: "I would be surprised if people did not respond to ketamine."

The cost question

Most participants in the double-blind stage consumed the pills at home, with brief visits to the clinic that they said did not inconvenience them. This was a sign that extended-release ketamine tablets with fewer or no side effects could ease access to treatment for the people who need it the most, Dr. Glue said.

"A ketamine-containing tablet is convenient, particularly for those in tier-three cities," said Dr. Bajaj, since they may not have access to clinics for ketamine treatment sessions. The drug costs only about ₹ 20 whereas intravenous treatment, which is more common, can cost anywhere between ₹ 750 and ₹ 2,500 per session, he said. Nasal sprays are usually inaccessible because they are even more expensive, ₹ 10,000 to ₹ 20,000, he said.

However, he added that licensing costs might push up the tablets' cost as well.

The major limitation of the study, per Dr. Bajaj, was the enrichment phase, which can skew the results because a significant number of people had been excluded after acute treatment. Dr. Glue expressed a similar concern: "Enrichment is fine to demonstrate that the tablets work," but further studies in more people for regulatory approval will need to have an 'unenriched' population as well.

Risk of abuse and overdose

Another concern, according to Dr. Bajaj, is that ketamine is a drug of abuse, and unsupervised treatment in people with depression symptoms or suicidal ideation could be dangerous.

To address some of these concerns, Dr. Glue's team designed R-107 to be exceptionally hard and difficult to shatter, so people can't crush the tablet and snort it or dissolve it in water to inject it intravenously for recreational use. Fortunately, none of the trial participants reported craving the tablet either.

Dr. Bajaj agreed making the tablets shatter-proof could mitigate its abuse, but said there was still the possibility of users with severe symptoms overdosing themselves with multiple tablets. He suggested this risk could be reduced by rationing the number of tablets available to users. But the



downside of this idea is that patients would have to visit the clinic to refill their prescriptions, which was the point of devising R-107 in the first place.

Having more data about the treatment in more people can make the picture clearer, Dr. Bajaj concluded. "But that is going to take time."

'ICK' AND 'BOOP': GEN Z IS RESHAPING THE ENGLISH LANGUAGE

IYKYK. And if you don't, consult the Cambridge Dictionary, which should now be the go-to source for older generations who complain about the obtuseness of Gen Z-speak. The first generation to grow up entirely in the internet era has reshaped language to such an extent that venerable institutions like the Cambridge Dictionary have had to take note, adding 3,200 new words to the 1.5 billion already officially recognised.

Among the words and phrases that made the cut are "the ick" (sudden dislike or disgust), "boop" (gentle, affectionate touch on the nose), "chef's kiss" (perfect), "IYKYK" (if you know, you know) and several gaming terms.

The criteria for inclusion, according to the dictionary's editors, is "staying power". Considering that slang from previous generations has more or less disappeared from everyday language — does anyone really use, or even understand, "the bee's knees" anymore? — the fact that over 3,000 Gen Z words are believed to have the longevity to outlast those who coined them speaks of deeper changes in how language is used today. A notable — and polarising — feature has been the tendency to dispense with formal language, allowing slang to cross over into official settings — for example, the use of work email sign-offs like "lukewarm regards", "stay hydrated queens" or "live, laugh, leave me alone".

It could be argued that such a casual attitude to language even in the most serious of settings is only to be expected from a generation that has come of age in a time of great instability. The unique frustration of growing up in a time of pandemic, wars and record-high unemployment and temperatures demands a unique vocabulary. To be able to collectively express "the ick" about the state of the world today may be one way for young people to "slay, serve, survive".

BUTTERFLIES ACCUMULATE ENOUGH STATIC ELECTRICITY TO ATTRACT POLLEN

Butterflies and moths collect so much static electricity whilst in flight, that pollen grains from flowers can be pulled by static electricity across air gaps of several millimetres or centimetres. The finding, published in the Journal of the Royal Society Interface, suggests that this likely increases their efficiency and effectiveness as pollinators.

The University of Bristol team also observed that the amount of static electricity carried by butterflies and moths varies between different species and that these variations correlate with differences in their ecology, such as whether they visit flowers, are from a tropical environment, or fly during the day or night. This is the first evidence to suggest that the amount of static electricity an animal accumulates is a trait that can be adaptive, and thus evolution can act upon it by natural selection.

That many animal species accumulate static electricity as they fly most likely through friction with the air is already known. What was not known is whether butterflies, moths, and other pollinators too accumulate sufficient static electricity, and if the accumulated static electricity can indeed attract pollen.

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



Testing process

To test this, the researchers studied 269 butterflies and moths across 11 different species, native to five different continents and inhabiting multiple different ecological niches.

“Butterflies and moths accumulate a net electrostatic charge. All individuals measured, from various phylogenetic, ecological and biogeographical groupings, carried a net electrostatic charge, suggesting that electrostatic charging is a universal trait among the Lepidoptera,” they write.

“This shows that despite their wingbeat frequency being about two orders of magnitude lower than most other insects, butterflies and moths are still capable of accumulating appreciable electrostatic charge.” Importantly, the magnitude of the net electrostatic charge on the Lepidopterans measured is sufficient to facilitate contactless pollination, they note.

LAB-GROWN MEAT: CLEARED IN SINGAPORE, AN EMERGING ALTERNATIVE WORLDWIDE

The Singapore Food Agency (SFA) approved this week the sale of a lab-grown meat product. This is the first time cultured meat has been cleared for sale anywhere in the world. The product approved by the SFA is cultured chicken, produced by US-based East Just. The company has announced the product will be manufactured with local partners under its new brand GOOD Meat.

Why is this a big deal?

In its June 2020 Food Outlook Report, the UN Food and Agriculture Organisation (FAO) stated that world meat output was set to contract row to 333 million tonnes, 1.7% less than in 2019. The disruption has been caused mainly by Covid-19, but it has added to already widespread fears about zoonotic diseases, especially African swine fever and highly pathogenic avian influenza.

This provides an opportunity to the alternative meat industry. According to a Nielsen report from May this year, the sale of plant-based meats, which have been available in retail outlets and restaurants since 2018, grew by 264% in the US over a nine-week period that ended May 2. The market for alternative proteins was growing even before the pandemic: in a 2019 report, Barclays predicted that alternative meat could capture 10% of the \$1.4-trillion global meat market over the next decade. But while plant-based meats were finding more and more favour, commercial availability of lab-grown meat (or cultured meat) was still many years in the future.

This is why the approval by Singapore to cultured chicken is seen as significant.

How is lab-grown or cultured meat different from plant-based meat?

The latter is made from plant sources such as soy or pea protein, while cultured meat is grown directly from cells in a laboratory. Both have the same objective: to offer alternatives to traditional meat products that could feed a lot more people, reduce the threat of zoonotic diseases, and mitigate the environmental impact of meat consumption.

In terms of cellular structure, cultured or cultivated meat is the same as conventional meat — except that cultured meat does not come directly from animals.

According to the Good Food Institute (GFI)'s 2019 State of the Industry Report on cultivated meats, compared to conventional beef, cultivated beef could reduce land use by more than 95%, climate change emissions by 74-87% and nutrient pollution by 94%. The report adds that since cultivated meat is created in clean facilities, the risk of contamination by pathogens such as



salmonella and E coli, which may be present in traditional slaughterhouses and meat-packing factories, is significantly reduced. It does not require antibiotics either, unlike animals raised for meat, thereby reducing the threat posed to public health by growing antibiotic resistance.

Who else is making cultured meat?

According to the GFI report, by the end of 2019, 55 companies were focused on cultivated meat products, including Future Meat Technologies (chicken, lamb, beef) in Israel, Biftek (beef) in Turkey, Cubiq Foods (chicken fat) in Spain, Netherlands-based Meatable (pork, beef), French company Gourmet (foie gras) and US-based Memphis Meats (beef, chicken, duck). Also among these is Delhi-based Clear Meat, which is developing cultured chicken.

How soon will cultured meat be widely available to consumers?

There are still significant hurdles to be overcome before cultured meat is widely available. Apart from ensuring that the products are affordable — currently still a challenge — and dealing with consumer mistrust, producers of alternative meats will face resistance from traditional meat producers.

The world's largest meat companies, such as Nestlé, Tyson Foods and Perdue Farms, have already jumped on the fast-moving plant-based meat bandwagon. But production of cultured meat is difficult to scale up at present.

DRUG USED TO TREAT CLOTS CAN PROTECT AGAINST COBRA VENOM DAMAGE

Orange-red in colour and native to Tanzania, the *Naja pallida* — the red spitting cobra — is a formidable, 1.2-metre-long foe. When threatened, it raises its hood and hisses loudly. If this display doesn't deter its predator, it opens its mouth. Muscles around the snake's venom glands squeeze, releasing jets of venom onto the eyes, nose, and mouth of the threat. As the victim's face sears in pain, the cobra takes the opportunity to lunge forward and bite, delivering a massive quantity of venom into the victim's body.

The venom attacks cells in the body and damages the nervous system. For most of the cobra's regular victims — toads, frogs, birds, and other snakes — the only fate is death. A lucky human might be spared but with a permanent disability.

Bad deal on antivenoms

Encounters with venomous snakes kill about 1.4 lakh people every year, especially in the tropical regions of Africa and Asia. Despite this alarming number, the treatment for snakebites has remained archaic.

Based on the work of French scientists in the late 1800s, antivenom is made today by injecting domestic animals like horses and sheep with small amounts of snake venom. This kicks the animal's immune system into action, producing antibodies to neutralise the venom. Researchers extract these antibodies from the animal's blood and transport them in cold storage to hospitals, where they are injected into the bodies of snakebite victims.

Difficulties in production, storage, transportation, and administration aside, antivenoms are also expensive and can have severe side effects in humans; some of them could be fatal.



That may soon change. In a July 2024 study published in the journal *Science Translational Medicine*, a team of Australian, British, Canadian, and Costa Rican scientists have reported that tinzaparin, a drug commonly used to prevent blood clots, significantly reduces damage to cells due to spitting cobra venom. The team also found the drug could reduce skin damage in mice injected with the venom.

According to a press release, the scientists have filed for a patent and may start human clinical trials soon.

According to Kartik Sunagar, an associate professor at the Centre for Ecological Sciences, Indian Institute of Science (IISc), Bengaluru, who studies the evolution of snake venoms and advanced snakebite medicines, “This discovery could pave the way for a real-world solution for regions that suffer the highest burden of snakebite morbidity.”

How venom kills cells

The venom of the red- and the black-necked spitting cobras — the two species whose venom the researchers used in the study — is “poorly understood,” R.N.V. Krishna Deepak, who studies snake venoms using computational methods at Azim Premji University, Bengaluru, said.

Our understanding of how these venoms kill human cells is worse, which contributes to the lack of advances in antivenom development.

To address this issue, the researchers first investigated how spitting cobra venom affects human cells. They grew a collection of human cells in the laboratory; each member of this collection had a single gene removed. (They used CRISPR-Cas9, a Nobel-winning genome-editing tool, to build this collection.) When a gene is knocked out, cells are unable to manufacture a particular protein. The researchers then treated this collection with the venom of either of the two snakes and selected cells that survived. Given that this resistance to spitting cobra venom had been conferred by the absence of some genes, the authors concluded these genes were involved in facilitating the venom’s effects on normal human cells.

Further investigation revealed that many of these genes were involved in the synthesis of a sugar compound called heparan sulphate, which is known to regulate the formation of blood vessels and clots in the human body.

Blood thinner to antidote

The researchers hypothesised that if the venom’s toxicity depended on the biological pathway that synthesised heparan sulphate, artificially stopping this pathway could ameliorate the venom’s toxic effects.

One way of doing so is to introduce molecules that closely resemble heparan sulphate. As the body senses an excess of these molecules, it shuts down the pathways responsible for heparan sulphate synthesis. One such molecule is tinzaparin, a drug used to treat serious blood clots.

When the team introduced tinzaparin immediately after subjecting cells to the snake venom, the cells survived. Tinzaparin could protect these cells even when it was introduced an hour after the cells had been exposed to the venom. Further experiments revealed that tinzaparin worked by blocking the interaction between the venom and its receptor in the cell by binding to venom molecules.



When the researchers injected mice with venom from either of the two cobras along with tinzaparin, they found that skin damage resulting from the venom was much less when the mice were provided with the drug versus when they were deprived of it.

INDIAN SCIENTISTS BUILD BREAKTHROUGH GENE-EDITOR, ARE AIMING FOR PATENT

Scientists from the CSIR-Institute of Genomics and Integrative Biology, New Delhi, have developed an enhanced genome-editing system that can modify DNA more precisely and more efficiently than existing CRISPR-based technologies.

CRISPR occurs naturally in some bacteria, as a part of their immune system that limits infections by recognising and destroying viral DNA. In their Nobel-prize winning work, scientists repurposed this bacterial defence mechanism to develop a novel approach for editing the genomes of higher-order organisms.

CRISPR's off-target problem

Today, using CRISPR-Cas9, researchers can add, remove, or alter specific DNA sequences in the genomes of animals. This system has been used in various fields, including in agriculture — to improve the nutritional value of plants and increase their yield — and in healthcare to diagnose several diseases and treat genetic disorders.

The CRISPR-Cas9 gene editing tool uses a guide-RNA (gRNA) designed to find and bind to a specific part of the target genome. The gRNA directs an enzyme, Cas9, to the target site, which is followed by a short DNA sequence called the protospacer adjacent motif (PAM). Cas9 recognises and binds to the PAM sequence, and acts as a molecular scissor that snips some damaged DNA. This automatically triggers the cell's DNA repair system, which repairs the snipped part to insert the correct DNA sequence.

But the CRISPR-Cas9 system can also recognise and cut parts of the genome other than the intended portion. Such “off-target” effects are more common when using the SpCas9 enzyme derived from *Streptococcus pyogenes* bacteria. Scientists have been able to engineer versions of SpCas9 with higher fidelity but only at the cost of editing efficiency.

Switching SpCas9 with FnCas9

To overcome these issues, researchers are exploring Cas9 enzymes from *Francisella novicida* bacteria. While this Cas9, called FnCas9, is highly precise, it has low efficiency as well.

To enhance it without compromising its specificity, researchers led by Debojyoti Chakraborty at CSIR-IGIB modified and engineered new versions of FnCas9.

The researchers tinkered with amino acids in FnCas9 that recognise and interact with the PAM sequence on the host genome. “By doing this, we increase the binding affinity of the Cas protein with the PAM sequence,” Dr. Chakraborty said. “The Cas9 can then sit on the DNA in a stronger configuration, and your gene editing becomes much more effective.”

The researchers also engineered the enhanced FnCas9 to be more flexible and edit regions of the genome that are otherwise harder to access. “This opens up more avenues for gene editing,” Dr. Chakraborty said.



'ZOMBIES' IN OUR GENES HELPED US EVOLVE, AND COULD HELP FIGHT CANCERS

Viruses are ubiquitous entities that have long plagued humans, often presenting in pesky, self-limiting infections, like a bout of the common cold. While most viral encounters are transient and merely inconvenient, some can have devastating or chronic consequences, leading to severe disease or even death. The recent COVID-19 pandemic and other emerging infectious diseases around us are good examples.

However, this battle between host and pathogen churns up a fascinating question: could viral infections have reshaped the human genome in the process?

A unique enzyme

Most viruses can't really affect the genome. However, retroviruses buck this trend: they are a group of viruses that can integrate and reshape the genomes of the hosts they infect. Retroviruses have an RNA genome; can reverse-transcribe it to DNA and thus insert it into the host's genome.

Their name comes from a unique enzyme they possess, called reverse transcriptase. It's the one with the ability to convert the virus's RNA into a corresponding DNA sequence. Teams led by Howard Temin at the University of Wisconsin–Madison and David Baltimore at the Massachusetts Institute of Technology reported its discovery in 1971. It spawned a widespread search for viruses that have this enzyme.

The knowledge that these viruses could cause cancer was even then well-known, even if the mechanism wasn't clear until the 1971 teams' reports. Oluf Bang and Vilhelm Ellermann had discovered the viral cause of chicken leukaemia back in 1908 while Ludwik Gross isolated a leukaemia-causing virus in mice in 1957.

The discovery of HIV

But it wasn't until 1980 that researchers — Robert C. Gallo & co. — found the first human retrovirus. Dr. Gallo had extensively worked on the human T lymphotropic virus (HTLV) and his group isolated it from a patient with cutaneous T-cell lymphoma. This work was later published in the Proceedings of The National Academy of Sciences.

As if in quick succession, in 1983, Françoise Barré-Sinoussi, working closely with Luc Montagnier at the Institut Pasteur in Paris, reported the discovery of a retrovirus from the lymph node of a patient suffering from acquired immune deficiency syndrome (AIDS).

French researchers initially called the virus the lymphadenopathy-associated virus (LAV) while American researchers called it HTLV-3. Both these names were superseded by the name 'human immunodeficiency virus' (HIV) in 1986. For their discovery, Dr. Barré-Sinoussi and Dr. Montagnier were awarded the medicine Nobel Prize in 2008.

Genomic elements left behind

In the life cycle of a retrovirus, the reverse-transcribed DNA is integrated into the host's DNA along with another enzyme called integrase, which acts like glue to bind the two DNA genomes. Once bound, the viral DNA is called a provirus, and is complete with all the ingredients it needs to be functional. At the end of this process, the virus practically hijacks human cells and turns them into virus-making factories.



It's typically not possible for a person to inherit retrovirus infections or even the provirus because these integrations usually damage only a subset of cells. However, such genome invasions can sometimes mess up the integration process, causing 'zombie' regions in the host's genome. These parts are called endogenous retroviruses (ERVs). ERVs usually can't replicate and produce functional proteins since they lack their regulatory regions.

If the abortive integrations involve the germ cells — i.e. those that produce the gametes, sperm cells and ova — the host will be able to transmit its ERVs to its offspring. This happens in rare instances. This said, over the tens of thousands of years of mammalian evolution, many retroviruses have left a number of genomic elements in the genome, sort of the genetic fossils of early infections. These elements have long lost the potential to produce viruses but researchers believe they have played a big hand in the evolution of their hosts. In fact, research strongly suggests around 8% of the human genome is composed of ERVs.

Biomarker for preeclampsia?

A good example of their influence are the syncytins, a class of genes thought to be descended from an ERV. That is, these genes originally came from viruses and were acquired by chance as the mammalian host evolved. But at some point they became essential for the host because they helped create the placenta, an organ that became crucial to support a growing baby.

This change is thought to have been important for the evolution of mammals with placentas from their egg-laying ancestors. Over time, the original ERV's envelope gene (*env*) was thought to be modified or replaced by new versions, forming the syncytin genes as we see today in different mammal species.

Syncytins are important genes involved in placental development; many ERVs are also highly expressed in the placenta. In a recent paper in the Proceedings of the National Academy of Sciences, researchers from Sun Yat Sen University in China reported that a particular RNA was dysregulated in early-onset preeclampsia — a condition during pregnancy where the blood pressure shoots up. This RNA was derived from an ERV. The study also suggested that the presence of this RNA could be used as a biomarker for the condition.

In future, as research techniques continue to advance, scientists may uncover more wonderful insights into the evolutionary significance of ERVs and their contribution to human biology. Such knowledge will undoubtedly lead to breakthroughs in regenerative medicine, cancer therapies, and personalised medicine, ultimately enhancing our understanding of human health and evolution.

DEMENTIA HAS 2 NEW RISK FACTORS- UNTREATED VISION LOSS, HIGH CHOLESTEROL: LANCET STUDY

Now you have another reason to watch your cholesterol. A new Lancet Commission report has flagged it along with untreated vision loss as significant new risk factors for dementia, a condition characterised by memory problems and disruptions in thinking and social skills. Its most prevalent form is Alzheimer's Disease, which accounts for about 60-70 per cent of dementia cases.

Key takeaways:

— In fact, both these factors have been found to be a trigger for nine per cent of all dementia cases. Seven per cent of cases can be linked to high levels of low-density lipoprotein (LDL), commonly



known as bad cholesterol, which develops midlife around age 40. Two per cent of dementia cases are linked to untreated vision loss in later life.

— The report, authored by 27 leading dementia experts, highlights the crucial importance of managing cholesterol levels and addressing vision issues to potentially reduce the risk of developing dementia.

— The World Health Organization (WHO) ranks dementia as the seventh leading cause of death globally.

— Back in 2020, the Lancet Commission had identified 12 risk factors for dementia: lower levels of education, hearing impairment, high blood pressure, smoking, obesity, depression, physical inactivity, diabetes, excessive alcohol consumption, traumatic brain injury [TBI], air pollution and social isolation.

— Researchers explain that the link between bad cholesterol and dementia stems from excess cholesterol raising stroke risk and triggering the buildup of two proteins — amyloid β and tau — that disrupt functioning of brain cells.

— High levels of LDL cholesterol have been associated with greater amyloid burden in the brain.

ANIMALS ACQUIRE GENES FROM BACTERIA THAT CAN PRODUCE ANTIBIOTICS

A group of small, freshwater animals protect themselves from infections using antibiotic recipes “stolen” from bacteria, according to a new study. The tiny creatures are called bdelloid rotifers, which means ‘crawling wheel-animals’. They have a head, mouth, gut, muscles and nerves like other animals, though they are smaller than a hair’s breadth.

When these rotifers are exposed to fungal infection, the study found, they switch on hundreds of genes that they acquired from bacteria and other microbes. Some of these genes produce resistance weapons, such as antibiotics and other antimicrobial agents, in the rotifers. The findings were published in the journal Nature Communications.

Prior research found that rotifers have been picking up DNA from their surroundings for millions of years, but the new study is the first to discover them using these genes against diseases. No other animals are known to “steal” genes from microbes on such a large scale.

“These complex genes—some of which aren’t found in any other animals—were acquired from bacteria but have undergone an evolution in rotifers,” coauthor David Mark Welch, senior scientist and director of the Josephine Bay Paul Center at the Marine Biological Laboratory says in a release. “This raises the potential that rotifers are producing novel antimicrobials that may be less toxic to animals, including humans, than those we develop from bacteria and fungi.”

Most of antibiotics are produced naturally by fungi and bacteria in the wild, and humans can make artificial versions to use as medicine. The study suggests that rotifers might be doing something similar. The scientists think that rotifers could give important clues in the hunt for drugs to treat human infections caused by bacteria or fungi. One problem with developing new drugs is that many antibiotic chemicals made by bacteria and fungi are poisonous or have side effects in animals.



NIPAH MONOCLONAL ANTIBODY TRIALS MAY BEGIN IN INDIA IN 2025

If the Indian drug regulator greenlights it, a human clinical trial to test the safety and efficacy of a novel Nipah monoclonal antibody MBP1F5, which might offer immediate protection to people at risk of infection against the deadly disease, might begin next year. A similar trial will be carried out in Bangladesh as well. Though trials on many vaccines are currently under way, there is no approved vaccine against the Nipah virus anywhere in the world. The Nipah virus has a 40% to 75% mortality rate in people who are infected.

India and Bangladesh have been chosen for the trial as Nipah virus outbreaks have been reported in these two countries in recent years. Nipah outbreaks have occurred in Kerala in 2018, 2019, 2021 and 2023. In the case of Bangladesh, Nipah outbreaks have been occurring since 2001; the virus has been reported from 34 of 64 districts in Bangladesh with 341 cases detected so far and 242 deaths.

The novel Nipah monoclonal antibody is currently undergoing a phase-1 clinical trial in the U.S., which is carried out by the U.S. Department of Defence.

A spokesperson of the Coalition for Epidemic Preparedness Innovations (CEPI), which is funding the human trials, told The Hindu that the trial led by ServareGMP (a non-profit biotechnology organisation based in California) and supported by Mapp Biopharmaceutical, which is also located in California, will work with local clinical research networks to carry out the trial in India and Bangladesh.

The monoclonal antibody is designed to bind to the Nipah virus F protein, preventing the virus from entering a host cell and causing infection in people. "This mechanism will offer protection against both known strains of Nipah virus (Bangladesh and Malaysia) and its closely related viral cousin, Hendra virus, for at least six months — enough time for vaccine immunity to build," says a CEPI release.

In response to a question about equitable access to monoclonal antibodies, once the trial results are positive, he says: "Alongside ensuring pricing commitments for Global South countries, a reserve of monoclonal antibody doses will be stored in a Nipah-affected country, helping to enable rapid availability in the event of an outbreak and accessibility for those most in need."

WHAT TO KNOW ABOUT THE LISTERIA OUTBREAKS IN THE US AND CANADA

Two separate outbreaks of listeria, a bacteria which can contaminate food, have been reported in the United States and Canada in recent weeks. The US government's Centers for Disease Control and Prevention (CDC) on July 19 reported an outbreak across 12 states, attributing it to the consumption of undercooked meats sliced at deli counters. Two deaths have been reported, while 28 people have been hospitalised.

The Canadian government's public health notice on July 17 said 12 cases had been reported and two of them resulted in deaths. Here is what to know.

What is listeria and listeriosis?

Listeria or *Listeria monocytogenes* is a type of bacteria found in soil, vegetation, water, sewage and even the faeces of animals and humans. Listeria-contaminated food can lead to an infection called listeriosis.



What are the symptoms of listeriosis?

Most people who ingest listeria-infected food do not fall sick or develop symptoms. The bacteria can be present in the infected person's system for up to two months until the symptoms present themselves, making it difficult to establish the connection between what was consumed and the infection.

Symptoms include vomiting, nausea, cramps, severe headache, constipation and fever.

Who is vulnerable to listeriosis?

People with compromised immune systems, pregnant persons and their offspring and the elderly (aged 65 and above) are vulnerable. The US outbreak has a median age of 75. Listeria can result in hospitalisation and even death for the immunocompromised and the elderly.

According to the CDC, pregnant women are 10 times more likely to develop a listeria infection and risk pregnancy loss, premature birth or even life-threatening infection in the newborn.

Some foods are more likely to have listeria than others, including milk, raw sprouts, deli meats and hot dogs, soft cheeses and smoked seafood.

What is the treatment for listeriosis?

Treatment depends on the extent of the infection. In many cases, intestinal listeriosis manifests within a day or two of consuming the contaminated food item and may lead to diarrhoea and vomiting. The treatment is similar to one for a routine stomach infection and could require antibiotics.

If the infection spreads beyond the intestines, it leads to invasive listeriosis. Severe symptoms present themselves two weeks after the food has been consumed.

What do we know about the listeria outbreaks?

The CDC says, "When two or more people get the same illness from the same contaminated food or drink, the event is called a foodborne disease outbreak".

The true numbers of those infected may be higher than reported as the symptoms are not immediately visible. Some people may recover without medical care.

Of the 18 infected people the CDC interviewed, 16 had consumed meat sliced at a deli. The US Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) is working to identify the deli meat suppliers responsible. No product recalls have been announced so far and a CDC investigation is underway.

In neighbouring Canada, a separate listeria outbreak is reportedly connected to the contamination of plant-based refrigerated beverages, including the Danone's Silk brand and the Great Value brand of drinking milk substitutes (almonds, oats, cashews and coconuts).

Has any advisory been issued?

The CDC has advised the public, especially high-risk groups, to avoid unheated deli meats, cheeses and salads and opt for packaged items instead. Deli equipment, surfaces and food can be easily contaminated, while refrigeration of deli items does not kill the bacteria. All deli meats are



recommended to be heated to an internal temperature of 165 degrees F before consumption to kill Listeria, if present.

Refrigerators, containers and surfaces that have come into contact with deli meats are advised to be thoroughly sanitised. Finally, all patients displaying symptoms, especially those in the high-risk groups, are advised to seek medical attention immediately.

ZIKA INFECTION

A new study has found that maternal Zika virus infections can reprogramme foetal immune development, leading to long-term consequences in children's immunity. These changes even occur in children born without the physical characteristics associated with congenital Zika syndrome— suggesting that the 95% of babies born of Zika-infected pregnancies who did not exhibit symptoms may have been affected by the virus with long-term immunological repercussions. The study used blood samples from newborn and two-year-old children whose mothers were infected by Zika virus during pregnancy. Immune analysis revealed highly elevated levels of inflammation, even two years after the Zika virus infection was cleared. The children's immune systems favoured producing one type of T-cell over another, altering their responses childhood vaccines. These changes left them likely vulnerable to future infections including diphtheria, tetanus and pertussis.

CHILDREN AT RISK AS MPOX VARIANT HITS CONGO CAMPS FOR DISPLACED

Mpox, a viral infection that can spread through close contact, is usually mild but can lead to death in some cases. It causes flu-like symptoms and pus-filled lesions on the body.

The current mpox outbreak in Congo has already seen around 27,000 cases and claimed more than 1,100 lives, most of them children, since the beginning of 2023. It began with the spread of an endemic strain, known as Clade I. But the new variant, known as Clade Ib, appears to spread more easily through routine close contact, as seems to be the case among children.

Another mpox variant, Clade IIb, prompted an international health emergency when it spread globally in 2022, mainly through sexual contact among men who have sex with men. Public health officials in the U.S. and Europe launched campaigns to promote safe sex practices and vaccinated at-risk populations to curb the spread.

In Congo, there are no vaccines or specific treatments for mpox available outside of clinical trials. Stigma, regulatory hurdles, and a lack of money, along with measles and cholera outbreaks in the displacement camps have made it a challenge for people to access medical tools, especially in densely packed locations.

Last month, the country approved the use of two mpox vaccines, but funding remains a significant challenge. Only a few countries have offered to donate shots to Congo, and WHO approval regulations remain a hurdle for international vaccine organisations.

CONTROLLING GESTATIONAL DIABETES CRITICAL TO MOTHER, BABY'S FUTURE

The 18th Annual Conference of the Diabetes in Pregnancy Study Group India 2024 (DIPSI), which was held in March in New Delhi, marked a significant milestone in the fight against non-communicable diseases (NCDs) with the unveiling of the Delhi Declaration. This pioneering



document provides a futuristic perspective on the primordial prevention strategy for diabetes, especially gestational diabetes (GDM), which has amplified the global threat of NCDs.

GDM was originally described as any form of glucose intolerance that develops or is first diagnosed during pregnancy. This condition is an antepartum complication that has short-term and long-term implications for maternal and foetal health. GDM increases the risk of type 2 diabetes in women later in life. At the same time, their children face consequences such as obesity, insulin resistance, and type 2 diabetes due to likely epigenetic modifications caused by exposure to high glucose concentrations in utero. Hence, identifying GDM at the right time and proper management are pivotal in reducing these risks.

Due to the increased attention paid to GDM, the Delhi Declaration encourages using the single test procedure formulated by DIPSI and approved by the Ministry of Health and Family Welfare, Government of India. This low-cost and effective strategy is crucial to identifying glucose intolerance in pregnancy to prevent the progression of NCDs.

Foetal programming

One of the key issues emphasised in the Delhi Declaration is foetal programming. This refers to alterations in the structure, anatomy, and biochemical activities due to injurious influences or stress during specific developmental phases of foetal growth. One such adverse stimulus is hyperglycaemia during pregnancy, which increases the risk of the foetus developing NCDs when it grows up, a concept known as the “Foetal Origin of Adult Diseases.”

The studies show that women should be screened for glucose intolerance at eight weeks of pregnancy. Foetal beta cells begin to secrete insulin at the gestational age of 11 weeks of pregnancy. Maternal 2-hour postprandial blood glucose (PPBG) level of 110 mg/dL by the 10th week of pregnancy predicts GDM. This early glucose intolerance, called Early Gestational Glucose Intolerance (EGGI), requires treatment in order to keep blood glucose levels below 110 mg/dl at 10 weeks to avoid foetal hyperinsulinemia (higher than normal levels of insulin in the blood) and, subsequently, GDM.

A National Institutes of Health, US, and WHO analysis states that a 2-hour post prandial blood sugar of 110 mg/dl at the 10th week predicts early GDM. This will enable the launch of appropriate lifestyle changes and medical interventions even before GDM is actually established. The 2013 WHO guideline does not include A1c as a means of diagnosing diabetes in a pregnant woman and for monitoring. Screening between the 8th and 10th weeks enables healthcare providers to keep maternal glucose levels below 110 mg/dl. Taking early action can greatly change the course of NCD development.

The Delhi Declaration states that all pregnant women with PPBG ≥ 110 mg/dl should be put on medical nutrition therapy and begin taking metformin 250 mg twice a day until delivery. These interventions aim to ensure that glycaemic levels remain between 99 ± 10 mg/dl during the pregnancy. Metformin is still relatively safe at this stage because the advantages of better glycaemic control outweigh the potential hazards.

A pilot study carried out in this regard has revealed some promising findings. Group A included 82 antenatal women with PPBG < 110 mg/dl at eight weeks and no intervention; only one woman developed GDM in the third trimester because she was bearing multiple fetuses. On the other hand, in Group B, which had 70 antenatal women with PPBG of 110 mg/dl at eight weeks on MNT



plus metformin, only one woman had GDM resulting from discontinuation of the intervention. These outcomes provide proof that the primordial prevention of diabetes is possible and feasible.

The Delhi Declaration has urged clinicians, researchers, diabetologists, obstetricians, and public health specialists to achieve set metabolic targets at the beginning of pregnancy for improved maternal and foetal health. The pledge involves the following principles:

- using advocacy to raise awareness of screening for PPBS at eight weeks of gestation,
- working with healthcare professionals and families to ensure euglycemia and ensure sound policies and programmes for the education,
- screening, and management of pregnant women.

Freedom from diabetes

The Diabetes in Pregnancy Study Group India 2024 conference has also set a clear agenda for the future: to launch social media advocacy campaigns, improve postpartum compliance, and reduce discrimination against pregnant women with diabetes. The ultimate idea is to address the problem head-on and create a generation free of diabetes through primordial prevention.

By adhering to these guidelines, the Delhi Declaration seeks to pave the way for healthier futures for the mom and her child.

The ideology of early detection and intervention is not only medically sound but also a public health call that holds out the prospect of dousing the epidemic of diabetes and other NCDs.

To sum up, we need to bear the following points as a mantra in the treatment of pregnant women: Prediction of GDM should be done on the basis of a 2hr PPBS reading of >110 mg/dl at the 10th week. Preventive action has to be taken so that maternal PPBS remains under the 110 mg/dl blood sugar mark throughout the pregnancy. The mother should be on Maternal Nutrition Therapy and oral Metformin for the entire pregnancy. Follow-up for women who have recorded GDM is essential after delivery.

With these simple, practical guidelines and an understanding of what the Delhi Declaration offers, we now have the means and the know-how to create a real and lasting improvement in the health of future generations.

The focus on early identification and treatment is not only a requirement of modern medicine but also a social mandate. Together, we can pave the way for a healthier, diabetes-free generation in the future. The womb is more important than the home, in some senses. It all starts in utero. Hence, for a diabetes free generation we should concentrate on the development of offspring.

LONG-TERM STUDY FINDS COVID-19 INCREASES DIABETES RISK

Diabetes is a chronic disease affecting hundreds of millions worldwide and has multiple risk factors. The more the risk factors present, the higher the likelihood of developing diabetes. Understanding these factors is essential for prevention. A new study published in *The Lancet Diabetes and Endocrinology* describes a link between COVID-19 and diabetes.

From databases of tens of millions of people in England registered with their general practitioners, researchers examined the risk of developing diabetes following COVID-19. They found a four-fold



increase in risk during the first-month post-infection. The risk remained elevated in two-thirds of these individuals in the second year.

Early indications came in 2020 when doctors across the world noted a surprisingly high occurrence of diabetes in previously healthy individuals following a diagnosis of COVID-19. Some required high doses of insulin. A paper published in the Journal of Family Medicine and Primary Care in October 2022 from Telangana reported similar findings.

The increased diabetes risk following COVID-19 is believed to involve at least two mechanisms. The receptors used by the virus to attach and enter human cells are also found in the insulin-producing beta cells in the pancreas. Therefore the virus might have damaged these cells. Additionally, the widespread inflammation caused by COVID-19 leads to insulin resistance. Besides adding to the body of evidence connecting chronic diseases and viral infections, the study enhances our understanding of the various mechanisms involved in the development of diabetes. In summary, COVID-19 has increased the burden of chronic diseases among survivors in several ways, with diabetes being one of them.

'PROPER DIET KEY TO MANAGING CHILDHOOD OBESITY, DIABETES'

Last week, Women and Child Development Minister Annapurna Devi stated in the Lok Sabha that 17% of children in the age group of 0–5 years in India are underweight (low weight for age), 36% are stunted (low height for age), and 6% are wasted (low weight for height) — all key indicators of malnutrition.

Malnutrition, as defined by the WHO, refers to deficiencies or excesses in nutrient intake, an imbalance of essential nutrients, or impaired nutrient utilisation. The double burden of malnutrition consists of both undernutrition, overweight, and obesity, as well as diet-related noncommunicable diseases, the WHO says.

India has struggled with malnutrition for decades — 56.4% of the total disease burden is attributed to unhealthy diets.

The Dietary Guidelines for India, developed by the Indian Council of Medical Research (ICMR)-National Institute of Nutrition (ICMR-NIN), Hyderabad, said a large proportion of children suffered impaired nutritional status while concurrently battling the rising prevalence of overweight, obesity, and pre-diabetic symptoms, creating a dual burden of malnutrition where both undernutrition and overweight and obesity coexist.

Indians, says Nihal Thomas, senior professor, department of endocrinology, diabetes, and metabolism, Christian Medical College, Vellore start with a disadvantage: they already have a nutritional backlog of 150 odd years. Over a period of time, malnourishment leads to the thrifty phenotype, where more adipose tissue and fat are stored, even when fewer calories are consumed, at the cost of lean body muscle, he explains. This leads to changes in the pancreas and liver, and, as a result, when exposed to times of plenty, Indians put on weight easily, making them more susceptible to insulin resistance and therefore diabetes.

In addition, says independent development economist and food researcher Dipa Sinha, new challenges to food security compound the already existing burden of large deficits in the nutritional levels of people. These deficits, she says, are not just in terms of the amount of food available, but the right kind of food: a diverse diet, sufficient proteins, and micronutrients.



THE GLOBAL STRUGGLE FOR A PANDEMIC TREATY

The 77th World Health Assembly, or WHA (May 27-June 1, 2024), in Geneva, witnessed two significant developments for global health governance. First, it agreed on a package of amendments to the International Health Regulations (IHR) 2005, drawn from 300 proposals for reform by governments of both the global north and south, and extensively negotiated over the last two years. The IHR amendments aim to enhance the ability of countries to prepare for and respond to Public Health Emergencies of International Concern (PHEIC) and introduce a new category for urgent international response — a Pandemic Emergency (PE). The amendments aim to ensure equitable access to health products during health emergencies and to mobilise financial resources to support developing countries in building and maintaining core health system capacities required under the IHR. Notably, the amendments emphasise solidarity and equity, while mandating the creation of a National IHR Authority for better coordination.

Second, the 77th WHA extended the mandate of the Pandemic Treaty negotiating body, namely, the intergovernmental negotiating body (INB), stipulating that the proposed WHO Pandemic Agreement must be completed as soon as possible. The outcome should be submitted for consideration at the 78th World Health Assembly in May 2025, or earlier if possible, at a Special Session of the World Health Assembly in 2024.

Pathogen Access and Benefit Sharing

Three key contentious issues in the latest draft of the Pandemic Agreement remain significant obstacles to its adoption: a pathogen access and benefit sharing (PABS) mechanism; technology transfer, local production, and intellectual property; and the One Health approach which emphasises coordinated public health measures based on animal, human, and environmental health. These core provisions, which are fundamental to achieving a safer and fairer world, are stalled due to geopolitical discord and competing interests between higher- and lower-income countries. Skilled diplomats and political leaders must understand that international cooperation and mutual solidarity are a win-win for global health security.

The most contentious issue in the pandemic agreement negotiations has been the Pathogen Access and Benefit Sharing (PABS) system in Article 12, often seen as the “heart” of the agreement. The imperative for PABS emerged in response to the gross inequities in treatment access and vaccine distribution witnessed during the COVID-19 pandemic. The PABS system aims to ensure that genetic resources and pathogen samples shared from developing countries (which are the most likely sources for such pathogens), are reciprocated with corresponding benefits such as vaccines and diagnostics that result from research and development on samples and data provided from the Global South. The latest proposal suggests that manufacturers of vaccines and diagnostics — primarily based in wealthy countries — using genetic information from pathogens in low- and middle-income countries, would commit to donating a portion of their products to WHO for global distribution based on the principles of need and effectiveness. Low- and middle-income countries (LMICs) are pushing for a guarantee of at least 20% of shared pandemic products, while many high-income countries argue that 20% should be the maximum limit, and some rich countries will not even agree to 20%.

Technology transfer, intellectual property

Intellectual property protections, rich-world hoarding, export restrictions, and manufacturing limitations all contributed to vaccine inequity during the COVID-19 pandemic. The transfer of



technology, know-how, and skills is often a crucial step toward preparing for and responding to pandemics. Strong provisions for technology transfers and local production could potentially compensate for the failures in PABS negotiations. Above all, technology transfer and intellectual property waivers are needed to ensure diverse manufacturing capacities globally so that LMICs are no longer reliant on “charity” from high-income countries and can maintain self-sufficiency.

Next to PABS, the fierce division over governance of production and technology transfer, and its implications on intellectual property, outlined in Articles 10 and 11, has significantly delayed negotiations. The central issue is the conditions for technology transfer to “facilitate sustainable and geographically diversified production” through mechanisms such as product information sharing and use of WTO- Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) flexibilities such as compulsory licensing. There remains a lack of consensus on the transfer of ‘know-how’ and the binding nature of these transfers. High-income countries advocate for Voluntary and Mutually Agreed Terms (VMAT), but the use of VMAT language could discourage countries, particularly LMICs, from adopting mandatory approaches recognised under the TRIPS Agreement.

Disagreement also mounts over the so-called ‘peace clause’ which requires member states to respect the use of the TRIPS flexibilities and not exercise any direct or indirect pressure to discourage the use of such flexibilities.

One Health

The draft Agreement requires member states to adopt a pandemic preparedness and surveillance approach that recognises the interconnection between the health of people, animals, and the environment and promotes a coherent, integrated, coordinated, and collaborative effort among all relevant organisations, sectors, and actors, as appropriate. High-income countries, particularly the European Union, strongly support One Health. However, LMICs view it as an unfunded mandate that imposes an additional burden on their already strained resources.

The enduring obstacle in international law is its enforcement. Given the lack of robust compliance mechanism and, consequently, the lack of real accountability in International Health Regulations (IHR), implementation of the Pandemic Agreement remains a critical concern. The proposed Conference of Parties (COP) will play a crucial role in this regard by taking stock of its implementation and reviewing its functioning every five years. The latest draft of the agreement has proposed the COP to consider establishing, at its first meeting, an inclusive, transparent, and effective monitoring and evaluation system, in a manner consistent with the IHR. In the forthcoming negotiations, it remains to be seen how countries, especially wealthy nations, respond to this proposal.

A core aim of the Pandemic Agreement — beyond ensuring the immediate availability of medical products during emergencies — should be to promote long-term and sustainable access to these products by diversifying production and enhancing regional manufacturing capabilities. Issues of pathogen access and technology transfer are not mere technicalities; they are essential to the success of the pandemic agreement once it is adopted. With the recent amendments to the IHR and the ongoing Pandemic Agreement negotiations, the world has already made unprecedented strides in international law. The coming months of negotiations are crucial. This treaty is not just for the next pandemic but also serves as a blueprint for a more equitable and resilient global health system.