CURRENT AFFAIRS FOR UPSC

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INTERNATIONAL

TRUMP AND MUSK ARE NOT AS ENTERTAINING AS THEY THINK THEY ARE

Kim Kardashian's crown is safe, Bigg Boss will continue to thrive. The great challengers to "reality" TV — disgruntled billionaires playing victim — are still a force to reckon with in politics, business, conflicts and many things besides. What they are not is entertaining. Beyond the politics, that was the most obvious takeaway from Tesla, SpaceX and X (formerly Twitter) boss Elon Musk's two-hour interview with the man hoping, once again, to be US President, Donald Trump, streamed on the former's social media platform on August 13.

The essence of the conversation was encapsulated in the first few minutes — with conspiracy theories, self-promotion and a glancing acquaintance with facts. The live stream was delayed by about 40 minutes and Musk blamed the glitch on a distributed denial-of-service attack — the server was flooded with users in an attempt to cause a crash. He provided no evidence for this claim. Trump, for his part, marveled at the number of users, perhaps confusing curiosity for support. Both abused their bete noires — Joe Biden, Kamala Harris, Democrats and migrants for the politician; regulation, taxation and those who impose them for the tech bro. It was all predictable. More importantly, it was all boring.

Both Trump and Musk have gone beyond their core competence, to great success. From real estate to TV to the White House; from South Africa to space, and perhaps to Mars. They are adept at controlling news cycles and grabbing eyeballs. But the art of conversation is just a little more difficult than demagoguery. And not everyone can be a reality star, a la the Kardashians. For both the influencer and the interviewer, that's good news.

WHAT IS DDOS ATTACK, CAUSE OF TRUMP-MUSK INTERVIEW GLITCHES?

— A Denial-of-Service (DoS) attack simply means that a website or any other online service cannot be accessed because it has been the target of attacks from a malicious actor. According to the US government's Cybersecurity & Infrastructure Security Agency, this targeting is done by directing a large number of users against a particular online server at the same time to "flood" it.

— Bots can also be used to overwhelm the network, resulting in slow loading times or a total pause in internet services.

— In the case of a distributed denial-of-service (DDoS) attack, multiple sources work against one target. This makes the culprit harder to locate.

— There are different ways of carrying out DOS attacks. Botnets, which are networks of compromised devices, can be deployed by potential attackers.

— In a "Smurf Attack", the attacker sends Internet Control Message Protocol (ICMP) broadcast packets to several hosts. The ICMP can be normally used to communicate data transmission errors to systems, but in this case, attackers send it maliciously.

— While communicating, attackers use a spoofed source IP address which actually belongs to the target machine. As the target machines respond, they end up flooding their own servers, resulting in a DDoS attack.

— Then there is an "SYN flood", which occurs when an attacker sends a request to connect to the target server but does not complete the connection… Multiple, targeted incomplete connections again result in a load for the server, making it difficult to complete legitimate connections smoothly.

— Slowing internet speed and inability to access an online service are signs of a DoS attack…

— DoS attacks can cause major disruption, lasting for anywhere between a few hours to a few days. In 2016, major websites like Spotify, Twitter and Amazon were unavailable for many hours because of a DDoS attack.

For Your Information:

— All internet connected smart devices will be required to meet minimum security standards under what the UK government has dubbed as "world first" laws to protect consumers and businesses from hacking and cyber-attacks.

— Under the new regime, manufacturers will be banned from having weak, easily guessable default passwords like "admin" or "12345" and if there is a common password, the user will be prompted to change it on start-up.

WHY UKRAINE HAS CARRIED OUT INCURSION INTO RUSSIA'S KURSK REGION

Ukrainian troops have advanced around 30 km into the Russian territory of the Kursk region, in what has been Kyiv's largest incursion on Moscow's territory since the start of the war in 2022. On Sunday, in a video address, Ukraine's President Volodymyr Zelenskyy said the surprise attack, launched on August 6, was being carried out to "restore justice" and "push the war into the aggressor's territory".

What is happening?

Although no independent reports from the region are available, some suggest that Ukraine has already captured more land since the beginning of the attack than it did over the entire course of last summer's counter-offensive.

Russian forces are currently engaged with Ukrainian troops near the villages of Tolpino and Obshchy Kolodez — which are about 25 km and 30 km from the Russia-Ukraine border, Russia's defence ministry said in a statement on Sunday. The incursion involves three Ukrainian brigades — a total of six to eight thousand troops — sources told TVP World, a Poland-based news outlet.

Ukrainian soldiers have been posting videos on social media in which they claim to have captured a host of settlements in the Kursk region. The soldiers filmed themselves tearing down Russian flags in villages they have captured, or standing in front of road signs to show that they have entered a town.

Around 76,000 people have been evacuated from the region, where a state of emergency has been declared by local authorities, according to Russia.

Why has Ukraine launched the attack?

Currently, there is no clarity about the attack's objectives. Military experts have said there could be several political and military reasons behind it.

Some experts suggest that Ukraine wants to seize as much land as possible to strengthen its position on the negotiation table. Ukrainian land captured by Russia could be exchanged for Russian land conquered by Ukraine.

It could also be possible that Ukraine wants to capture the Kursk nuclear power plant as a payback for Russia's seizure of Ukraine's Zaporizhzhia nuclear plant — it has been under Moscow's control since 2022. The Kursk nuclear plant is just 60 km away from the Ukrainian border.

The incursion could be part of Ukraine's effort to force Russia to redeploy its troops away from the east — the attack has come just weeks after Moscow captured several villages in Ukraine's eastern Donetsk region. This could help relieve some pressure on Ukrainian troops posed in the east.

What happens next?

It is quite unlikely that Ukraine would be able to hold all of the Russian territory it has advanced on. To maintain its current position, Kyiv would need to send more troops, tanks, and resources to the region.

In an interview with Polish Press Agency, retired Polish General Roman Polko said, "At a moment when Ukrainian defenders in the east are being pushed back on several axes, the use of highly capable Ukrainian combat forces in Kursk is either a brilliant countermove to shift the momentum in the war, or a strategic error which compounds the challenges in Ukraine's eastern Ukraine defensive operations".

AL-SHABAAB: GROWING FROM SOMALIA'S RUINS

On August 2, a suicide bomber detonated an explosive device at the entrance to the Beach View Hotel on Lido Beach in Mogadishu, the capital of Somalia, which is often frequented by government officials, businesspersons and youth. Before the shock could abate, five attackers stormed the site and started shooting at civilians indiscriminately. By the time security officials had neutralised the attackers, at least 37 lives were lost and 210 were wounded. The strike was subsequently claimed by al-Shabaab, an affiliate of al-Qaeda, which has waged a war against the Somali government for the past 17 years.

For al-Shabaab, this operation was just another leaf in its playbook, having conducted similar strikes in the Horn of Africa. In March, the group had laid siege to another hotel in Mogadishu killing 27 people, including three members of parliament and three soldiers. The deadliest attack in the country's history was the double car bombing in October 2017 killing 358 people and injuring 228 in Mogadishu. The attacks have spilled over the border to Kenya too.

But as far as Somalia goes, al-Shabaab is merely a chapter in the nation's history that is fraught with authoritarianism, clan war, famine, piracy, corruption and resource crunch, all of which had prompted the U.S. based-The Fund for Peace to call the country in 2011, a failed state for a fourth year in a row. That is slowly changing with the UN stating in 2021 that the former failed state is on a fragile path to progress.

WHY DID JAPAN'S PRIME MINISTER STEP DOWN?

In a surprise announcement, Japanese Prime Minister Fumio Kishida said on August 14 he would step down as leader of the ruling Liberal Democratic Party (LDP) next month, bringing his premiership to an early end.

Since coming to office in October 2021, Kishida has struggled to overcome dire approval ratings. The party has been dogged by revelations of ties to the Korean-based Unification Church in the wake of the assassination of former Prime Minister Shinzo Abe in July 2022, as well as a political fundraising scandal uncovered last November.

REGIONAL TROUBLES

Thailand's youngest Prime Minister, 37-year-old Paetongtarn Shinawatra, was elected by the Parliament on Friday after the constitutional court ousted Srettha Thavisin. Ms. Paetongtarn is the youngest daughter of former Thai Prime Minister and tycoon Thaksin Shinawatra, and the fourth member of her family to hold the position. Mr. Thaksin was removed in a coup in 2006, while Ms. Paetongtarn's uncle Somchai Wongsawat was dismissed by the constitutional court in 2008, and her aunt Yingluck Shinawatra was also dismissed, again by the same court, in 2014. The latest change of Prime Minister mirrors several such sudden dismissals of the past that are attributed to Thailand's conservative establishment. Mr. Srettha was among more than a dozen Prime Ministers appointed since 2001. Significantly, the court held Mr. Srettha guilty of ethical violations for appointing a Cabinet Minister who had been convicted for attempting to bribe a judge overseeing Mr. Thaksin's corruption cases more than a decade ago. Mr. Srettha was himself only elected in 2023, when the reformist Move Forward Party, which won the most seats in the elections, was disqualified from forming a government and banned for suggesting changes to the strict laws governing criticism of the monarchy. As a result, Ms. Paetongtarn's chances of a smooth term in office, and making radical changes to the system seem bleak. Her most important task would be to help nudge Thailand's sluggish economy back into shape while averting the fate of her predecessors. Given her age and lack of experience, she is expected to be guided mainly by her father, who is back after his exile in the UAE over corruption charges, following a compromise with the establishment.

The developments come at a time of instability in India's Indian Ocean neighbourhood to the east — the ouster of Bangladesh Prime Minister Sheikh Hasina has sent the country into a period of uncertainty, which the interim government must contend with. The developments follow a spurt in violence between militant groups and Myanmar's embattled junta that imperil India's investments as well as peace along the border with India's north-east. With Sri Lanka also heading for presidential elections in September, Thailand's crisis has cast another shadow over plans to hold the BIMSTEC summit in Bangkok on September 4. Many agreements to be adopted on digital payment mechanisms, connectivity, and maritime cooperation have already been negotiated, and it is to be hoped that the summit will now not need to be put off. While Ms. Paetongtarn's election may suggest some stability in the short term, New Delhi must keep its shock absorbers on, to deal with other surprise crises and seemingly chronic instability in the neighbourhood.

THAI PM'S DISMISSAL COULD STALL BIMSTEC MEET, MODI'S PLANS TO TRAVEL TO BANGKOK

The decision of Thailand's Supreme Court to dismiss Prime Minister Srettha Thavisin from his post on Wednesday cast a shadow over the BIMSTEC Summit to be held in Bangkok next month. Prime Minister Narendra Modi is due to travel to Bangkok for the Summit of the Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation (BIMSTEC) of seven regional countries on September 4, including Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand.

Escalating violence in Myanmar, the dramatic ouster of Bangladesh PM Sheikh Hasina on August 5, and upcoming presidential elections in Sri Lanka on September 21 had already raised questions over high-level participation in the summit. With Muhammad Yunus sworn in as the chief of the interim government in Dhaka, many have also speculated that Mr. Modi would forge ties with the new Bangladeshi regime that would attend the BIMSTEC summit.

With the host country's PM dismissed, all eyes will be on how soon the ruling coalition in the Thai Parliament will replace the "caretaker cabinet" with a newly selected Prime Minister, and whether the BIMSTEC summit would need to be put off.

Officials said it was too early to know about BIMSTEC as the development in the Thai court was "totally unexpected".

The uncertainty could also affect Mr. Modi's plans to visit Singapore on his return journey, where officials confirmed to The Hindu, he is due to stop over for a bilateral meeting with Singapore Prime Minister Lawrence Wong on September 5. Ahead of the visit, the India-Singapore Ministerial Roundtable (ISMR) "3+3" talks, involving Foreign, Finance and Trade Ministers of both countries, are scheduled in Delhi on August 25.

According to sources, the ISMR meeting has been delayed since the talks were last held in 2022, due to difficulties in matching the schedules of all six Ministers. While India has "2+2" format talks with the U.S., Russia, Japan, Australia and U.K., Singapore is the only country with which it holds "3+3" discussions.

The BIMSTEC and Singapore meetings are part of a number of initiatives involving India's "Act East" policy in the next few weeks. In his third tenure in office, Mr. Modi has already hosted Ms. Hasina in June and Vietnam PM Pham Minh Chinh in July, and will host Malaysian PM Anwar Ibrahim on August 19. External Affairs Minister S. Jaishankar and Defence Minister Rajnath Singh will also host their Japanese counterparts for the "2+2" meeting in Delhi on August 20.

The agenda for the BIMSTEC Summit was discussed when Foreign Ministers of the regional grouping met in Delhi on July 11-12 for a retreat hosted by Mr. Jaishankar.

On August 7, Commerce Minister Piyush Goyal also addressed a BIMSTEC economic meeting, pushing for the removal of tariff and non-tariff barriers, trade facilitation, and negotiations for a Free Trade Agreement (FTA) among BIMSTEC countries, all of which are expected to be discussed during the summit.

EXPRESS VIEW: RUMBLES IN RAKHINE

Close to 200 civilians, most of them from Myanmar's marginalised Rohingya community, were killed earlier this week in an artillery and drone attack on the country's Rakhine province. The survivors have blamed the Arakan Army, the armed wing of the Rakhine Group, one of the main ethnic outfits resisting Myanmar's Tatmadaw regime, for the atrocity. The militant group has denied responsibility, offered condolences, and blamed the junta. However, by all accounts, the needle of suspicion of most observers points to the predominantly Buddhist Arakan Army. In the last six months, as the hold of the junta has weakened in large parts of Myanmar, the Arakan Army has replaced it in targeting the Rohingya. The Rakhine outfit has, reportedly, torched entire villages, at least three in the past six months. The last attack happened while a Rohingya group was trying to cross over into Bangladesh.

In the past seven decades, ethnic armed groups have fought variously for independence, autonomy and federalism in Myanmar. In the country's latest spell under military rule, these groups have emerged as among the most serious challengers to the junta. The Arakan Army has been steadily carving out areas independent of the Tatmadaw. It claims to speak for the entire Rakhine region. However, unlike some other opponents of the military regime, it views federalism as a subterfuge for imposing the rule of the gun. In more than one way, it copies the practices of the Tatmadaw. For instance, like the military regime, the Arakan army and its close ally, the Myanmar National Democratic Alliance (MDAA), use a combination of force and incentives — the promise of citizenship, for instance — to recruit the Rohingya. In April, some Rohingya conscripts to the Myanmar Army reportedly burnt down the homes of Buddhist families. The incident provoked another attack on the predominantly Muslim villages, and again, the Arakan Army denied responsibility.

The latest spell of violence against the Rohingya has triggered another wave of immigration of this beleaguered community to Bangladesh. Given the latest churn in India's eastern neighbourhood, New Delhi should keep a close watch on the developments in the Rakhine region. Both the Arakan Army and the MDAA have close links with China. Especially worrying is the fact that large parts of the Kaladan Road Project, which aims to link Kolkata with Sittwe seaport in Rakhine Province and develop road and river links between Myanmar and Mizoram, are now under the Arakan Army's control. Delhi must keep all diplomatic options open to secure India's interests in this troubled region.

NATION

WILL SAUDI'S NEW LAW AID MIGRANT WORKERS?

The story so far:

The Kingdom of Saudi Arabia, one of the world's largest recipients of migrant domestic workers (MDWs), will roll out a new domestic workers law in September. The six GCC states (Saudi Arabia, the UAE, Qatar, Kuwait, Oman, and Bahrain) employ close to 5.5 million migrant domestic workers, and all of them exclude MDWs from labour laws, with only four having passed specific domestic worker laws.

How many migrants work in Saudi Arabia?

In Saudi, as of the first quarter of 2024, there were 39,13,925 migrant domestic workers with 27,32,344 males and 11,81,581 females, making up 25% of the total workforce. The exclusion of these workers from the labour law leaves huge gaps in protection, as monitoring mechanisms such as labour inspections, complaints mechanisms, and the Wages Protection System do not apply to the sector. These vulnerabilities are further exacerbated by the systemic marginalisation of migrant workers under the Kafala system. The employer-tied visa system leaves lower-income migrant workers at the absolute mercy of their sponsors. In effect, the state has outsourced the immigration regime to individuals, the majority of whom are citizens.

The current and upcoming MDW laws do not address these protection gaps sufficiently. It is common knowledge that female MDWs face extreme abuse at the hands of their employers within households and by officials when they seek remedy. Saudi Arabia's regulations have failed to address these issues, and the broader justice mechanism that fails migrant workers in general is especially indifferent to the plight of MDWs.

Saudi still does not have a minimum wage, and mandatory referral wages apply only when prescribed in bilateral agreements by origin countries. This means MDWs are not only paid poorly but there are no clear calculations for overtime, though almost all of them are overworked.

Who are migrant domestic workers?

They are employed by individuals to render services in their household. The combination of exclusion from labour laws and the stranglehold of the Kafala system results in employers having absolute control over domestic workers. Saudi has 14 categories of domestic work. Some categories are recent additions, and concerningly, go beyond household work to roles requiring specialist skills.

As per the official data, there are over 20 lakh workers who fall under the category 'servants and house cleaners' — referring to domestic workers, nearly 60% of whom are female. The second most recruited category is drivers, at 18,17,120, almost all of whom are male. Saudi is the only GCC state where male domestic workers constitute the majority in the sector, at nearly 70%.

How does the Kafala system work?

GCC citizens are wealthy and can afford 'engines of liberation' — mechanised consumer goods that were meant to reduce the domestic labour of women. This has not played out as desired in most patriarchal cultures, even if women are active in the labour economy and the dependence

on women's labour at home is still high. Large joint families living together demand a host of unpaid services that women in the household were once responsible for. With growing affluence and the assumption that domestic work is menial, these tasks are now delegated to paid MDWs, but the value placed on their work — and by extension them — remains low. Many of the mechanisms and institutions set up by Saudi to govern the sector tend to have an employer bias, including its Musaned system, the domestic worker recruitment platform, through which all aspects of the recruitment and employment of MDWs are regulated.

Consequently, the intersection of the Kafala system and labour law exclusion results in a type of bonded labour. The state makes it easy to recruit and employ migrant workers, resulting in extreme exploitation with impunity. The cost of recruitment excluding wages is steep — between U.S.$2,000 and U.S.$5,000 per worker — and employers feel they have 'bought' the worker, instead of seeing it as payment for services.

Is the new MDW law better?

Some notable features of the new law are a maximum of 10 working hours a day and entitlement to a weekly off day; prohibition of confiscation of identity documents; emphasis on workers' right to communication; workers have a right to terminate the contract without losing entitlements under certain conditions; compensation for unjust termination; one month paid leave yearly and employer must pay for the annual ticket home.

Saudi also introduced insurance on all new MDW contracts to protect workers and employers, the cost of which is built into the recruitment fees. More recently and quite significantly, the kingdom included all new MDWs in its WPS from July, and will gradually cover all existing MDWs by the end of 2025.

What are the persisting concerns?

Saudi has a poor record of implementation, especially when it comes to protecting the rights of migrant workers. Wage theft and labour exploitation are rampant, but employers are rarely held to account. When it comes to MDWs, especially women, they cannot leave the employer's household without permission and there's a risk of being reported as absconding (huroob).

Though the absconding regime has been reformed, making it more difficult to file false charges, and giving workers more time to challenge false accusations, the law still can be weaponised by abusive employers. The lack of labour inspections, limited access to communication, and language barriers make it difficult both for the state to assess the impact of reforms and for workers to report violations.

What is the status of Indian MDWs?

At 26.5 lakh, Indians constitute the single largest migrant population in the kingdom. Though Saudi does not furnish nationality-wise disaggregated data, by several estimations, the domestic work sector comprises a large percentage of Indians working as drivers, and also in other categories.

Recruitment of Indian MDWs must be through the eMigrate system. India's minimum referral wage for the sector is SAR1,500 (₹33,400). Special provisions for female MDWs — minimum age must be 30 — include a financial bank guarantee of U.S.$2,500 in favour of the Embassy in Riyadh. The contract must be attested at one of the missions in Saudi.

However, according to many workers in distress, consular support is limited at best to repatriation and there is no effort to help with access to justice or ensure workers receive all their entitlements before deportation. Given the size of the kingdom and the diaspora, the Embassy in Riyadh and the consulate office in Jeddah are not equipped enough to deal with these needs.

FIRST LEG OF PRESIDENT DROUPADI MURMU'S STATE VISIT TO FIJI, NEW ZEALAND, AND TIMOR-LESTE

The President arrived in Suva, Fiji on August 6, 2024. This marked the first-ever visit of an Indian Head of State to Fiji. She was honoured with Fiji's highest civilian award, the 'Companion of the Order of Fiji,' by President Ratu Wiliame Maivalili Katonivere. She praised the determination and resilience of the 'Girmitiya' indentured laborers who arrived in Fiji 145 years ago.

— The President landed in Wellington, New Zealand on August 8, 2024. She was received by Governor General Dame Cindy Kiro with a traditional 'Maori Powhiri' ceremony and accorded Royal Guard of Honour.

— The President reached Dili, Timor-Leste on August 10, 2024 on the final leg of her state visit. This is the first-ever visit by an Indian Head of State to this country. She was conferred the Grand Collar of the Order of Timor-Leste, the country's highest civilian award.

RETURN OF THE FOREIGN HAND

One had thought that a "rising India" is now self-confident and secure in its own skin; and that it had overcome the impulse to blame the "foreign hand" for any unwelcome or unanticipated development. But the shock of "losing an ally" in Dhaka seems to have triggered a Delhi derangement.

— Conspiracy theories pander to political prejudices and discourage common sense. They avoid reckoning with the causes of a political catastrophe staring in your face. You don't have to be a geopolitical genius to recognise that Sheikh Hasina was increasingly unpopular.

— Hasina appears convinced that the US overthrew her because she refused to give America a military base. She is not the only South Asian leader who is blaming the US for losing power.

— Pakistan's former prime minister, Imran Khan, has been at it since he was defenestrated in a successful no-confidence vote in the National Assembly in April 2022. Like Hasina, Imran Khan also thinks his refusal to give a base ("absolutely not" were his famous words) was what turned America against him.

— To be sure, the US military is looking for bases and facilities as it responds to the Chinese military challenge in Asia. But to suggest that the US so desperately needs bases in Bangladesh and Pakistan that it is organising coups would be outlandish.

— Hasina's story is about both triumph and tragedy. She survived against great odds, and saved the legacy of the nation's liberation from Pakistan. Over the last 15 years, Hasina turned Bangladesh into a fast-growing economy and a "model" for other developing countries, including Pakistan to follow… Like all tragic heroes, she had fatal flaws — the relentless determination to concentrate power in her hands and an inability to heal the deep political divisions in the country over its identity and history.

— India has every reason to regret Hasina's fall from power, but Delhi can't be detained by what happened in the last few days. It must look ahead and cooperate with the new rulers in Dhaka to build on the solid foundation she constructed for the bilateral strategic partnership.

For Your Information:

— If Hasina's 15-year old rule was tainted by the arrests of Opposition leaders, suppression of dissent and crackdowns on free speech, the protests against her regime fueled concerns of a return to political instability and reopening of past scars — many of them leftovers of Bangladesh's liberation movement, some going even further back to the Partition of the Subcontinent.

— Events in the week since he has taken over as the head of the interim government, have underlined that applying the healing touch and holding social peace should be Yunus's first priority.

HOW WILL SHEIKH HASINA'S EXIT IMPACT INDIA?

The story so far:

A week after protests in Bangladesh boiled over, forcing former Prime Minister Sheikh Hasina to flee to India, there's little clarity about her future. While the Narendra Modi government has given her shelter, it has also moved to engage the regime that replaced the Awami League government, even as it counts the cost of Bangladesh's political changes on India's relations with the country.

Is Ms. Hasina's ouster a setback for India?

Ms. Hasina's removal from power in Bangladesh is no doubt a dramatic setback for India, as both countries have transformed ties on every front in the past decade and a half. The worry is that all the progress made on the economic front, border security, defence, and strategic ties, trade and connectivity, and linking people-to-people could be undone.

What kind of transformation did her reign bring to relations between the two neighbours?

From her return to office (2009), Ms. Hasina made her intentions to forge strong ties with Delhi clear. She began a nationwide crackdown to shut down terror camps, a campaign against religious radicalisation, and extradited over 20 "most wanted" men accused of terrorism and crime to India. In sharp contrast to her predecessor Bangladesh Nationalist Party (BNP) Prime Minister Khaleda Zia's government, Ms. Hasina also worked on ending border tensions caused by illegal immigration into India, particularly the 2001 incident where brutal BDR-BSF clashes left 15 dead. Several border patrolling agreements and the signing of the historic 2015 land boundary agreement followed.

In India, the Manmohan Singh government followed by the Modi government gave Bangladesh trade concessions and low-interest Lines of Credit to help Ms. Hasina take a country, once called the "basket case" of the global economy, to a developing country, that outstripped its neighbours on human development indices. India and Bangladesh worked on enhancing trade through connectivity, border 'haats', andrail, road and river links. This year Ms. Hasina and Mr. Modi even essayed new defence cooperation. Though Ms. Hasina's government grew more and more authoritarian in the past decade, banning and arresting Opposition leaders, legislating tighter controls on the media, and filing hundreds of cases against any civil society group that criticised

her, New Delhi remained steadfast in supporting her. In turn, Ms. Hasina stood with India on every issue, from boycotting SAARC (South Asian Association for Regional Cooperation) over terrorism from Pakistan, to the Citizenship Amendment Act that set off protests in Bangladesh.

Bangladesh has become a lynchpin to India's regional connectivity plans to Southeast Asia and the Indo-Pacific, and an important buyer of Indian energy off the subcontinental grid. The worry is that many of the agreements signed, including the most recent power agreement with the Adani group, will now be reviewed.

Can New Delhi forge similar ties with the new government?

New Delhi has shown that it continues to engage the interim government and any future elected government in Dhaka. The Indian High Commissioner in Dhaka, Pranay Verma, attended the swearing-in ceremony of the new interim government led by Muhammad Yunus.

However, several issues complicate the Modi government's ties with the new regime in Bangladesh. Firstly, Ms. Hasina's presence in India is viewed with suspicion in Dhaka. External Affairs Minister S. Jaishankar's statement in Parliament that she has come to India just "for the moment" indicates that New Delhi would like to see her travel elsewhere until some of the anti-Hasina sentiments in Bangladesh die down. Things will get trickier if the new government there demands her extradition.

Secondly, elections in Bangladesh could throw up the BNP as winners, and India's experience with Ms. Zia's last stint in power (2001-2006) was bitter. During that time, Bangladesh became a haven for violent anti-India separatist groups, and China and Pakistan made inroads. It remains to be seen if two decades on, another BNP government will be different. Thirdly, Mr. Modi's appeal for the safety of Hindus and other minorities, as well as the Ministry of Home Affairs setting up a five-member committee to "maintain communication channels with their counterpart authorities in Bangladesh to ensure the safety of Indian citizens and people belonging to minority communities in Bangladesh," are being seen as partisan in Dhaka. Hundreds have been killed in violence in the past few weeks; Mr. Modi's appeal and setting up of the committee will further complicate Delhi-Dhaka ties.

Will Bangladesh's ties with other countries change?

The immediate impact of the changes in Dhaka will be felt in ties with the U.S., which was consistently inimical to the Hasina government, and has even been accused of instigating her downfall. Last year, the U.S. State Department passed a special visa policy to "promote democracy" in Bangladesh, seeking to sanction officials who attempted to subvert elections. This was targeted at Ms. Hasina and the Awami League, and thus ties with the new dispensation will likely improve. Bangladesh's ties with Pakistan had also been tense during Ms. Hasina's tenure, and that could change. Ms. Hasina had close ties with China, joining the Belt and Road Initiative and meeting President Xi Jinping. Beijing will likely forge equally strong ties with the new government in Dhaka.

WHAT IS THE STATUS OF HINDUS IN BANGLADESH?

Muhammad Yunus, head of Bangladesh's caretaker government, visited the Dhakeshwari Temple in Dhaka on Tuesday, and assured leaders of the Hindu community that "we are all one people", and "justice will be given to all".

Bangladesh's minority Hindus have faced more than 200 attacks in 50-odd districts since the fall of Sheikh Hasina's Awami League government on August 5. As policing collapsed, at least five people were reported killed in attacks on Hindu families, institutions, and temples.

The largest minority

Bangladesh's 2022 census counted a little more than 13.1 million Hindus, who made up 7.96% of the country's population. Other minorities (Buddhists, Christians, etc.) together constituted less than 1%. Muslims were 91.08% of Bangladesh's 165.16 million people.

The share of Hindus in the population varies widely across Bangladesh's eight divisions — from just 3.94% in Mymensingh to 13.51% in Sylhet.

In four of Bangladesh's 64 districts, every fifth person is a Hindu — Gopalganj in Dhaka division (26.94% of the district population), Moulvibazar in Sylhet division (24.44%), Thakurgaon in Rangpur division (22.11%), and Khulna in Khulna division (20.75%).

Hindus were more than 15% of the population in 13 districts, and more than 10% in 21 districts, according to the 2022 count.

Declining share in population

Historically, Hindus had a much bigger share of the population in the Bengali-speaking region that makes up today's Bangladesh. At the beginning of the last century, they constituted about a third of the population of this region. There has been a significant demographic shift since then.

Every census since 1901 has indicated a decline in the share of Hindus in the population of what is today's Bangladesh. This decline was the steepest between the censuses of 1941 and 1974, i.e. when Bangladesh was East Pakistan.

Notably however, only the 1951 census reported a significant fall in the absolute numbers of Hindus compared with the previous (1941) count — from about 11.8 million to about 9.2 million. The number recovered gradually to reach the pre-Partition level of 11.8 million in the 2001 census.

The population of Muslims in this region rose from about 29.5 million in 1941 to 110.4 million in 2001. The increase in the proportion of Muslims in the population — from an estimated 66.1% in 1901 to more than 91% today — corresponds to the percentage decline in the Hindu population during this time.

Multiple factors — including some that predate the Partition — are behind this change.

Fertility rates differential

According to estimates by scholars, the fertility rate among Muslims has historically been higher than that of Hindus in Bengal. Data from the first census of India (1872) onward support this hypothesis, primarily based on a comparison between Hindu-majority West Bengal and Muslim-majority East Bengal.

The American anthropologist David Mandelbaum argued that the impact of religion on the differential fertility rates in Bengal was indirect, and acted primarily through educational and economic factors. (Human Fertility in India, 1974) Muslims across Bengal belonged to the lower socio-economic strata and lagged in education — both factors associated with higher fertility

rates. They were also more rural, and engaged in agriculture, again a factor associated with larger family sizes and consequently, fertility when compared to urban households.

This trend continued after Partition. The total marital fertility rate (a lifetime measure of marital fertility) of Muslims was 7.6 children per woman compared with 5.6 for Hindus, demographers J Stoeckel and M A Choudhury wrote in their 1969 paper 'Differential Fertility in a Rural Area of East Pakistan', published in the journal The Milbank Memorial Fund Quarterly.

While fertility rates in both communities have fallen since, the total fertility rate of Hindus was 1.9 children per woman compared with 2.3 for Muslims in 2014, M Moinuddin Haider, Mizanur Rahman, and Nahid Kamal wrote in their 2019 paper 'Hindu Population Growth in Bangladesh: A Demographic Puzzle' published in the Journal of Religion and Demography.

Partition and migration

Bengal and Punjab were the two provinces of British India that were divided between India and Pakistan on the lines of religion. The division was haphazard, often arbitrary, and left a trail of violence and trauma whose reverberations can be felt even now. However, in Bengal, unlike Punjab, there was no massive, state-facilitated exchange of population across the new border in 1947.

Historian Gyanesh Kudaisya wrote that 11.4 million Hindus (42% of the Hindu population of undivided Bengal) remained in East Bengal after Partition. "In 1947, only 344,000 Hindu refugees came into West Bengal, and the hope lingered among the minorities of East Pakistan that they could continue to live there peacefully," Kudaisya wrote. ('Divided Landscapes, Fragmented Identities: East Bengal Refugees and Their Rehabilitation in India, 1947-79' in The Long History of Partition in Bengal: Event, Memory, Representations, 2024)

The movement of refugees took place through the 1950s and 1960s, and volumes varied based on community relations between Hindus and Muslims. Even when major riots were not taking place, Hindus in Bangladesh faced what scholars Sekhar Bandyopadhyay and Anasua Basu Ray Chaudhury called "'conjunctural violence' caused by the specific circumstances of Partition". This did not amount to "more than verbal abuse and minor physical intimidation, prompted by an unusual resource crunch and severe scarcity of space caused by the steady flow of Muhajir migration from India". (Caste and Partition in Bengal: The Story of Dalit Refugees, 1946-1961, 2022).

Kudaisya wrote: "1948 saw an influx of 786,000 people into India, and in 1949, over 213,000 Bengali refugees crossed over the border into West Bengal… An estimated 1,575,000 people left East Bengal in 1950…another 187,000 refugees came [in 1951], followed by another 200,000 in 1952… 76,000 persons coming to India in 1953, 118,000 in 1954, and 240,000 in 1955… In 1955, when Pakistan adopted an 'Islamic' constitution, the number of incoming refugees again mounted to 320,000… This process of gradual displacement continued throughout the 1960s."

Assam (including present-day Meghalaya, Nagaland, and Mizoram), West Bengal, and Tripura recorded unprecedented increases in population between 1951 and 1961, which scholars attribute entirely to the arrival of refugees from East Pakistan.

Another wave of migration took place in 1971, as the Pakistani Army and its collaborators went on a murderous campaign against Bengalis before the Liberation War. According to Indian

estimates, approximately 9.7 million Bengalis sought refuge in India during the conflict, around 70% of whom were Hindu.

"The West Pakistani generals had calculated that by forcing millions of East Pakistani Hindus to flee to India they would weaken Bengali nationalism as a political force," Sanjib Baruah wrote for The Indian Express in 2021.

Since the formation of Bangladesh, migration of Hindus into India has decreased. Porous borders, well-established familial and kinship networks in India, and periodic inter-religious tensions in Bangladesh are drivers of this migration.

THREE NEIGHBOURHOOD QUESTIONS

"In less than three years, Indian foreign and security interests have suffered severe setbacks in three countries in India's immediate neighbourhood."

— "On August 5, Prime Minister Sheikh Hasina, the mainstay of India's Bangladesh policy, had to resign at short notice amidst widespread and violent protests and flee to this country."

— "On November 17, 2023, Mohamed Muizzu was sworn in as President of Maldives…He is committed to diminishing India's role in the island country while enhancing China's presence…And, on August 15, 2021, Afghanistan's President Ashraf Ghani, in whom India had invested so much diplomatic capital, had to fly out of the country even as the Taliban took over."

— "Were these grave reverses the consequence of misjudgements of those in charge of the country's foreign and security policies or do the reasons lie in the structures of policy making in these critical areas."

— "It is essential that the political and security classes introspect on these issues, avoiding political point scoring. The nation is facing such significant security challenges that it cannot afford the luxury of politics as usual on these matters."

— "The government, apart from the judgement and instincts of its top leadership, has to rely on the professional advice given by the various ministries, organisations and agencies which handle India's external interests. It has to be ensured that they work harmoniously. A brief consideration if this is so would not be out of place in view of the adverse impact to India's interests in the cited cases of regime change."

— "In 1968, India created its external intelligence service with the mandate to ensure that it develops the skills to explore and bring forth the subterranean which impacts India's interests. It has a special role to play in the neighbourhood. Diplomats and officers of the external intelligence, MEA, other concerned ministries and the external intelligence agency have different but complementary roles and methods to safeguard and promote national interest. They have to avoid the temptation to tread into the others' mandate."

MALDIVES A KEY PARTNER IN MAINTAINING STABILITY IN REGION, SAYS JAISHANKAR

The Maldives is a key partner for India in the Indian Ocean region and the two nations aspire to turn their cooperation into a modern partnership, External Affairs Minister S Jaishankar said on Sunday.

— Jaishankar's remarks came as he along with his Maldivian counterpart Moosa Zameer attended the handing over ceremony of Addu Reclamation and Shore Protection Project and inauguration of the 4-lane Detour Link road project facilitated by the Government of India under the Line of Credit of EXIM Bank.

— "The Maldives for us is a key partner in the Indian Ocean region. It is very much at the heart of our Neighbourhood First policy. And it is therefore very natural that the cooperation between our two countries has moved beyond the traditional role. And today really aspires to be a modern partnership," Jaishankar said.

— India has partnered with the government of Maldives on the Addu Reclamation and Shore Protection project to find a sustainable way to develop it as a regional hub, he said.

For Your Information:

— The Maldives is an essential ally for India, helping to protect its maritime borders and monitor the wider Indian Ocean region, where China is waging war. The archipelago is located about 300 nautical miles (560 km) off the west coast of India and about 70 nautical miles (130 km) from Minicoy Island in Lakshadweep.

— The Maldivian Democratic Party has welcomed President Mohamed Muizzu-led government's "sudden recalibration" of its India policy and said Male has always been confident that India will always be the first responder any time the Maldives "dials an international 911".

FREEDOM NOTES

Prime Minister Narendra Modi's first Independence Day speech in his third term in office — the eleventh since 2014 — sought to signal continuity and authority, particularly in the context of the fact that he is now leading a coalition government. He called for a uniform civil code, terming it a secular measure agnostic of religious faiths, 'one nation, one election,' and increased safety of women against the backdrop of the sexual assault and murder of an on-duty doctor in Kolkata recently. Mr. Modi said there were attempts to destabilise the economy of the country, echoing the BJP's view on a recent report by U.S.-based short seller Hindenburg Research that has accused the head of stock market regulator SEBI of conflict of interest. Mr. Modi criticised the continuing trend of dynastic politics and suggested that one lakh first generation young leaders should enter electoral politics at various levels, and also expressed hope for peace being restored in Bangladesh. Reviewing his two terms in power, he claimed that India has made great strides in manufacturing, and in fighting corruption, and vowed to stay the course regardless of obstacles. The desirability of a uniform civil code, or more youngsters in politics or fighting corruption is not in question. But unfortunately, all these remain contentious issues, largely due to the government's partisan approach.

That Leader of the Opposition Rahul Gandhi was seated in a back row of the audience at Red Fort where Mr. Modi delivered his customary address is instructive. The government's explanation for this breach of precedent, that the seats in the front rows were given to members of this year's Olympic team, is hardly a reasonable one. The government needs to be less unilateral and more consultative if it is truly committed to advancing a unified national agenda in the seventy-eighth year of India. A uniform civil code in a country as diverse as India requires consensus building, and ending the opportunistic use of the issue to attack the Muslim community. The government cannot fight corruption by investigating only Opposition leaders and overlooking serious charges

against functionaries such as the SEBI chief. Criticism of the government is not a conspiracy to destabilise the nation, and labelling it as such is appealing only to a diminishing number of people. Independence Day should be a good occasion as any other to remember that the nation is not the government, and certainly not synonymous with the party in power. The freedom is for keeping the government of the day accountable to the people through a political process.

RULE AND EXCEPTION

The Supreme Court of India's order granting bail to Delhi Deputy Chief Minister Manish Sisodia is a reminder to judges that they cannot deny bail as a form of punishment. It is also a reminder that the fundamentals of bail law are quite simple. Where a case turns mainly on documentary evidence, bail is the norm, and it is to be denied only if the suspect is a flight risk and is unlikely to appear before the court for trial, or is in a position to influence witnesses and tamper with evidence. The possibility of the trial not beginning anytime soon or that it may be a protracted one is also a circumstance warranting grant of bail. In times when Opposition political leaders are targeted and investigative agencies have no compunction about being seen as branches of the ruling party, the mere act of releasing a person on conditional bail after giving enough time for the completion of the investigation is seen as something extraordinary. In the Delhi liquor policy case, Mr. Sisodia was arrested by the CBI and then the Enforcement Directorate in early 2023. Delhi Chief Minister Arvind Kejriwal's turn came this year, but he managed to get interim bail in the ED's case concerning money-laundering charges, while he is still in custody in connection with the CBI's corruption case.

The order of Justices B.R. Gavai and K.V. Viswanathan has done more than pave the way for Mr. Sisodia's release after nearly a year-and-a-half in prison. It has foregrounded the principle that the rigours of a bail-denying law, the Prevention of Money Laundering Act in this case, need not stand in the way of a person's conditional release if there is a prolonged delay in the trial proceedings. It has also brought under focus the tendency among some judges to "play safe". The Bench has rightly highlighted the tendency among some judges to ignore the principle that bail is the rule, and not the exception. In Mr. Sisodia's case, based on the ED's assurance that the trial would be complete within six to eight months, the Court had allowed him to apply for bail again if the trial progresses too slowly or is protracted. This was on October 30, 2023. However, both the trial court and the Delhi High Court paid no heed to the Supreme Court's pointed reference to the need for speedy trial, but dismissed his application on merits and claimed that any delay in the commencement of the trial was attributable to the various petitions he has filed. Judges should guard against a likely loss of public trust in the judiciary's ability to protect the liberty of citizens and ensure fair trial without prolonged and needless pre-trial imprisonment.

SOCIO-ECONOMIC DIFFERENTIALS WITHIN SCS/STS

A common critique of the group-based approach to affirmative action policies is that it treats the potential beneficiary group as a homogenous class. In reality, as critics argue, rarely does a group turn out to be a homogenous class. Even within an identified disadvantaged group, families are often found to be placed poles apart in terms of access to material as well as symbolic resources. Therefore, group-based affirmative action policies are seen as benefiting relatively advantaged families from the beneficiary group. An inevitable consequence is widening intra-group inequality. This, in a way, goes against the very purpose of affirmative action, which is, achieving greater equality in society.

Reservation of seats for Scheduled Castes (SCs) and Scheduled Tribes (STs) in educational institutions, public employment, and legislative bodies is constitutionally mandated. These two historically disadvantaged categories consist of a large number of subgroups of different ethnic origins, living in different spatialities and social relations. The outcomes of the reservation policy have generated discontent and dissension within. It has been asserted that the benefits of the reservation have accrued to a few subgroups within SCs/STs. This has led to the demand for a more equitable distribution of benefits by creating sub-classification within SCs/STs based on degrees of disadvantage and deprivation.

This demand has also reached the Supreme Court. In 2004, a five-member Bench of the Supreme Court (in E.V Chinnaih vs State of Andhra Pradesh) affirmed SCs/STs as a homogenous class and, ruled against sub-classifications within these umbrella categories, horizontally or vertically. However, in a landmark judgment on August 1, 2024, the apex court allowed sub-classification and paved the way for sub-quotas within the SC/ST quota. While the Court has endorsed the existence of socio-economic differentials within SCs and STs and the idea of substantive equality over nominal equality, little analysis is available to get a sense of the extent of inequalities characterising these categories. This is even though India's population census collects and duly publishes data on socio-economic indicators for individual sub-groups within SCs and STs.

Here, we highlight socio-economic differentials within SCs/STs based on data from the 2011 population census. Owing to the space constraints, our analysis is confined to a few large States. Because the number of sub-groups comprising SCs and STs is too large in these States, we pick up two numerically important sub-groups (one being well-off and the other relatively deprived) to reflect the extent of socio-economic disparities.

Census data show that different sub-groups continue to have uneven exposure to urbanisation. Across States, while some sub-groups are marked by a decent level of urbanisation, others are overwhelmingly rural-based. Differential urban exposure shows a high correlation with opportunities for life chances. Invariably, sub-groups with higher urbanisation demonstrate higher levels of educational attainment and lower level placement in precarious forms of employment.

Among SCs, for example, Musahars in Bihar and Uttar Pradesh seem to be the most disadvantaged. Fewer members among them are likely to attain a high school degree. The number of those with a college degree is negligible. In contrast, Pasis in Bihar and Chamars in Uttar Pradesh are only a little way off the State average. In Maharashtra, sub-groups, such as Bhambis and Mangs, occupy disparate levels of educational and occupational attainment, with the former being much better off compared with the latter. Likewise, Chamars in Punjab are ahead of Mazhabis in terms of access to education and exposure to urbanisation. The proportions of matriculates and graduates among the former were 1.5 times higher than the latter. In West Bengal, Namsudras and Bagdis stand poles apart in terms of urbanisation, educational attainment, and sources of livelihood.

Socio-economic differentials among STs are as pronounced as among SCs. In Chhattisgarh, for instance, the Halba tribes are not only far more urbanised than and educationally ahead of the Baiga tribes but also have fewer members working as agricultural labourers when compared with the latter. Similar is the case between the Oraon and Mal Paharia tribes in Jharkhand. Oraons are also the most educated tribes in the neighbouring State of Odisha and far ahead of Bhumia — one of the tribes with minimal access to education. In Rajasthan, the Meenas are well known as the most educated and economically advanced tribal group. The developmental processes seem to have completely bypassed the Garasias, one of the largest tribal sub-groups of the State.

The above analysis brings into sharp focus the persistence of socio-economic disparities. It suggests that different sub-groups within SCs and STs are at disparate levels of socio-economic development. Given this, it is also not difficult to infer who might have most benefited from the undifferentiated reservation regime. The course to be taken by the political class is not known, but sub-classification within SC/ST and the creation of sub-quotas can be reasonably expected to result in a more equitable distribution of benefits of reservation.

SC REFUSES TO RESTRICT STATES' POWER TO TAX MINES ONLY PROSPECTIVELY

The Supreme Court on Wednesday declined pleas by assessees, including public sector undertakings, to restrict its July 25 majority judgment which upheld the States' power to tax mines and minerals rights, to have only prospective effect.

The majority on the nine-judge Bench, with the exception of Justice B.V. Nagarathna, who had originally given a dissenting opinion, held that the prospective application of the July 25 judgment would run the risk of invalidating many State laws.

"The power to levy tax is an incidence of sovereignty. If we are to give a prospective application to the judgment, it would result in a situation where the legislation enacted by the States in pursuance of their plenary powers may conceivably be invalidated... This would not be a constitutionally just outcome," the Supreme Court reasoned.

However, the Bench introduced conditionalities for the retrospective levy of tax by the States. The court declared that States could levy tax on mines and mineral rights from April 1, 2005. Demands of tax would not operate for transactions prior to this cut-off date.

"The total amount, that is the principal plus the interest, due by the assessees in the pending matters may be substantial in comparison to their total net worth. The Steel Authority of India has stated on affidavit that retrospective application of the July 25 judgment will lead to revival of cumulative demands to the tune of approximately ₹3,000 crore from different States," the court observed. Again, the payment of retrospective tax for the period between April 2005-July 2024 needs to be paid only in instalments staggered across 12 years, commencing from April 1, 2026.

"It is the prerogative of the State legislatures to determine whether to forego the dues for the period before July 25, 2024," it observed.

WHY IS THE DELHI HC HEARING A PLEA AGAINST THE EXCLUSION OF SECTION 377 FROM THE NEW CRIMINAL LAWS?

The Delhi High Court on Tuesday (August 13) directed the Centre to clarify its stance on non-consensual sexual offences against LGBTQIA+ persons and men under the Bharatiya Nyaya Sanhita, 2023 (BNS). The new criminal law came into force on July 1, 2024, and replaced the Indian Penal Code, 1860 (IPC).

The development has come nearly six years after the Supreme Court in Navtej Singh Johar v. Union of India decriminalised homosexuality by ruling that Section 377 (unnatural offences) of the IPC does not punish people in same-sex relationships. This provision punished anyone who "voluntarily has carnal intercourse against the order of nature with any man, woman or animal". Though the SC reinterpreted the provision, Section 377 remained in the text of the IPC until the BNS came into force — where it was deleted entirely.

However, this may have unforeseen consequences, according to the petitioners who have approached the Delhi HC. They have argued that Section 377 provided protections to men and LGBTQIA+ individuals from non-consensual sexual intercourse even after the SC's 2018 verdict.

What are the concerns surrounding the removal of Section 377? Does the BNS provide any alternate protections?

Rape under the BNS and 'Unnatural offences' under the IPC

Chapter V of the BNS is titled "Of offences against women and child" and provides the definition and punishment for the crime of rape under Section 63. However, the language of the section is gendered — it only considers rape in the context of a man committing the crime against a woman.

On the other hand, Section 377 (while it was still on the books) severely punished non-consensual intercourse "with any man, woman or animal". Offenders could be punished with imprisonment for life and a fine.

In 2018, the SC delivered its verdict on the challenge to Section 377. It referred to those areas of the section that criminalised consensual unnatural sex as "irrational, indefensible and manifestly arbitrary". The court also noted that Section 377 was used as a weapon to harass members of the LGBTQIA+ community, resulting in discrimination against them.

"Section 377 is arbitrary. The LGBT community possesses rights like others. Majoritarian views and popular morality cannot dictate constitutional rights," the court said.

However, the court clarified that its judgement was limited to decriminalising consensual sex between adults.

In its 2023 report on the BNS, the Parliamentary Standing Committee on Home Affairs recommended retaining Section 377 in the BNS. It said, "Following this decision (in Navtej Singh Johar), section 377, IPC is now applied to prosecute only non-consensual sexual acts…[I]n the Bharatiya Nyaya Sanhita, 2023, no provision for non-consensual sexual offence against male, female, transgender and for bestiality has been made."

The case at the Delhi HC so far

On Monday (August 12), a Delhi HC bench comprising Acting Chief Justice Manmohan and Justice Tushar Rao Gedela began to hear a PIL filed by lawyer Gantavya Gulati. The petitioner argued that "Section 377 of IPC in its absence poses threat to every individual but especially LGBTQ persons". The petitioner also said the BNS does not contain any protections for a man who is sexually assaulted by another man.

The Centre, however, argued that the court could not direct the legislature to enact a provision, even if there were an anomaly in the law. The government's counsel pointed out that a representation had already been filed flagging this issue with the union government and is pending consideration.

The bench directed the Centre to return on August 28 to clarify its stance on non-consensual sexual offences following the deletion of Section 377.

Alternative protections under the BNS

Section 36 of the BNS provides every person with the "right of private defence" to protect their own body or the body of another person "against any offence affecting the human body". This right also extends to protecting property from the offences of "theft, robbery, mischief or criminal trespass".

Section 38 details the situations where this right allows the "voluntary causing of death or of any other harm to the assailant". This includes situations where a person is faced with "an assault with the intention of committing rape" or "an assault with the intention of gratifying unnatural lust". Unlike the offence of rape, these provisions are not limited to women or any specific gender.

Section 140 also punishes kidnapping or abduction where the victim is "subjected to grievous hurt, or slavery, or to the unnatural lust of any person". However, in both cases (private defence and kidnapping) the phrase "unnatural lust" has not been defined.

VIOLENCE, MOST FOUL

Some excesses are more excessive than others; it is fair to count rape among the most egregious violations of human rights. The recent horrific rape and murder of the Kolkata postgraduate medical student in what should have been a haven for her — a State-run hospital she was working in — must give the nation pause. The state and circumstances in which the body was found leave no room for any doubt that it was a most dastardly violent act, and brazen in that it occurred within a hall in the supposedly safe confines of the government medical college hospital. Every rape, unfortunately, is measured in severity by the amount of attention it garners from the public, and the outrage beast is selective. That is where the problem lies: even enforcement authorities seem to gauge public outrage before acting upon crimes against women. The Kolkata case was a classic example: the parents of the slain doctor were reportedly told that she had committed suicide initially, a blatant lie. Whereas, it could not have escaped the attention of anyone at the scene of crime, but particularly so medical professionals, that here indeed was dreadful assault and murder. Was the wilful cover-up necessitated by the fact that both the home and health portfolios are being held by none other than the Chief Minister of the State? Or to avoid responsibility for the administrative lapses that allowed such a crime to take place? The government, sadly, preferred to wait until the public outrage over the grisly crime became impossible to contain politically.

Indignant protests broke out in Kolkata and across the country, bolstered mostly by medical students and post graduates in hospitals, demanding safety and security as they engaged in healing people. Multiple acts of violence against doctors have marred the peace between doctors and patients, in the country, for years now. The murder, last year, of Dr. Vandana Das in Kerala by a patient with mental illness is recent history, but the frequent attacks on doctors and nurses during COVID-19, or when there are adverse health outcomes, have been recorded too. The Indian Medical Association has said that for doctors, pedestrian working conditions, an inhuman workload and harassment in the workplace are the reality, even without violence queering the pitch. The move to drop the 2019 proposal to introduce legislation to protect doctors and their workplace was a lapse, and it should be remedied forthwith. Above all, the state should proactively take steps to prevent rapes, making the punishment a deterrent. The nation cannot afford to fail one more doctor or hospital caregiver. Those tasked with saving lives should not have to fear for their own.

EVEN A WOMAN CAN BE BOOKED AS A PERPETRATOR OF CHILD SEXUAL ABUSE: HC IN POCSO CASE RULING

Holding that the law cannot be given a "restrictive meaning," the Delhi High Court in a significant ruling held that even a woman can be booked as the perpetrator of child sexual abuse.

— Justice Anup Jairam Bhambhan, in an August 9 judgment on a revision plea filed by a woman accused under the Protection of Children from Sexual Offences (POCSO) Act, 2012, held that the accused must face trial under the Act.

— "The word "he" appearing in Section 3 of the POCSO Act cannot be given a restrictive meaning, to say that it refers only to a "male"; but must be given its intended meaning, namely that it includes within its ambit any offender irrespective of their gender," the ruling stated.

— The accused had argued that the offence of aggravated penetrative sexual assault under the POCSO Act "can never be made out against a woman" since the Act repeatedly uses the pronoun 'he'. The lawyers of the accused argued that the interpretation of Indian Penal Code provisions on rape, which only criminalises actions of a man, is similar to the definition of penetrative sexual assault in Section 3 of the POCSO Act.

EGG OR SPERM DONOR HAS NO LEGAL RIGHT ON CHILD: BOMBAY HC

The Bombay High Court on Tuesday held that merely donating eggs or sperm does not give legal entitlement to the donor to claim that he or she is the biological parent of the child.

Pronouncing the verdict that was reserved on August 2, a single-judge Bench of Justice Milind Jadhav dismissed the argument of a woman (petitioner's sister) who had volunteered to donate her oocyte (eggs) to her sister and brother-in-law who could not conceive naturally, and said the sister had no legitimate right to claim that she was the biological parent of the twins.

The Bench was hearing a plea filed by a woman (petitioner) who challenged a trial court order that refused to give her visitation rights and access to her twin daughters born through surrogacy.

Appearing for the petitioner, advocate Ganesh Gole argued that since the twin girls are of growing age, the petitioner needs to be given visitation rights. "When the petitioner failed to conceive naturally, the couple consulted a gynaecologist who advised them to go for altruistic surrogacy through an egg donor and that is when the petitioner approached her younger sister." the advocate said.

Later, the husband left the petitioner, took away the twins, and started living with the sister.

2005 guidelines

The judge referred to the National Guidelines for Accreditation, Supervision and Regulation of ART (Assisted Reproductive Technology) Clinics in India, enacted in 2005, and noted, "The younger sister of petitioner can have no right whatsoever to intervene and claim to be the biological mother of the twin daughters as argued. The submissions on behalf of the husband that his wife's younger sister being the oocyte donor is the biological mother stands rejected outrightly in view of the settled position in law on the basis of the guidelines and the Surrogacy Act enacted subsequently. The limited role of the younger sister of petitioner is that of an oocyte donor, rather a voluntary donor and at the highest, she may qualify to be a genetic mother and nothing more,

but by such qualification, she would have no intending legal right whatsoever to claim to be the biological mother of the twin daughters as the law clearly does not recognise so."

Justice Jadhav held that the lower court order that denied visitation rights to the petitioner was without proper application of mind. The court granted the petitioner visitation rights and access to the twin daughters.

AN OVERVIEW OF GOVERNANCE IN DELHI

The story so far:

The Supreme Court has ruled that the Lieutenant Governor (LG) of the National Capital Territory (NCT) of Delhi can nominate 10 aldermen to the Municipal Corporation of Delhi (MCD) on his own without the aid and advice of its council of ministers. This has added to the friction between the Union government, the Delhi government and the local government.

How did Delhi government evolve?

At the time of the commencement of the Constitution in 1950, Delhi was a Part C State. During the States reorganisation carried out in 1956, it was made a Union Territory to be governed by an administrator. The MCD was established in 1958, and a limited local government was established since 1966. Subsequently, as per the recommendations of the Balakrishnan committee (1989), the Constitution through the 69th amendment (1991) provided for a Legislative Assembly and council of ministers for the NCT of Delhi. However, the subjects of public order, police and land were excluded from the Delhi government; the Union government has control over them. The Government of NCT of Delhi Act, 1991 contains the detailed provisions relating to its legislature, executive and administration.

What are the issues?

Since 2015, the Union government led by the Bharatiya Janata Party (BJP) and the Delhi government led by Aam Aadmi Party (AAP) have been at loggerheads on various issues. While political differences play a pivotal role in such conflicts, there are also important legal angles. The judgments of the Supreme Court have resulted in amendments to the Government of NCT of Delhi Act that have curtailed the powers of the elected government in Delhi. A brief summary of these developments in the last decade is provided in the above Table.

Apart from the issues between the Union and the Delhi government, the MCD with its elected representatives add another dimension to the problem as was witnessed in the recent unfortunate loss of lives due to electrocution and flooding in Delhi. The public at large witnessed the shifting of blame between elected representatives at all three levels.

What can be the way forward?

As part of its judgment in 2023, the Supreme Court mentioned that there is a triple chain of accountability in a democracy. The officials are accountable to the ministers; the council of ministers are collectively responsible to the legislative assembly; and the legislative assembly members are accountable to the people. The constant tussle between various layers of government ruptures such a chain of accountability.

The NCT of Delhi is spread over 1,450 sq kms while the capital of our country 'New Delhi' that houses most of the central government offices and foreign embassies is around 50 sq kms. In the

U.S., Washington DC which is the capital district is spread only around 177 square kilometres. A similar approach may be considered where the area in 'New Delhi' of 50-100 square kilometres can be under the complete control of the Central government. The rest of the areas may be brought under the powers of the Delhi assembly. This would require a constitutional amendment after detailed deliberation and consensus. Nevertheless, under the existing set up, the spirit of the judgment of the Supreme Court in 2023 should be honoured.

This would ensure that the people of Delhi get responsible and responsive governance from all three layers of government irrespective of whichever party is in power.

ON AMENDMENTS TO THE WAQF ACT

The story so far:

On August 8, the Union government introduced a Bill in the Lok Sabha to amend the 1995 Waqf Act (1995 Act). The proposed amendments seek to significantly reform the law by enhancing the Centre's regulatory authority over waqf properties and, for the first time, permitting the inclusion of non-Muslim members in Waqf Boards. The draft legislation, proposed to be renamed the Unified Waqf Management, Empowerment, Efficiency, and Development Act, 2024, is heralded by the government as a comprehensive overhaul aimed at enhancing "the efficiency of the administration and management of the waqf properties." However, several Opposition parties have accused the Centre of floating the Bill without adequate consultation with stakeholders, claiming it encroaches upon the Muslim community's religious rights.

What is India's 'waqf' law?

In Islamic law, waqf refers to property dedicated in the name of God for religious and charitable purposes. This can include any movable or immovable property set aside for the public good, embodying an act of piety that allows Muslims to extend their charitable deeds beyond their lifetime. A waqf can be established through a formal deed or instrument, or a property can be deemed waqf if it has been used for religious or charitable purposes over an extended period. The proceeds from such properties are typically used to maintain mosques, fund schools or provide for the poor. However, once designated as waqf, the property cannot be transferred through inheritance, sold, or given away. A non-Muslim is also allowed to create a waqf as long as the objective of creating it aligns with Islamic principles.

In India, waqfs are regulated by the 1995 Act. Waqf properties are identified and delineated through a survey conducted by the State government. A survey commissioner, appointed under the Act, identifies these properties through local investigations, witness testimonies, and review of public documents. Once identified, the properties are recorded in the State's official gazette, and a list is maintained by the State Waqf Board. Each waqf is managed by a mutawalli (custodian) who oversees its administration. While similar to a trust established under the Indian Trusts Act of 1882, a waqf, unlike a trust, cannot be dissolved by a Board.

What is the role of the Waqf Board?

The 1995 Act establishes Waqf Boards in each State to oversee the administration of waqf properties within their jurisdiction. These Boards are considered juristic persons, allowing them to sue or be sued in a court of law. Each State Waqf Board has a chairperson and includes one or two nominees from the State government, Muslim legislators, recognised Islamic scholars, and mutawalli of the waqfs. The Act also mandates the appointment of a full-time Chief Executive

Officer for each Board, who must be a Muslim by faith and hold at least the rank of Deputy Secretary in the State government.

The Waqf Board is authorised to manage waqf properties and take measures to recover lost assets. It can also sanction the transfer of immovable waqf property through sale, gift, mortgage, exchange, or lease. However, this would require the approval of at least two-thirds of the Board members. Amendments to the 1995 Act in 2013 further strengthened the Board's authority and made the sale of waqf properties nearly impossible, as neither the mutawalli nor the Board had the right to sell a waqf property.

In addition to the State Waqf Boards, the legislation also establishes the Central Waqf Council — a national advisory body under the Ministry of Minority Affairs. The Council ensures the uniform administration of waqf properties across the country and is headed by the Union Minister of Minority Affairs. It also advises the Union government on waqf-related issues, including policy development, implementation of waqf laws, and resolution of inter-State disputes.

What are the key changes in the proposed law?

The definition of 'waqf' has been altered. Now, under the Bill, only lawful property owners who have practised Islam for at least five years are authorised to create 'waqf' properties through the execution of formal deeds. This revision abolishes the 'waqf by use' concept — which permits a property to be considered waqf based on usage, even if the original deed was disputed. Traditionally, waqf properties were often dedicated orally until formal documentation became standard practice.

To prevent any fraudulent waqf claims, the Bill states, "Any government property identified or declared as waqf property, before or after the commencement of this Act, shall not be recognised as waqf property." Additionally, the law also permits widows, divorced women, and orphans to be beneficiaries of proceeds from waqf assets.

Under the new Bill, the responsibility of surveying waqf properties, previously managed by survey commissioners under the 1995 Act, will now be assigned to district collectors or officers of equivalent rank. To improve the accuracy of waqf property records, the Bill proposes a centralised registration system. All information about waqf properties must be uploaded to this portal within six months of the new law's enactment. Moreover, any new waqf property registrations must be submitted exclusively through this portal to the Waqf Boards. Notably, the Bill omits section 40, which previously granted waqf tribunals the authority to determine whether a property qualifies as waqf. Instead, it designates the district collector as the final arbiter in such matters. Once a determination is made, the collector must update the revenue records and submit a report to the State government. However, the Bill makes it clear that the disputed property cannot be treated as a waqf property till the collector submits his final report. This implies that until the government decides the issue, a Waqf Board cannot be in control of the disputed land.

One of the most contentious aspects of the Bill is the proposed inclusion of non-Muslims in key waqf institutions — the Central Waqf Council, State Waqf Boards, and waqf tribunals. It empowers the Centre to appoint three Members of Parliament (two from the Lok Sabha and one from the Rajya Sabha) to the Central Waqf Council without specifying that they have to be Muslims. Under the 1995 Act, the three MPs to be included in the Council had to be from the Muslim community. But, as per the new Bill, State Waqf Boards have to include two non-Muslims and two women as members. The composition of waqf tribunals has been changed from a three-member body to a two-member body. The tribunal will now consist of a district judge and an officer of joint secretary

rank to the State government. Under the proposed law, tribunals must resolve disputes within six months, with a possible extension of six months.

Additionally, the Bill empowers the Centre to "direct the audit of any waqf at any time by an auditor appointed by the Comptroller and Auditor-General of India, or by any officer designated by the Central Government for that purpose." The Waqf Boards are required to audit their accounts annually, selecting auditors from a panel constituted by the State governments. Penalties will also be levelled upon mutawallis if they fail to maintain proper accounts.

The proposed law allows courts to intervene in waqf disputes. It removes the finality of decisions made by waqf tribunals, allowing aggrieved parties to appeal directly to the concerned High Court. This is aimed at increasing judicial oversight and curbing instances of arbitrary exercise of power by Waqf Boards or tribunals.

What are the potential implications?

Professor Faizan Mustafa, noted academician and Vice Chancellor of Chanakya National Law University, Patna, told The Hindu that while the amendments are a positive step, it is crucial to implement measures that adequately protect waqf properties without infringing upon the freedom of religion guaranteed under Article 25 of the Constitution.

"Rights vested in waqf properties hundreds of years ago cannot be taken over by executive officers without fair judicial determination," he added.

He also noted that the increased centralisation of waqf property management might undermine the autonomy of Muslim religious institutions. While welcoming the inclusion of non-Muslims and women in waqf governance, Mr. Mustafa questioned, "Will non-Hindus be allowed on Hindu temple boards in States such as Tamil Nadu, Kerala, and Karnataka?" He further asserted that excessive government control is at odds with the principles of economic liberalisation.

After its introduction in Parliament, the Bill was referred to a joint parliamentary panel for further scrutiny after the Congress-led INDIA bloc opposed the proposed law in its present form.

In March last year, the Union government apprised the Delhi High Court that close to 120 petitions challenging provisions of the 1995 Act are pending before courts across the country.

ON BROADCAST BILL, GOVERNMENT'S WELCOME STEP BACK

In November last year, the Ministry of Information and Broadcasting had placed the draft Broadcasting Services (Regulation) Bill in the public domain for comments. Last month, a new version of the Bill was reportedly shared with a few stakeholders. Several provisions have been met with legitimate criticism. Concerns have been articulated over the government's apparent attempt to exercise greater sway over online content, and curb views that it may deem as being critical of it, raising worries over freedom of speech and expression. Such fears are underlined when a government official, according to a report in this paper, cites the 'role a number of independent content creators played in the run-up to the 2024 Lok Sabha polls' in videos 'which made some sensational claims about the government and its senior leaders', as a key reason for the bill.

Several controversial provisions of the draft Bill warrant more careful consideration. It has sought to expand its scope from OTT content and digital news to social media accounts and online video

creators. It seeks to expand the definition of 'digital news broadcaster' to include publishers of news and current affairs content, also encompassing independent content creators. This could include users on platforms such as YouTube, Instagram and X, platforms that provide space to a vast multitude and help amplify news and views. The Bill could possibly include creators who reside outside the country as well — this, though, would run up against the wall of enforcement. These content creators need to intimate the government of their work, set up a content evaluation committee, and ensure its diversity — only programmes certified by these committees would be allowed to run. Such sweeping provisions, which could lead to greater interventions and curbs, posing hurdles for creators in the development of content and in the generation of revenue streams, don't square with the government's own attempts elsewhere to bolster the start-up ecosystem, and invigorate the digital economy.

After a pushback from several quarters, the government has done well to withdraw the draft Bill. The ministry has said that it 'is holding a series of consultations with the stakeholders,' and has allowed them till October 15 to place their comments. It has said that a fresh draft will be published after detailed consultations. This is the right step. Such far reaching regulations, besides being undesirable, will also be difficult to implement. The government must listen to all stakeholders before it goes forward with this bill.

MAKING IT RIGHT

The recent verdict given by the Bombay High Court indicates the kind of spanners that state governments have thrown in the RTE's track. That court set aside a government order issued earlier this year… This provision calls upon unaided private schools to reserve one-fourth of their seats for the poor. The Maharashtra government's order said that private schools need not implement this provision if there is a government school within a distance of 1 kilometre.

— Maharashtra is not the only state where the bureaucracy came up with this clever idea. The government gave two arguments in support of its order. One was about resources. If they are being spent for providing easy access to a government school, why should they be duplicated? This argument is rooted in the rule that the government will reimburse a private school for the cost of enrolling a poor child.

— The other argument put forward was about the Right to Education itself. It was not "absolute" in the sense that other fundamental rights are. This logic is quite popular; what is surprising is that a state government is using it, thereby revealing its lack of commitment to a law enacted by Parliament as a follow-up to a constitutional amendment.

— When the RTE was promulgated, it was expected to serve as a conscience raiser. The idea of giving every child the right to be at a school has waited for a long time. Gopal Krishna Gokhale tried to seek approval for it in the Imperial Legislative Assembly in 1911. He failed.

— The RTE's progress is far from reassuring. Amendments to the original Act have dented several key aspects that were intended to make elementary education experientially deep for children across the socio-economic divide. The biggest failure of the system to live up to RTE's vision is in teacher training. It has remained the weakest link in the policy chain.

— About 15 years ago, the J S Verma Commission, which was appointed by the Supreme Court, gave clear-cut guidelines to revamp teacher training. Our system has ensured that interest in these guidelines wouldn't last long. Interest in RTE itself has been waning for some time now.

NCERT REMOVES CARTOON ON COALITION POLITICS, SAYS IT CAST 'INDIA IN NEGATIVE LIGHT'

The National Council of Educational Research and Training (NCERT) has removed a political cartoon from the Class 12 political science textbook, Politics in India since Independence, saying "it shows India in a negative light".

The cartoon in Chapter 8 — Recent Developments in Indian Politics — depicted political leaders from 1990 onwards and posed questions on the survival of their respective governments.

The cartoon by Ravishankar, originally published in the India Today magazine, had on display former Prime Ministers V.P. Singh (1990), Chandra Shekhar (1990), P.V. Narasimha Rao (1991), H.D. Deve Gowda (1996), I.K. Gujral (1997), and A.B. Vajpayee (1998) and a string of questions on the survival of their coalition governments and democracy.

Change made in April

The cartoon depicted the long phase of coalition politics in India from the National Front led by V.P. Singh in 1989, the United Front in 1996-97, and the BJP-led coalition in 1998 to the National Democratic Alliance (NDA) in 1999, and the United Progressive Alliance in 2004 and 2009.

This trend changed in 2014 when the BJP won a full majority in the Lok Sabha and led an NDA government.

However, a decade later, India yet again has a coalition government at the Centre post the 2024 Lok Sabha election.

The document published by the NCERT depicting the changes dates back to April, prior to the 2024 election and the formation of the NDA coalition government led by Prime Minister Narendra Modi in which the BJP does not have a majority on its own.

The illustration has been replaced with two students conversing with each other.

One student questions, "Does that mean that we will always have coalitions? Or can the national parties consolidate their positions again?" The other answers, "I am not worried about whether it is a single party or a coalition government. I am more worried about what they do. Does a coalition government involve more compromises? Can we not have bold and imaginative policies in a coalition?"

IIT MADRAS RETAINS TOP SPOT IN NIRF RANKING FOR SIXTH CONSECUTIVE YEAR

In the 2024 rankings, released by Education Minister Dharmendra Pradhan on Monday, IIT Madras also retained the first position in engineering for the ninth year since 2016. The Indian Institute of Science, Bengaluru is the top institution under both the universities and research categories, retaining both positions since 2016 and 2021, respectively.

The ranks were given in 16 categories this year, three more than last year. Open universities, skill universities, and State public universities are the three new categories. Mr. Pradhan said the Ministry is considering "sustainability" as a criterion, probably from next year.

While the Indian Institute of Management, Ahmedabad continued to be the top management institute for the fifth consecutive year since 2020, the All India Institute of Medical Sciences

(AIIMS), New Delhi is the best place to study medical sciences as it retained the top spot for the seventh consecutive year.

IIT Bombay is the best 'innovational institution' followed by IIT Madras and IIT Delhi. IIT Roorkee retained its first position in architecture and planning for the fourth consecutive year. The National Law School of India University, Bengaluru was named the best law school for the seventh year in a row.

PERFUNCTORY PANACEA

Later this month, 33 scientists will be awarded the Rashtriya Vigyan Puraskar (RVP), the current government's revamped approach to independent India's long tradition of annually awarding scientists with promise. The rejig is in doing away with the Shanti Swarup Bhatnagar (SSB) awards, once awarded to scientists under 45 by the Council of Scientific and Industrial Research (CSIR). It comprised a certificate, a cash prize and some additional monetary benefits. The RVP replaces it with a medal and a certificate and, renaming it the Vigyan Yuva-SSB. There are also other RVP awards — the Vigyan Shri, Vigyan Ratna and Vigyan Team awards. The latter will be for scientists over 45 who have made distinguished contributions in science and technology over their entire career as well, as for teams of scientists and technologists with exceptional contributions.

In theory the total number of awards, under all categories, is capped at 56, though those selected for this year are fewer than the ceiling. The team award has been conferred on the Indian Space Research Organisation's 'Chandrayaan-3 team', which certainly has over three members. These may well be technicalities and, being the first edition of the prizes, could be transitional. The list of awardees spans a wide range of fields from astrophysics to agriculture, and this is not unique to the RVP, the awardees are overwhelmingly from centrally funded and the most elite of India's scientific and research institutions such as the Indian Institutes of Technology, Indian Institutes of Science Education and Research, CSIR and atomic energy institutions. The RVP awards were instituted after the Ministry of Home Affairs and heads of science departments concluded in 2022 that there were too many awards being given out by individual scientific departments and that it was necessary to trim them and raise their 'stature' to national awards. While distinguished scientists have always received the Padma awards, just as those in other fields, the original schema for scientist-specific awards was to encourage them to stick to research, whose outcomes are not always immediately tangible and whose impact is not immediately assessed. Much like Olympic medals, Nobel Prizes continue to elude Indian scientists and this has been a touchy topic for many governments. The national awards are not a substitute or catalyst for the Nobels. The government should not assume that scientists only crave honour and recognition. Too many scientists in India labour with minimal funds, substandard equipment and a discouraging milieu, forcing them to compete at the cutting edge of research with their hands tied. Raising the budgetary allocation and making scientific research more rewarding in India will do greater service to science than tokenism.

LAKHS OF PATENT ORDERS BY 'OUTSOURCED' STAFF NULL AND VOID, SAYS LAW MINISTRY

In what puts a question mark on the legality of lakhs of patent and trademark orders passed in the last two years by the Controller General of Patents, Designs and Trade Marks (CGPDTM), the Union Law Ministry and an Additional Solicitor General (ASG) of India have opined that these orders are

"legally unenforceable" as they were "made by outsourced employees" in violation of the Trade Marks Act, 1999.

— What has led to a chaos in the grant of intellectual property rights is the patent body's decision to hire hundreds of employees "outsourced" through a single source, the Quality Council of India, an autonomous body, and not belonging to the Government of India. In the last one year itself, these employees granted patents and trademarks to companies in quasi judicial orders.

— The decisions by "outsourced employees appointed through any agency (and not by the Central Government) in any statutory proceeding can very well be challenged as null and void as these orders are passed by legally incompetent persons", the Department of Legal Affairs said in a legal opinion April 25, 2024, sought by the Department for Promotion of Industry and Internal Trade (DPIIT) earlier that month. In her opinion on June 17, 2024, ASG Aishwarya Bhati suggested "annulment of decisions" made by the "unauthorised outsourced employees".

— A week ago, the Calcutta High Court had also ruled that hiring contractual employees for "quasi-judicial functions" in the patents and trademark office was not legal.

— What's the way out:

Terming all patent orders illegal will mean reversing decisions taken over the last two years that have already impacted hundreds of businesses. The way out, as suggested by the ASG, could be an expert committee going over the merits of each order passed, and giving a stamp of approval.

For Your Information:

— Intellectual property right (IPR) is the right given to persons over the creations of their minds: inventions, literary and artistic works, and symbols, names and images used in commerce. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.

— A patent is an exclusive right granted for an invention, and under Patents Act 1970, a "patent is granted for any invention". A patentee under the Act is defined as the person whose name is entered on the register of patents as the "grantee or proprietor of the patent".

WHY ARE INDIA'S 'GAGANYATRIS' GOING TO THE ISS?

The story so far:

On August 2, the Indian Space Research Organisation (ISRO) announced that two of the astronauts selected for its maiden human spaceflight mission, 'Gaganyaan', will train in the U.S. for a mission to the International Space Station. Wing Commander Shubhanshu Shukla has been assigned to fly to the ISS while Group Captain Prashanth Nair will be his backup. Both astronauts have flown to the U.S. and have begun their training.

What is this new mission?

On June 22, 2023, the U.S. and India issued a joint statement after Prime Minister Narendra Modi met President Joe Biden. The statement mentioned "a joint effort to the International Space Station in 2024". The two astronauts — or "Gaganyatris", as ISRO calls them — are the Indian participants in this mission.

In an August 2 statement, ISRO said: "During the mission, the Gaganyatri will undertake selected scientific research and technology demonstration experiments on board the ISS as well as engage in space outreach activities. The experiences gained during this mission will be beneficial for [Gaganyaan] and it will also strengthen human space flight cooperation between ISRO and NASA."

Who are part of India's crew?

On February 27, Mr. Modi announced the names of the four astronaut candidates for the Gaganyaan mission.

The other two, apart from Mr. Shukla and Mr. Nair, were Group Captains Ajit Krishnan and Angad Pratap.

They have undergone training in India and Russia; according to the India-U.S. joint statement, NASA will provide Mr. Shukla and Mr. Nair "advanced training ... at the Johnson Space Center in Houston, Texas".

According to ISRO, a "National Mission Assignment Board" selected Mr. Shukla and Mr. Nair for the joint mission. Their flight to the ISS will next need to be approved by the Multilateral Crew Operations Panel.

What are mission parameters?

According to ISRO's statement, its Human Spaceflight Centre has signed an agreement with Axiom Space, Inc. "for its upcoming Axiom-4 mission to the ISS". The mission, colloquially called Ax-4, is the fourth crewed mission to the ISS organised by Axiom Space, a private company based in Houston. In an August 7 interview, ISRO Chairman S. Somanath said India's share of the cost would be in the hundreds of crores of rupees.

Axiom plans to operate the world's first commercial space station and currently offers human spaceflight services. Mr. Shukla or Mr. Nair will fly to the ISS with three others: mission commander Peggy Whitson (U.S.) and mission specialists Sławosz Uznański (Poland) and Tibor Kapu (Hungary). SpaceX will provide the launch vehicle and its Crew Dragon capsule will house the crew. NASA has said the mission will last 14 days. According to the ISS's programme manager, Ax-4 will fly no sooner than November. In the August 7 media interaction, Mr. Somanath had said it is expected sometime "next year middle to end".

What is the schedule onboard the ISS?

Mr. Somanath recently said that the main purpose of the joint mission is to expose the two 'Gaganyatris' to the way a spaceflight mission is organised and conducted and to give them flight experience.

If he flies to the ISS, Mr. Shukla has also been designated the mission pilot — a responsibility Mr. Somanath said will put him through the paces of conducting a mission.

The two 'Gaganyatris' will also be conducting "five different experiments" onboard the ISS, according to Mr. Somanath, who added that "some of them... originated in India" while "some are international experiments" in which India will be "joint partner".

What is Gaganyaan's status?

ISRO has thus far completed the pad abort and the high-altitude abort tests, and has tested the crew escape system, among others.

In October 2023, Mr. Somanath told The Hindu the LVM-3 launch vehicle for the mission has virtually completed the process of being rated to carry humans. He added the crew module was being developed. He said engineers were working on the capsule's Environmental Control and Life Support System and the overall Integrated Vehicle Health Management System: "Every day, there is some test happening."

The next Gaganyaan milestones are a series of uncrewed suborbital and orbital test flights. The last of these is currently expected to happen in mid-2025, although the date could slip further.

AFTER LAUNCH SUCCESS, ISRO SAYS SSLV DEVELOPMENT IS COMPLETE

The smallest launch vehicle of the Indian Space Research Organisation (ISRO) — SSLV (Small Satellite Launch Vehicle) — in its third and final developmental flight Friday placed the EOS-08 and SR-0 satellites into a precise 475-km circular orbit. With this, the SSLV will be inducted into the space agency's fleet of operational launch vehicles.

— The technology of the vehicle, however, will be transferred to the private industry for commercial flights in bigger numbers.

— The vehicle is only 2 metres in diameter and 34 metres long. It uses three solid fuel-based stages and a final liquid-fuel based stage to correct the velocity for placing small and micro satellites in orbit.

— The VTM or Velocity Trimming Module is the last liquid-propellent based stage of the rocket which is used to correct the velocity just before injecting the satellites into orbit. It was this stage, which did not switch on during the first development flight of the SSLV due to a previous misreading of sensors, leading to the satellites being injected into an unstable orbit.

— The primary goals of the EOS-08 mission are to design and develop a microsatellite, create payload sensors compatible with the microsatellite bus, and incorporate new technologies needed for future operational spacecraft.

— EOS-08 is based on the Microsat/IMS-1 bus and contains three payloads: EOIR, GNSS-R, and SiC UV Dosimeter.

— ISRO's EOS-08, which was the primary payload on the mission, is a 175-kg experimental satellite, carrying on board three new technologies.

— The Electro-Optical Infrared Payload (EOIR) is designed to capture images in mid-wave and long-wave infra-red during the day and night. The data can be used for surveillance, disaster monitoring, environmental monitoring, fire detection, volcanic activity observation, and industrial and power plant disaster monitoring.

— The Global Navigation Satellite System-Reflectometry payload (GNSS-R) has been designed to demonstrate that reflected signals from satellite-based navigation systems like GPS can be used for applications such as ocean surface wind analysis, soil moisture assessment, cryosphere studies over the Himalayan region, flood detection, and inland waterbody detection.

— Notably, the third payload SiC UV Dosimeter will be used to study the amount of UV radiation that will hit the viewport of the crew module in preparation for the Gaganyaan mission.

For Your Information:

— ISRO's Small Satellite Launch Vehicle (SSLV) is a three-stage Launch Vehicle configured with three Solid Propulsion Stages. It also has a liquid propulsion-based Velocity Trimming Module (VTM) as a terminal stage, which can help adjust the velocity as it prepares to place the satellite.

— Essentially, the aim behind SSLVs is to produce low-cost launch vehicles with short turnaround times and minimal infrastructural requirements. The SSLV can launch satellites weighing up to 500kg and accommodate multiple satellites.

— The Polar Satellite Launch Vehicle (PSLV) is the third generation of Indian satellite launch vehicles. first used in 1994.... It has also been called "the workhorse of ISRO" for consistently delivering various satellites into low earth orbits (less than 2,000 km in altitude) with a high success rate.

— On the other hand, Geosynchronous Satellite Launch Vehicles (GSLVs) have been instrumental in launching communication satellites in the geosynchronous transfer orbit... It is a circular orbit 35,786 kilometres above Earth's equator.

ARMY TO PROCURE ADVANCED SYSTEM TO DETECT ENEMY DRONES

The Indian Army is set to procure an advanced version of the Integrated Drone Detection and Interdiction system (MK IIA) to counter the growing threats from unmanned aerial systems, particularly along the western and northern borders.

— As per the Army, the proposed system should have a surveillance, detection and tracking capability, microprocessor for computing a targeting solution and a LASER weapon system for hard kill or destruction and jamming capability for soft kill or denial. A Request for Information (RFI) was published last month by the Army to seek details about the system from prospective vendors.

— The fresh RFI comes within months after the Army inducted indigenous integrated drone detection and interdiction systems in the northern border along the China border in the northern sector and is reflective of the efforts to develop and procure counter drone systems in the wake of an increase in threats from enemy unmanned aerial systems.

— Developed by Defence Research and Development Organisation (DRDO) and Bharat Electronics, the Army Air Defence had got seven of these systems, five of which were inducted for deployment close to the northern borders. These systems too had both soft and hard kill options.

— Apart from these indigenous systems, other improvised systems with different counter-UAS capabilities have been deployed by the Armed Forces. This includes prototypes of laser-based systems developed indigenously with Army Air Defence, improvised versions of ZU-23 and L/70 guns for drone detection and killing, ad-hoc handled jammers, low-level lightweight radars, among others. The Armed Forces have inducted anti-drone systems from Indian private firms and the Israeli SMASH 2000 plus systems to tackle enemy drone threats.

STOCK NOT EXHAUSTED, ARMY EXTENDS DEADLINE ON USE OF OLD COMBAT UNIFORM BY A YEAR

Over two years after the Army introduced a new combat uniform for its personnel, it has recently issued guidelines on their use and management after it was found that much of the existing stock of the old uniform had remained unutilised and could lead to wastage, The Indian Express has learnt.

The Army had unveiled its digital print combat uniform in January 2022 — a shift from its earlier disruptive print combat uniform — and it was to be issued to all personnel in a phased manner over the next few years considering the existing stocking and provisioning mechanisms in place.

To prevent misuse, the new uniform is only issued to the troops through ordnance chain as against the previous combat uniform which is available in the open market.

According to sources in the Army, the existing stock of the old disruptive pattern combat uniform was supposed to be exhausted by June 2025. However, the latest assessment conducted by the Army suggests it would not be possible to exhaust the entire stock by June 2025 as the life of a combat uniform is 15 months.

The sources said it was found that several Army units stopped seeking the old disruptive pattern combat uniform thinking that the new digital print uniform will be made available to them post June 2025.

To avoid wastage of the existing stock of old combat uniform and to check any loss to state and objection by auditors in the later years, the Army has issued new guidelines which state that the existing stock of the old combat uniform will be in service till June 2026, as against the earlier deadline of June 2025.

The old combat disruptive print uniform will have to be issued to Defence Security Corps (DSC) troops as they are not authorised to get the new digital print combat uniform. Additionally, the Army has stated that no regional procurement of new digital print combat uniform will be carried out by ordnance echelons till the existing stock of old combat uniform is exhausted.

Any other stock of combat uniform in the old pattern would be first offered to other government departments such as Border Roads Organisation (BRO) and charitable trusts, the rest will be disposed of through official channels.

What's unique in the new uniform?

Since the old pattern of combat uniform was readily available in the market, one of the challenges was to create a unique and multi-terrain pattern. The new digital print combat uniform, designed and developed by NIFT and introduced in January 2022, is said to be lightweight, robust and quick drying and thus more comfortable for the troops during operations. It is available in 13 different sizes and the fabric is a combination of cotton and polyester in a ratio of 70:30.

DOES INDIA HAVE LAWS ON THE MOVEMENT OF BALLAST WATER?

The story so far:

The Tamil Nadu Water Resources Department (WRD) has informed the National Green Tribunal that it has sought ₹160 crore from the Kamarajar Port in Ennore, Tamil Nadu, to facilitate the removing of invasive mussels on the coast near the port in connection with an ongoing case on the proliferation of Mytella strigata, or charru mussel that harms marine ecosystems and hinders fisher boat movements, affecting their livelihood. The WRD has charged that Kamarajar Port is the main reason for the spread of the invasive species by not regulating the ballast water from ships.

What is ballast water?

Ships need to have a certain level of immersion into the sea to be stable. When a ship discharges cargo, it rises up in the water and therefore, to keep a minimum level of immersion, ship staff take in sea water called ballast water inside tanks in the ship. And when the ship loads cargo, leading to more immersion, the ballast water is pumped out of the ship. Until recently, there was no bar on taking in and pumping out of ballast water at ports, in the ocean, along the coast and so on. Since ballast water carries invasive species into other countries that destroy ecosystems, global shipping has sought to regulate ballast water discharge.

How serious is the problem?

In India, scientists have recorded nearly 30 invasive species coming from ship ballast water. Among the most harmful in recent times is the charru mussel, Mytella Rigata, says Biju Kumar, professor and head of the department of aquatic biology and fisheries at the University of Kerala. In the Pulicat lake in Tamil Nadu, as in Ashtamudi lake in Kerala, this mussel has replaced almost all other species, he says. Its survival rate and egg production is very high. Though of marine origin, it can survive even in fresh water, he adds.

What are global regulations?

The Ballast Water Management (BWM) Convention of the International Maritime Organization (IMO) came into force in 2017 to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water. From September 8, 2017, ships must manage their ballast water so that aquatic organisms and pathogens are removed or rendered harmless before the ballast water is released in a new location.

Recently constructed ships with functioning ballast water management systems continuously take a small portion of the ballast water they had taken in after discharge of cargo and dose it with chemicals so that all the water is rendered free of any biological organism before the water is pumped out during the loading of cargo. Ships built before the BWM convention that don't have these systems are required to exchange the ballast water they took in a port with "neutral" water from the middle of the oceans enroute to the loading port.

Among the countries most serious about preventing ship ballast water damaging their marine ecosystems are Australia and New Zealand. Australia, as a major supplier of coal and iron and other raw materials, sees much ballast water pumping out in ports. Australia is home to ecologically sensitive areas such as the Great Barrier Reef where such water can cause immense harm. Ships calling on Australian ports are often subject to rigorous checks including of ballast water management systems.

What is India's position?

Documents of the IMO show that as of July 2, 97 countries have signed on to the BWM as contracting states. India is not on the list of countries. This means that there is no obligation on the part of ships calling on Indian ports to enforce the BWM convention. While other rules such as relating to discharge of oil apply in Indian ports, the discharge of ballast water brought in from other countries is not subject to checks or regulation.

"No restriction is seen regarding discharge of ballast water in Indian ports," says V. J. Mathew, senior advocate who specialises in maritime law. In any case, ports are only a facilitator of ship traffic and cannot be held liable in such cases. If there is any evidence that a vessel has pumped out the ballast water that led to the invasive species, then the vessel owner can be held liable if a law is in force, says Mr. Mathew, adding that it is time India signed on to the convention.

HOW CAN TRAFFIC WHICH CAUSES AIR POLLUTION BE CONTROLLED?

The story so far:

A recent report stated that India is home to 83 of the 100 most polluted cities in the world. Another report from the British Medical Journal estimated that air pollution led to the deaths of 2.1 million people in India, the second largest numbers after China. Over 99% of the population breathes air that is poorer than the recommended WHO standards.

How severe is air pollution?

The International Energy Associates estimates that 12% of India's CO2 emissions are due to road transport, of which the vast majority of Particulate Matter (PM) 2.5 emissions are due to heavy vehicles. PM2.5 comprises pollutants, which, by being microscopic can reach the deepest parts of our lungs, and spill over to blood, thereby causing a range of respiratory and cardiovascular effects. Moreover, heavy vehicles contribute significantly to the emission of Nitrogen Oxide (NOx), capable of causing similar health effects. NOx contributes to the formation of ground-level ozone, worsening impacts on air quality and heat, which further fuels air pollution in urban contexts. Several studies have indicated that heavy vehicles contribute to about 60-70% of the total vehicular PM emissions and about 40-50% of the total NOx emissions in urban areas.

What are some of the measures taken to combat air pollution?

With the transport industry growing at 9.1% per annum, the Bureau of Energy Efficiency's (BEE) initiative in developing the draft Corporate Average Fuel Economy (CAFE) norms for cars in India is timely and laudable. The timelines to implement CAFE III from 2027-2032 and CAFE IV from 2032-2037 are practical. The commitment to shift from the Modified India Driving Cycle (MIDC) to the World Light Duty Vehicle Testing Procedure (WLTP) from March 31, 2027, is excellent because the WLTP offers a more accurate and globally harmonised measure of a vehicle's actual fuel consumption and CO2 emissions. The proposed emissions target for CAFE III based on the WLTP at 91.7g CO2/km and for CAFE IV at 70g CO2/km is achievable. Such stringent CO2 targets are essential for driving innovation and encouraging the adoption of cleaner technologies. In the interest of the health of our planet and citizens, these targets should be made non-negotiable. However, the CAFE norms exclude emissions by heavy vehicles such as trucks, lorries, and other freight vehicles.

What more can be done?

The government introduced a vehicle scrappage policy to phase out old and polluting vehicles, including heavy vehicles in 2022. It mandates that passenger vehicles older than 20 years and commercial vehicles older than 15 years must pass a "fitness and emissions test". If vehicles fail the mandatory tests, they are categorised as end-of-life vehicles, and will lose their registration certificate, and are recommended to be scrapped. Yet this policy is yet to take off in Karnataka for two reasons: there are only two scrapyards for the entire State and it is voluntary. Most older vehicles in Bangalore are not four-wheelers but older BMTC buses, private vans, and heavy vehicles. Maharashtra is one among 21 States that have announced incentives such as discounts on road tax or on a new private vehicle purchase to encourage scrapping but this is yet to have far-reaching impacts on air pollution in the State. Policymakers must ensure that the guidelines do not remain exemplary in the letter alone.

Existing policies of the government to combat air pollution such as the testing of vehicles at regular intervals to ensure they are within emission limits, banning open garbage burning, and checking industrial emissions need to be implemented with the greatest stringency. While we welcome the government's efforts to curb air pollution, we also strongly suggest that mass transit is the only sustainable method of tackling air pollution in India.

GLACIAL LAKES MULTIPLY IN HIMACHAL AND TIBET, POSES THREAT TO LIVES AND INFRA DOWNSTREAM

The number of glacial lakes in the Satluj river catchment area has almost doubled from 562 in 2019 to 1,048 in 2023, according to satellite data analysed in a recent study by the Centre on Climate Change of Himachal Pradesh Council for Science Technology-Environment (HIMCOSTE). The catchment area of the Satluj basin was studied from upstream of Jhakri to the Mansarover Lake in Tibet, in the Trans Himalayan Region from where the river originates.

Smaller lakes sprout

Of the 1,048 lakes mapped in 2023, 900 are small, each spanning an area of less than five hectares, while 89 lakes have an area between 5 hectares and ten hectares, and 59 lakes are bigger than 10 hectares each.

"Over the years, the number of glacial lakes has been gradually increasing. In fact,as the frequency of small lakes with an area of less than five hectares has been rising, it indicates that the climate warming effects are more significant in the higher Himalayan region. The swift melting of glaciers and less snowfall during the winter could be reasons behind the rise in lakes," said S.S. Randhawa, a co-author of the study, and the principal scientific officer at HIMCOSTE.

He said it could be inferred from the basin-wise analysis that the number of lakes is much higher in the Tibetan Himalayan Region or the Upper Satluj basin, in comparison to the Spiti and Lower Satluj basins, indicating that the Upper Satluj basin is more susceptible to glacial lake formations. "As the formation of small lakes is relatively higher in the upper region, it indicates greater climate change impact in the higher region in comparison to the lower regions. The average temperature in the high altitudes areas is rising faster than the lower areas," Mr. Randhawa said.

Downstream danger

The study, which analysed multi-spectral satellite images, suggests that the rise in glacial lakes in Himachal Pradesh's river basins can be disastrous downstream if the lakes burst their bounds for any reason.

"Climate change has influenced the health of glaciers in the entire Himalayan region. As a result, the cryospheric cover over the Himalayan terrain is reducing. One of the ramifications of this is the development of high-altitude glacial lakes," said Sunil Dhar, Dean of the Department of Environmental Sciences at the Central University of Jammu. "The number of such lakes has increased over the years and these lakes have become unstable due to the increase in the volume of water or due to the calving effect of adjoining glaciers, [creating] avalanche either of snow or rocks. These lakes have a potential of bursting out, and depending on the volume of water, velocity and the outburst spread, it can pose a threat to habitations and infrastructure down stream," he added.

HOW TUNGABHADRA DAM GATE WAS SWEPT AWAY, WHY FARMERS ARE FEARFUL

A flood alert has been sounded downstream of the Tungabhadra dam in Karnataka's Koppal district after one of the 33 crest gates of the massive stone masonry dam across the Tungabhadra river was washed away late on Saturday evening (August 10).

— The Tungabhadra, which is formed at the confluence near Shimoga of two streams, Tunga and Bhadra, that rise in the Western Ghats, flows into the Krishna at Sangamaleshwaram in Andhra Pradesh. The river, which forms part of the boundary between Karnataka and Andhra Pradesh, has a total catchment area of almost 70,000 sq km.

— The Tungabhadra reservoir sprawls over an area of 378 sq km primarily in Karnataka's Vijayanagar district. It is one of the major reservoirs in South India that supplies water for irrigation and industrial use, as well as drinking water to Karnataka and Andhra Pradesh.

— The dam was first conceived of in 1860 to mitigate the impact of recurrent famine in Rayalaseema. Construction was begun by the erstwhile governments of Hyderabad and Madras in 1945, and the project was completed in 1953.

— The Tungabhadra Board was established by a presidential order in 1953. The Board currently has a chairman appointed by the Union government, and four members, representing the Union government and the states of Karnataka, Andhra Pradesh, and Telangana.

THREE MORE RAMSAR WETLAND SITES NOW IN INDIA, TAKING TOTAL TO 85

The Environment Ministry on Wednesday said three more wetlands in India had been designated Ramsar sites. This brings the total number of such sites in India to 85. The new sites are the Nanjarayan and Kazhuveli bird sanctuaries in Tamil Nadu and the Tawa reservoir in Madhya Pradesh.

India is one of the "contracting parties" to the Ramsar Convention, signed in Ramsar, Iran, in 1971. It became a signatory in 1982. From 1982 to 2013, a total of 26 sites were added to the list of Ramsar sites in the country. From 2014 to 2024, the country has added 59 wetlands to the list. Currently, Tamil Nadu has the highest number of Ramsar sites (18), followed by Uttar Pradesh (10).

India's Ramsar wetlands make up around 10% of the total wetland area in the country across 18 States. No other South Asian country has as many sites though this has much to do with India's geographical breadth and tropical diversity.

The United Kingdom (175) and Mexico (142) — smaller countries than India — have the most Ramsar sites, whereas Bolivia spans the largest area, with 1,48,000 sq. km under the convention's protection.

Being designated a Ramsar site does not necessarily invite extra international funds, but the Centre and States must ensure these tracts of land are conserved and saved from man-made encroachment. Acquiring this label also helps with a locale's tourism potential and its international visibility.

To be a Ramsar site, a wetland must meet at least one of the nine criteria defined by the Ramsar Convention such as supporting vulnerable, endangered, or critically endangered species or threatened ecological communities; regularly supporting 20,000 or more waterbirds; or is an important source of food for fish, spawning ground, nursery and/or migration path on which fish stocks are dependent upon.

MORE AND BETTER

Since the Zika outbreak began on June 20, when the first case was reported from Pune, confirmed cases have been slowly but steadily rising. As of August first week, Maharashtra has reported 88 confirmed cases. Pune city, the epicentre, alone accounts for 73 cases, while six are from Pune rural. Of the total number reported so far, at 37, pregnant women alone account for half the number of confirmed infections. Though rare, people with Zika virus infection run a risk of suffering from Guillain-Barré syndrome, a neurological disorder in which the immune system mistakenly attacks part of the peripheral nervous system. But a more harmful effect is seen in pregnant women who run a risk of giving birth to babies with a smaller than average head size, called microcephaly, and other neurological impairments. As in a January 2023 paper in The Lancet Regional Health – Americas, a meta-analysis of babies born to 1,548 pregnant women infected with the Zika virus, from 13 studies in Brazil between 2015 and 2017, found the absolute risk of microcephaly to be 6.6% either at birth or during follow-up. Babies also had 18.7% absolute risk of suffering from functional neurological abnormalities, and a relatively smaller risk of neuroimaging, ophthalmic and auditory abnormalities. There was also a significant risk of premature birth (10.5%), low birth weight and small for gestational age (16.2%). Less known is the risk of sexual transmission of the virus by infected men due to the presence of potentially infectious virus in their semen for at least two months. It is hence important for infected men, especially those planning a family, to be made aware of the risk as well as recommend measures to prevent viral transmission to women for at least three months, as in the U.S. CDC guidelines.

Given the harmful effects of the virus, it is shocking that the Pune-based ICMR lab ramped up testing only after the publication of news about the Pune Municipal Corporation planning to send samples to a government medical college instead to cut the delay in testing. As Kerala just demonstrated in the latest outbreak of the Nipah virus, and as Gujarat learnt it the hard way in the ongoing Chandipura virus outbreak and acute encephalitis syndrome cases, it is becoming increasingly important and necessary that States develop the capacity to conduct high-quality testing and sequencing of viruses that cause frequent and deadly outbreaks. From the time that the first suspected case is observed, the reduction in the lead time to test results is the key to instituting timely public health responses that can limit the virus spread and stop an outbreak.

The COVID-19 pandemic demonstrated the advantages of decentralised testing and sequencing, and this should be replicated for every pathogen that causes deadly outbreaks.

DENGUE VACCINE: PHASE-3 OF TRIAL BEGINS IN ROHTAK

The first phase III clinical trial for dengue vaccine in India was kickstarted on Wednesday, with the first person receiving a shot at Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences (PGIMS), Rohtak. The trial will be conducted at 19 sites across 18 states and Union Territories. It will follow 10,335 healthy adults for a period of two years. The trial is primarily funded by the Indian Council of Medical Research, with the company partially bearing the expenses.

— The vaccine called DengiAll, which works against all four serotypes of dengue, has been developed by Panacea Biotech.

— Panacea's vaccine uses live, weakened versions of all four dengue serotypes. These weakened versions of the virus were developed by the National Institute of Allergy and Infectious Diseases in the US— they deleted parts of the genetic code of DENV1, DENV3, and DENV4 and then genetically engineered a DENV2 backbone using parts from the weakened DENV 4, on which the others were tacked.

— One of the biggest challenges with developing a dengue vaccine is that the four serotypes of the infection offer very little protection against each other, meaning one individual can be infected repeatedly with different serotypes. More importantly, it can lead to antibody dependent enhancement (ADE) — a person with low levels of antibodies against one serotype of dengue, getting a more severe infection with another serotype.

— ADE was the reason for controversy surrounding the first dengue vaccine in the world.

For Your Information:

Which tests are used to detect dengue?

— IgM and IgG antibodies test and NS1 antigen test. Both are done through ELISA kits and hence are popularly known as Elisa test.

— IgM and IgG test for dengue antibodies detected in an initial blood sample, meaning that it is likely that the person became infected with dengue virus within recent weeks. This test is normally done after 3-7 days of fever while NS1 antigen test is a test for dengue, which allows rapid detection on the first day of fever, before antibodies appear.

Symptoms: The onset of dengue fever is usually a sudden rise in temperature lasting 2-7 days and commonly associated with headache, flushing, retro-orbital pain and/or rash, myalgia, weakness, rash and itching. Haemorrhagic manifestation (petechiae and positive tourniquet test).

— The disease has a seasonal pattern, i.e., the peak comes after monsoon and it is not uniformly distributed throughout the year. Dengue virus is transmitted through the bite of a female Aedes (Ae.) mosquito. Aedes is a day time feeder and can fly up to a limited distance of 400 metres. Dengue mosquitoes can't breed once the temperature falls below 16 degrees.

INDIA'S REGULATOR ALLOWS FASTER ACCESS TO DRUGS APPROVED GLOBALLY: WHY THIS CAN BRING DOWN COST, GET YOU CLOSER TO EMERGING THERAPIES

New drugs for weight loss, Alzheimer's or cancer, that have been approved by top regulatory authorities abroad but are awaiting approval in India, will no longer be required to undergo clinical trials in the country.

Pharma companies can now obtain regulatory clearance to sell their products in India if they can demonstrate that their new drugs offer a "significant therapeutic advance over the current standard of care," and have been approved by regulators in any of six countries or regions. These are the United States, United Kingdom, Japan, Australia, Canada, and the European Union — all known for their rigorous regulatory approval process.

This significant order, passed by the Drug Controller General of India (DGCI) on Wednesday, has waived clinical trials for new drugs for rare diseases, gene and cellular therapy, new drugs in a pandemic situation, and new drugs for "special defence purpose."

WHAT THE NEW ORDER MEANS

At present, a company must conduct a clinical trial in India even if the drug has been approved globally. The trial must be approved by a committee under the drug regulator. The new rules ease access and will benefit patients with rare diseases or cancers with specific genetic markers.

The exemption was included in the 2019 New Drugs and Clinical Trial Rules but had not been utilised until now because the drug regulator had not specified which countries' approvals could be used to waive local trials. Wednesday's notification clears the way for that.

YOU CAN NOW HAVE BLOCKBUSTER DRUGS

The move is expected to accelerate the availability of popular weight loss drugs like GLP-1 receptor agonists, such as semaglutide and tirzepatide, for treating diabetes and obesity. It will also expedite the entry of drugs like donanemab, which slows cognitive decline in early Alzheimer's patients, as well as cancer therapies like Tarlatamab (lung cancers) and Tovorafenib (pediatric brain tumour), into the Indian market.

WHAT ABOUT MONITORING SIDE EFFECTS?

However, the drugs approved through this waiver mechanism will still have to carry out "Phase IV post-marketing surveillance" to keep a watch on any serious adverse events. "This step has been taken to ensure early access to cutting-edge therapies, especially drugs meant for rare diseases, where trials can take longer to recruit participants itself. These are not untested medicines — these are medicines that have already been approved in other countries with strict regulatory processes," said a senior health ministry official.

However, sources said that the DGCI's Subject Expert Committee, which reviews clinical trial data before granting final approval, will still have the authority to require a company to conduct a clinical trial if there is scientific evidence suggesting that the new drug might behave differently in the Indian population.

WHAT OF DRUGS UNDERGOING CLINICAL TRIALS?

Additionally, any drug currently undergoing clinical trials in India that has already been approved by these international regulators can reapply for this waiver, say officials.

According to the New Drugs and Clinical Trial Rules 2019, local clinical trials may not be required if a new drug is approved in specified markets, no major adverse events have been reported, a global trial with Indian sites is ongoing, there is no evidence that enzymes or genes in the Indian population affect the drug's safety and efficacy, and the applicant has provided an undertaking to conduct phase IV trials.

WHAT DOES THIS MEAN FOR DRUG PRICES?

According to a Health Ministry official, "This will not only benefit multinational drug companies, it will also be very beneficial for big drug manufacturers of the country. Say an Indian company gets a manufacturing licence for an international company's drug — conducting a local trial for approval significantly adds to their costs. Now, they may be able to save on clinical trials and subsequently price the products at a lower cost."

KERALA RESEARCHERS DEVELOP BREAKTHROUGH CYANIDE SENSOR TO ENHANCE SAFETY OF WATER, FOOD PRODUCTS

A research team at the Central University of Kerala has achieved a significant breakthrough in chemical sensing by developing a highly sensitive and selective cyanide sensor. Led by Ravi Kumar Kanaparthi of the Department of Chemistry, the team has created a material capable of detecting toxic cyanide at low concentrations, promising to enhance the safety of drinking water and food products.

Cyanide, a potent toxin, is present in various plants, fruits, and microorganisms. The World Health Organization (WHO) has set strict guidelines for its presence in potable water, limiting cyanide concentrations to below 0.19 mg/L due to its lethal effects on humans and aquatic life. Cyanide exposure can occur through consumption of certain foods like cassava (tapioca) and even common items like apple and apricot seeds, sprouting potatoes, and almonds. The risk is particularly severe in regions where cyanide-rich foods are staples.

The team addressed this critical need by designing a novel sensor that offers both high sensitivity and selectivity. The material they developed appears yellow to the naked eye when dissolved, but turns colourless upon detecting cyanide. This colour change provides a straightforward visual cue, making it easy to identify the presence of cyanide. Moreover, the material selectively detects cyanide without interference from other competing ions, ensuring accuracy in various testing environments.

Practical applications

The practical applications of the sensor are wide-ranging. The team demonstrated its effectiveness in detecting cyanide in tapioca extracts, where the sensor's colour shifts from yellow to bluish-green, and developed a strip for qualitative detection.

The innovation is relevant given recent incidents of cyanide poisoning. On January 2, the Animal Husbandry Department reported the death of 13 cows in Idukki due to cyanide toxicity after consuming tapioca hulls.

GLITCHES IN PORTAL HIT ISSUANCE OF BIRTH AND DEATH CERTIFICATES

The Civil Registration System (CRS), the Union government's centralised portal to register births and deaths, has been facing glitches for the past four months, several State government officials have told The Hindu. The malfunction has led to delays in issuing birth and death registration certificates.

Under the Registration of Births and Deaths (Amendment) Act, 2023, all reported births and deaths in India from October 1, 2023 should be registered through crsorgi.gov.in. So far, 23 States and six Union Territories have made the shift. Those such as Tamil Nadu which have their own portals send the data to the Centre in real-time as mandated by the 2023 amendment.

The Hindu accessed an August 5 letter by the Chief Registrar (Birth and Death), Bihar, to the Registrar-General of India. Bihar migrated to the new portal on June 10. "Due to the revamped CRS portal being extremely slow, the OTPs not being generated in time and continuous display of error message on the page, there has been a huge backlog in all the registration units in the State," the letter said.

As a result, it said, the Registrars are forced to face the ire of the people and public representatives. The glitches are leading to disruption of the entire system, it added. There is a mismatch between 1,408 registration IDs in the State and those available on the portal, and despite informing the RGI multiple times, several difficulties remain on the ground.

An official in Nagaland said sometimes they were not able to issue certificates for three days in a row.

CENTRE'S GUIDELINES FOR SPECIAL ASSISTANCE TO STATES FINALISED, RS 10,000 CRORE FOR LAND REFORMS

— The Centre has decided to provide states with Rs 10,000 crore in incentives for implementing **land-related reforms in rural and urban areas**, and Rs 5,000 crore for creating a Farmers' Registry during the financial year 2024-25 (FY25).

— According to sources, states will need to undertake land-related reforms in rural areas, which include the assignment of a Unique Land Parcel Identification Number (ULPIN) or Bhu-Aadhaar for all lands; digitisation of cadastral maps; survey of map sub-divisions according to current ownership; and the establishment of a land registry.

— In urban areas, fiscal incentives will be provided for the digitization of land records using GIS mapping and the establishment of an information technology-based system for property record administration, updating, and tax administration.

— The Centre has also decided to provide Rs 5,000 crore for the construction of working women's hostels.

— According to the guidelines, the land for the hostels will be made available by the state government free of cost, or the cost of acquiring the land will be borne by the state government.

— The state should adopt a Public-Private Partnership (PPP) model for the operation and maintenance of the hostels, according to the guidelines. Ownership of the hostel would rest with the state government, while operation and maintenance would be managed by a private party.

GEOGRAPHICAL STRUCTURE IN THE INDIAN OCEAN

— Three underwater geographical structures located in the Indian Ocean have been awarded names proposed by India. These are the Ashoka seamount, the Chandragupta ridge, and the Kalpataru ridge.

— All the three recently named structures were discovered by oceanographers from the National Centre for Polar and Ocean Research (NCPOR), Goa.

— These are located along the Southwest Indian Ridge area of the Indian Ocean and were discovered during an international survey exploration programme.

— In all, there are now seven structures in the Indian Ocean named mainly after Indian scientists or bear names proposed by India in this region of the Indian Ocean.

100 YEARS AGO, WHEN A TRAIN ROBBERY SHOOK THE EMPIRE

The audacious act, famously known as the Kakori case or the Kakori train robbery conspiracy case, shook the British government and accelerated the freedom movement. This year marks the 100th year of the incident — on Friday, August 9, UP Chief Minister Yogi Adityanath launched the centenary celebrations.

— "The Kakori case was the first major action executed by the Hindustan Republican Association (HRA), a revolutionary outfit set up in 1924 by, among others, Ram Prasad Bismil, Ashfaqullah Khan and Sachindra Nath Bakshi."

— "Bismil, who hatched the robbery plan, was joined in its execution by Ashfaqullah Khan, Rajendra Lahiri, Chandrashekhar Azad, Sachindra Nath Bakshi, Keshab Chakravarthy, Manmathnath Gupta, Murari Sharma, Mukundi Lal and Banwari Lal."

— "While the revolutionaries only intended to rattle the British government, the death of a passenger named Ahmad Ali, when the Mauser gun of one of the revolutionaries accidentally went off, hurt their cause."

— "Of the accused who were made to stand trial at the Special Sessions Court of Justice Archibald Hamilton, 19 persons were convicted. Bismil, Roshan Singh, Rajendra Nath Lahiri and Ashfaqullah Khan were sentenced to death while the others got varying jail terms, including a deportation to the infamous Kala Pani (Cellular Jail in Port Blair) for five of them."

— "While the sum stolen was paltry, the act was an audacious snook at the British Raj, whose response to Kakori was to set an example for future revolutionaries and restore British authority in the minds of the people."

For Your Information:

— The Hindustan Republican Association (HRA) was founded by a group of young men who were disillusioned by Gandhi's tactics and what they felt was zealous preaching of "non-violence."

— Ram Prasad Bismil and Ashfaqulla Khan, both poets, were among the group's founding members. Sachindra Nath Bakshi and trade unionist Jogesh Chandra Chatterjee were among the others. The HRA would also include figures such as Chandra Shekhar Azad and Bhagat Singh. Their manifesto, Krantikari (Revolutionary), was published on January 1, 1925.

THE GOTIPUA DANCERS WHO STUMBLE FROM BOYHOOD STARDOM TO ADULTHOOD ANONYMITY

In this traditionally revered boys-only dance form, a child's journey as an artiste often concludes at puberty, leaving them without the education required for an office job or the skills for a tradesperson.

Now, akhadas, where boys are nurtured into graceful dancers, are finding it difficult to attract disciples.

There are approximately 10 to 15 akhadas in Odisha where Gotipua is taught in the traditional gurukul style. Each one has four to five students, all under the age of 14. About 30 years ago, there used to be about 20 students at the each akhada.

The journey for Gotipua dancers involves over 20,000 hours of rigorous training spanning 10 years, dressing as girls on stage, sacrificing their education, and staying away from their families. Children are initiated into the practice as early as five. By the time they are 16 and their bodies change, complex hand and body movements that require suppleness become difficult. That is their age of 'retirement'.

The few parents, who do send their children to learn, do so for reasons other than upholding a cultural practice. Sushant Kumar Behera, a daily wager in Puri district, is happy to send his son Sudhir, a fourth-grader, to learn Gotipua. "It is difficult for me to pay my son's school fee, the gurukul is bearing the expense," he says.

Tradition troubles

Gotipua, which translates to 'one boy,' has children trained in singing, dancing, yoga, and acrobatics. They dress as girls and perform at temple festivals, social gatherings, and religious ceremonies. Originating in the 16th century, Gotipua is celebrated as the precursor to the classical Odissi dance form.

At an art exhibition titled 'Boy Dancer' organised by New Bridge India, a non-profit cultural initiative, and the Odisha State Museum in Bhubaneswar in the recent past, Gotipua aficionados wondered about the future of the dance and its dancers.

"After the advent of Sri Chaitanya [considered a Hindu saint and Krishna devotee], Vaishnavism was in full swing in Odisha in the 16th century. The Vaishnavites had, however, not approved of dancing by women. Instead, they preached and practised the cult of Sakhi Bhava or offering oneself to Krishna as a female attendant, and introduced boy dancers."

He adds that initially Gotiupa was performed within the temple precincts and only during festivals, but soon the dance became a popular form of entertainment outside the temple, especially in rural areas.

Historically, Gotipua gurukuls flourished under the patronage of kings and zamindars. In the 20th century, efforts were made to formalise and structure Gotipua, leading to the establishment of Odissi as a distinct and systematic dance form.

However, very few dancers make the transition to Odissi, which is centred in urban areas and is woman-focused.

With boys increasingly hesitant to pursue Gotipua, girls have begun to take it up, sparking objections from 'purists' who feel this alters the essence of the dance, because traditionally, women during their menstrual cycles are excluded from temples and religious ceremonies.

Kaveri Palei, a 24-year-old Gotipua dancer from Puri district, says it's a natural dance for women. "Certain eyebrow movements and poses are uniquely suited to girls," she says, adding that there has been resistance, but things are changing over time.

NAVEEN URGES CENTRE TO CONTINUE SUPPORT TO UNESCO KALINGA PRIZE

The Science and Technology Ministry has withdrawn its contribution to the prestigious UNESCO Kalinga Prize for Popularisation of Science, UNESCO's oldest award, instituted through a donation by Odisha's former Chief Minister Biju Patnaik way back in 1951.

— Official sources said the decision to withdraw the Department of Science and Technology's annual contribution to the award was part of the recent decision to 'rationalise' all science awards. The government has, last year, instituted a new set of science awards, called Rashtriya Vigyan Puraskar, to replace all the earlier awards, including the coveted Shanti Swarup Bhatnagar Awards. The inaugural set of Rashtriya Vigyan Puraskars were announced last week.

— Former Odisha Chief Minister Naveen Patnaik, however, has protested the government's decision and written to Science and Technology Minister Jitendra Singh to ensure that the support is restored.

— The Science Ministry has been supporting this award since 2001. The award carries a cash prize of US$ 40,000. The winner also receives a Kalinga Chair established by the DST which also carries a cash component of US$ 5,000. Besides, the winner is invited to travel to India for two to four weeks and interact with scientists and science communicators. The expenses of this are also borne out by the DST. Besides DST, the Kalinga Foundation and the state government of Odisha also contribute to the main award money.

— The winner of this award is selected by the Director-General of UNESCO upon the recommendation of a jury of five members. It is the Science Analysis and Policies Division of the UNESCO which administers this award. The award ceremony is scheduled during the celebration of the World Science Day in Budapest as the guest of UNESCO and India in the alternate years.

For Your Information:

— Rashtriya Vigyan Puraskar awardees: The RVP comprises four awards — Vigyan Ratna for lifetime achievement, Vigyan Shri for scientists of all ages, Vigyan Yuva for scientists under 45 years, and Vigyan Team for collaborative research work.

— The award ceremony will be held at Rashtrapati Bhavan Cultural Centre on August 23, the first National Space Day.

— These new awards were instituted last year after disbanding all existing science awards, including the coveted Shanti Swarup Bhatnagar Prize. Vigyan Yuva is a replacement for the Bhatnagar Prize, which too used to be given to outstanding scientists below 45 years old.

ONCE THRIVING, NOW ALL BUT GONE: A HISTORY OF KERALA'S JEWISH COMMUNITIES

From boasting a population of 20,000-50,000 in the mid-1940s, India's Jewish population today is estimated to comprise 4,000-5,000 members. Almost all belong to the Marathi-speaking Bene Israel community, settled on the Konkan coast for hundreds of years. They are not, however, the oldest Jewish community of India. That honour goes to one of Kerala's two main Jewish communities.

MALABAR JEWS, also known as the Cochin Jews, trace their history to the days of King Solomon (hypothesised to be in the 10th century BCE, almost 3,000 years ago). Initially, they settled in Cranganore (present-day Kodungallur in Thrissur district), which the community itself referred to as Shingly.

The oldest documentary evidence of this community — a set of copper plates given to the local Jewish leader by the Cranganore's Hindu ruler, from circa 1,000 CE — lists various economic and ceremonial privileges that the Jews enjoyed in the region. From the 14th century onward, and especially following the arrival of the Portuguese in the 16th century, Malabar Jews moved further south from Cranganore to Cochin (now Kochi) where the local king rolled out the red carpet for them.

PARADESI JEWS, literally "foreign" Jews, migrated to the Indian subcontinent in the 15th and 16th centuries from the Iberian Peninsula. They fled to India due to persecution by the Catholic rulers of Spain and Portugal, and settled on the Malabar coast alongside pre-settled Jewish communities, as well as in Madras (now Chennai). The Paradesi Jews of Cochin were active in Kerala's spice trade, and those settled in Madras were involved in the trade of Golconda diamonds and other precious stones.

In Kerala, the Paradesi Jews adopted Malyalam, and many local customs and traditions. But at some point, they stopped marrying those from Kerala's older Jewish community, and began to look down on them. This effectively created two distinct Jewish communities in Kerala. Many accounts, especially by Western writers, refer to the Paradesis as "White Jews" and the Malabaris as "Black Jews", although this pejorative characterisation is largely inaccurate.

A dwindling community

Unlike Jewish communities in Europe or West Asia, the ones in India seldom faced anti-Semitism or persecution. Many, like the Koders, rose to high positions as agents of foreign trade, and advisers to Dutch and Hindu rulers. Later, during British rule, Jews in Kerala prospered as merchants and were employed as teachers, clerks, and lawyers in the ever-expanding British bureaucracy.

However, since the 1950s, there has been a steady migration of Kerala Jews to Israel. According to estimates, there are well over 4,000 'Cochinim' in Israel today. Most belong to the Malabar Jewish community, with a few hundred Paradesis. Only 14 Malabar Jews, and one Paradesi Jew are now left in Kerala.

"Jew Streets" in Mattancherry and Kochi, and formerly Jewish-owned shops and business houses, are among the few remaining relics of Kerala's once-thriving Jewish community. So are the state's seven synagogues, the most prominent among which is the Paradesi Synagogue built in 1568 CE in Mattancherry, among the oldest synagogues in the Commonwealth. Queenie's late husband Samuel Hallegua was its last warden.

There are three other Paradesi synagogues at Paravur, Chendamangalam, and Mala. All of them are protected monuments. Malabari Jews have three synagogues, with only the Kavumbhagam Ernakulam Synagoge still active. This too was taken over by the state government in 2021 for conservation.

SINGLE DIGITS

India's return of six medals from the just-concluded Paris Olympics can be termed underwhelming at best. The nation secured one silver and five bronze medals, down from seven at Tokyo 2020 that included a gold and two silvers. At a time when the country is looking to diversify its sporting excellence, has found exuberant support from the government and big corporates, and was aiming for a double-digit medal yield, the Olympic fortnight belied expectations. There were indeed new heroes — shooters Manu Bhaker, Sarabjot Singh and Swapnil Kusale, and wrestler Aman Sehrawat are now household names. The men's hockey team finishing on the podium for a second straight time and Neeraj Chopra adding a silver to his historic javelin gold from Tokyo are top-notch efforts. But the dependence on a select few to repeatedly deliver, the near-zero presence in disciplines such as swimming and gymnastics, and wrestler Vinesh Phogat being disqualified for being above the weight threshold cast a dark shadow. The need of the hour is thus to broaden the base, increase participation and distribute funding more equitably to usher in a grass-roots revolution. The onus is also on the Union Sports Ministry to bring errant federations — often dens of nepotism and corruption — in line with the National Sports Code, fix accountability and decentralise governance.

As much as the Olympics is about winning and the shaping of national identities, it is also the greatest stage on earth to showcase the triumph of human will. This was best exemplified by the Netherlands' Sifan Hassan, the first since Emil Zatopek in 1952 to collect medals in 5,000m, 10,000m and marathon, Kenya's Faith Kipyegon, the first woman to win three consecutive 1,500m titles, Cuba's Mijain Lopez, who won a fifth individual gold on the trot in 130kg Greco-Roman wrestling, Novak Djokovic, who at 37 and with a surgically repaired knee, won the elusive singles gold in tennis, and Algerian boxer Imane Khelif, who braved incendiary attacks on her gender to rise to the top. Sweden's Armand Duplantis broke the men's pole vault record for an astonishing ninth time (6.25m) while swimmer Katie Ledecky, gymnast Simone Biles and hurdler Sydney McLaughlin-Levrone achieved transcendence by stretching their numbers to nine, seven and four Olympic golds, respectively. France did well as a host, winning 16 golds, its best figures in a century. The star was 22-year-old swimmer Leon Marchand, who bagged four golds to position himself as the best of this generation. Athletics, in the post-Usain Bolt era, was on the lookout for one such champion, but as Paris proved, that is a tough act to follow.

AFTER OLYMPICS, A QUESTION

Apart from the unfortunate news surrounding Vinesh Phogat's disqualification from her wrestling event at the Olympics, there has been another news item that did the rounds in several international newspapers. This concerned the Ambani family and their "quest" to improve India's standing in elite sporting events such as the Olympics.

— "There is a difference between promoting physical activity among the general population and sponsoring elite sporting activity. The former improves public health, while the latter is mainly concerned with adding to private profits and feelings of (frequently middle-class) nationalism."

— "How should we define the role of the state: Should its limited resources be devoted to increasing public welfare or enhancing private profit and the ephemeral buzz of nationalist feeling?"

— "There does not appear to be any evidence that the state's involvement in sponsoring Olympic participation has had any public welfare effects. First, it does not translate into any concrete benefits in terms of improved health because audiences for global sporting events are inspired to adopt better lifestyle activities."

— "Second, even if we were to grant that nationalism-fuelled exultation over medals adds to some form of emotional well-being, the fact that over the years, India has won under 45 medals altogether makes a weak case for publicly funding what is clearly very poor returns on investment."

— "There is, on the other hand, a clear relationship between national wealth and medals acquisition. At just over 3,000 medals, the US has the largest number, followed, as expected, by countries such as Germany and the UK."

— "Historically, there has been a close relationship between parties in power and their patronage activities… Their primary significance and role is to further the aims of party politics rather than nurture sporting talent. Sport is politics and since the politics of sport reflects the nature of the state, sporting success cannot be an outcome of state sponsorship."

— "On the other hand, those who genuinely believe in both greater sporting success as well as improved public welfare might consider that greater private involvement might bring about both. First, private investment is subject to the most significant rule of business: Profits… The state's involvement, on the other hand, does not entail any "shareholder" scrutiny of this kind."

— "We need to ask if state involvement in elite sports is the best way of using public money and who benefits from it. If elite sport is primarily about selling goods and commodities (no necessary evil in itself) and bolstering middle-class nationalism, should public funds be deployed for it? Can the private sector do it better – perhaps even create systems that are currently lacking – and should we aim at a society where public funds are expended in increasing the welfare of the majority?"

SHORT NEWS

BANGLADESH CHIEF JUSTICE RESIGNS AFTER 2-HOUR ULTIMATUM BY STUDENTS

Bangladesh's Chief Justice Obaidul Hassan and five other judges of the apex Appellate Division on Saturday tendered their resignation, five days after the fall of Sheikh Hasina's regime amid massive street protests and students marching towards the apex court demanding a revamp of the judiciary.

WILL MAINTAIN SMOOTH INDIA, CHINA TIES, SAYS BANGLADESH INTERIM GOVERNMENT

Bangladesh's newly-installed interim government on Sunday said it would maintain a "balanced" foreign policy, asserting that Dhaka intends to maintain "smooth and positive" ties with all, including India and China.

ST MARTIN'S ISLAND

— The recent ousting of Prime Minister Sheikh Hasina has brought St Martin's Island under the spotlight.

— The island is located in the northeastern region of the Bay of Bengal, close to the border between **Bangladesh** and Myanmar. It is nine kilometres away from the southern tip of Bangladesh's Cox's Bazar-Teknaf peninsula.

MULLAPERIYAR DAM

— Mullaperiyar dam, an age-old issue, was raised in the Parliament during the Monsoon session. Kerala maintains that the 130-year-old dam is unsafe but Tamil Nadu opposes its demand to build a new one.

— The Mullaperiyar Dam is situated on the Periyar River in Kerala but its ownership and operation rights belong to Tamil Nadu.

— The dam, constructed in 1895 during British rule, was designed to divert water from the west-flowing Periyar to the arid regions of Tamil Nadu for irrigation.

PROJECT PARI (PUBLIC ART OF INDIA):

It is an initiative launched by the Ministry of Culture to celebrate and enhance the public art scene in India. This project is executed by the Lalit Kala Akademi and the National Gallery of Modern Art in New Delhi from July 21-31, 2024. PARI aims to stimulate dialogue and reflection through public art that blends India's rich cultural heritage with contemporary themes.

VETERAN IAS OFFICER T.V. SOMANATHAN APPOINTED NEXT CABINET SECRETARY

The government Saturday appointed 1987-batch Tamil Nadu cadre IAS officer TV Somanathan as the next Cabinet Secretary of India. He will have a two-year tenure beginning August 30. He will take over the charge from Rajiv Gauba, a 1992-batch IAS officer, who has been the Cabinet Secretary since 2019.

CHALLA SREENIVASULU SETTY

— The Appointments Committee of the Cabinet (ACC) has approved the appointment of Challa Sreenivasulu Setty as the new Chairman of the State Bank of India (SBI), the country's largest lender.

— He will take over from the current Chairman, Dinesh Kumar Khara, who is set to retire on August 28.

RAHUL NAVIN

— The acting Director of the Enforcement Directorate (ED) has been appointed as full time chief of the ED for two years.

K NATWAR SINGH

— Veteran Congress leader and former External Affairs Minister K Natwar Singh passed away on 10th August at the age of 93.

— He has served as the External Affairs Minister from 2004-05. He had held multiple ministries as well.

— He was awarded the Padma Vibhushan after he served as the head of the preparatory committee of the Non-Alignment Summit in New Delhi in 1983.

EXERCISE UDARA SHAKTI 2024

— It is a joint air exercise between the Indian Air Force and the Royal Malaysian Air Force (RMAF) which was conducted from 5 to 9 August 2024 at Kuantan, Malaysia.

— The IAF participated with Su-30MKI fighter jets.

WORLD LION DAY

— World Lion Day is celebrated on August 10 to bring people together from across the globe to pay tribute to the mighty lion.

— It was initiated by Big Cat Rescue, the world's largest accredited sanctuary dedicated to big cats.

— India is home to the Asiatic lion, found only in the Gir Forest.

WORLD BIOFUEL DAY

— August 10 is annually celebrated as the World Biofuel Day to highlight the significance of biofuel.

— The day also commemorates the successful operation of an engine on peanut oil by German engineer Sir Rudolf Diesel on August 9, 1893.

SILICOSIS

— Researchers in the UK have recommended that new limits to a person's daily exposure to silica dust in the construction, mining, dentistry and other industries could save about 13,000 lives worldwide.

— Silicosis is a respiratory disease which causes a hardening of the lungs. It is caused by silica dust or silica crystals, which are found in soil, sand, concrete, mortar, granite and artificial stone.

— It can take a long time for silicosis to develop — typically 10 to 20 years of occupational exposure to silica dust.

70TH NATIONAL FILM AWARDS

— The 70th National Film Awards for the calendar year 2022 was announced on Friday.

— The National Film Awards were first given out in 1954, at that time it was called 'state awards'. Nargis won the inaugural Award for Best Actress, for her performance as a schizophrenia patient in 'Raat Aur Din', while Uttam Kumar won the Best Actor award for both 'Antony Firingee' and 'Chiriyakhana'.

— The first-ever Best Feature Film winner was the Marathi movie Shyamchi Aai. The most awarded film in the history of the awards remains Ashutosh Gowariker's Lagaan, which received eight honours in 2002.

YEN CARRY TRADE:

The yen carry trade involves borrowing in Japan, where interest rates are extremely low, and investing in countries with higher interest rates. Investors profit from the difference, but unwinding this trade can impact global markets.

CHINA TRIALS CARGO DRONES, AIR TAXIS AS LOW-ALTITUDE ECONOMY GAINS SPEED

Engineers sent China's biggest-yet cargo drone on a test run over the weekend while a helicopter taxi took to the skies on a soon-to-open 100-km (62-mile) route to Shanghai, laying new milestones for the country's expanding low-altitude economy.

DRUG CAPTAGON:

It is commonly known as "poor man's cocaine." It was originally manufactured in Germany in the 1960s and 1970s where it was intended to treat attention deficit disorders.

BUSINESS & ECONOMICS

INDIA'S FUEL EXPORTS TO EUROPE SHIFT ENTIRELY TO LONGER ROUTE AROUND AFRICA AMID ATTACKS ON SHIPS IN RED SEA

With no signs of a let up in threat to ships transiting the Red Sea, India's petroleum product exports to Europe have shifted entirely to the significantly longer and costlier, albeit safer, route around Africa via the Cape of Good Hope.

As per ship tracking data, not even one Europe-bound fuel taker that set sail from India in June and July took the Red Sea route, which used to be the mainstay of India's exports to Europe and other Western markets. In fact, this has been the story largely over the past five months, with the exception of a few isolated cargoes that took the seemingly perilous route in March and May.

Since late last year, numerous cargo ships have come under attack from the Iran-backed Houthi rebels of Yemen around the Bab el-Mandeb strait, which leads to the Red Sea and Suez Canal, forming the shortest, although narrow, route to the Mediterranean Sea and beyond from the Arab Peninsula, North-East Africa, and the Arabian Sea. The route is seen as an important artery of global goods and energy supplies. The Houthis have been claiming that they are targeting vessels with links to Israel and its allies in response to its military offensive in Gaza.

As per trade sources, taking the Cape of Good Hope route instead of the Suez Canal adds 15-20 days to the voyage to Europe from India, apart from significantly inflating the freight costs. Higher risk premiums and longer voyages have hit movement of goods between Asia and Europe, and Asia and North America in terms of significantly higher freight rates.

Prior to the Red Sea security crisis, tankers hauling fuels from India to Europe rarely opted for the longer route around the African continent and depended almost entirely on the Red Sea-Suez Canal route.

The data shows that India's petroleum fuel exports to Europe in recent months have edged lower—at around 250,000-300,000 bpd—from the all-time high of around 425,000 bpd in December 2023. India's overall fuel exports, however, are stable at around 1.2 million bpd with increased dispatches to Asian markets and Australia offsetting the decline in supplies to Europe.

With attacks on merchant vessels in and around the Red Sea intensifying in recent weeks amid growing concerns over the possibility of the Israel-Hamas conflict developing into a wider Middle Eastern crisis with increasing involvement of Iran, other regional players, and even Western powers, it is highly unlikely that the Red Sea-Suez Canal route would find favour with shippers anytime soon.

India was traditionally not the biggest of fuel sources for Europe, with the continent depending heavily on Russia for energy imports. However, in the aftermath of Moscow's February 2022 invasion of Ukraine, as Europe started shunning Russian crude oil and fuels, India emerged as the largest buyer of Russian seaborne crude and also a major fuel supplier to Europe with all such shipments passing through the Red Sea.

Notably, the movement of Russian oil through the Suez Canal-Red Sea route has largely been immune to the prevailing crisis as Russia is perceived as Iran's ally and Yemen's Houthi rebels are evidently backed by Tehran.

"Indian refiners import their Russian barrels on a delivered basis, which means they don't really have a say in what routes would be taken for those cargoes…Generally speaking, most of Russian (crude oil) exports to India still go through the Suez Canal, so in terms of exposure still some 40 per cent of Indian (oil) imports rely on the Egyptian waterway," Katona said.

Prior to December 2023, the Suez Canal and the Red Sea accounted for around 10 per cent of global crude oil flows and 14 per cent of petroleum product flows. But as a number of major shipping companies are now avoiding the route, choosing instead to go around Africa, the share of global oil and petroleum product flows passing through the Suez Canal has dropped significantly. Russian crude, however, stands out as an exception.

'INDIA-RUSSIA IN TALKS TO WORK OUT EXCHANGE RATE'

Aimed at increasing exports to Russia amid widening trade deficit with the country, the Reserve Bank of India is in talks with the Central Bank of the Russian Federation to work out a currency exchange rate, a government official said on Wednesday.

— This comes as Russia has rapidly ascended to become India's top oil supplier, but Indian exports to Russia have struggled, resulting in a $57 billion trade deficit in the bilateral trade worth $66 billion in FY24. The gap has resulted in Moscow seeking yuan due to its rising demand for Chinese goods.

— An exchange rate is essential for the two countries to settle trade without using the dollar. Currency challenges come due to the trade imbalance between the two countries. In contrast, Russia-China bilateral trade has crossed a record $240 billion in 2023.

— "Currently there is no exchange mechanism between rouble and rupee. Now there is only cross currency reference which is happening right now. That adds a layer of additional premium so the idea is to avoid that. That will happen only when the two currencies are traded freely at the same exchange rate without referencing," the official said.

— "Dynamic exchange rate could help push the trade from $4.5 billion to $45 billion. If you want your rupee vostro accounts to be actually functional a direct exchange rate is required. Normally, barring euro and dollar any other exchange mechanism is via a referencing mechanism which is either a dollar or euro," the official said.

For Your Information:

— Russia has rapidly ascended to become India's top oil supplier, but Indian exports to Russia have struggled, resulting in a $57 billion trade deficit in the bilateral trade worth $66 billion in FY24.

— The biggest challenge in boosting Indian exports to Russia has been the reluctance of private banks to facilitate trade with Russia due to fears of Western sanctions. Most private banks have significant business interests in Western countries and multiple branches that could face sanctions imposed by the European Union (EU) and the US.

JOB OPPORTUNITIES DWINDLING IN THE WELL INDUSTRIALISED STATE OF GUJARAT

On July 9, a crowd of more than 1,500 youngsters turned up in Gujarat's Ankleshwar after they learnt of opportunities at a private firm, which had organised walk-in interviews for 10 vacancies at a hotel. The crush of job aspirants almost went out of control and a hotel railing broke amid frantic jostling among the applicants. Fortunately, a stampede like situation was avoided with only a few applicants sustaining minor injuries.

The video of applicants jostling and pushing to get inside the hotel went viral on social media platforms offering a view from the ground on job prospects in Gujarat, one of the most industrialised States with a large industrial base.

The principal opposition Congress party shared the video of the overcrowding, taking a dig at Prime Minister Narendra Modi and the "Gujarat model" over the incident.

The incident in Ankleshwar, a hub of more than 1,000 chemical and pharmaceutical factories, brought into sharp focus, the government's much touted claim of being the State with the least unemployed in India and the largest job producer.

To be sure, Gujarat is among the States with the lowest unemployment rates, ranking fourth from the bottom across all age groups for 2022-23, data on unemployment rates across the country, shared in the Lok Sabha by the Minister of Labour and Employment Mansukh Mandaviya, show.

Gujarat's unemployment rate of 5.1% for the 15-29 years age group, for instance, is less than Delhi's 6.1%, Maharashtra's 10.9%, Karnataka's 8.5%, and much lower than Andhra Pradesh's 15.7%. For the 15-59 years age group, Gujarat's unemployment rate of 1.8% is lower than Delhi's 2%, Maharashtra's 3.4%, Karnataka's 2.6%, and Andhra Pradesh's 4.4%.

In the State assembly last year, the State government provided data on unemployed youth who have registered in the various districts. A total of 2.38 lakh educated youth in Gujarat are unemployed and have registered themselves for employment with various government departments, as per the government's submission.

Despite claims and counter claims, job supply is not able to match demand in Gujarat. Take for example, Surat's diamond sector. Recently, Diamond Workers' Union began a helpline for those facing job related stress. "Within 24 hours of launching the helpline, we received as many as 400 calls from distressed diamond workers," said Bhavesh Tank, president of the union for Surat city.

He said, major concerns for callers were unemployment, rising cost of living and depression due to financial constraints and job uncertainty.

'No service sector'

"In Gujarat, it's a unique situation. On the one hand, there are low level jobs like security guards, drivers, supervisors, etc, but native Gujaratis are not interested," said a government official, speaking on condition of anonymity. "So, bulk of them are filled with migrants from U.P., Bihar and Rajasthan. Even at industrial sites like Kandla Port, Alang shipyard, Dahej or Vapi industrial sites, daily wagers are mostly migrants. For natives, they want either government jobs or high paying ones that are not there in the market since service sector is still evolving here."

The paucity of good jobs is also reflected in large number of youth wanting to go abroad, even illegally, as seen in the case of illegal immigrants who were returned from France when their flight was caught.

According to another official, Gujarat initially did not focus on developing service sectors like IT and mostly focused on industrialisation, which had helped in job creation. But now there was stagnancy in industrial jobs, and particularly, wages had not risen due to overall slack in factories, the official said.

SURAT DIAMOND FACTORIES LOSE SPARKLE AS WANING GLOBAL DEMAND CRIPPLES BUSINESSES

Large-scale layoffs and pay cuts due to dwindling global demand caused by economic and geopolitical factors have taken the sheen away from Surat's famed diamond industry, which until now employed around seven lakh workers in thousands of factories.

Recently, one of the largest diamond firms in Surat declared a 10-day "vacation'" for its 50,000 employees from August 17 to 27, citing diminished demand for polished diamonds in the international market due to an "economic slowdown" in developed countries.

According to him, the short supply of rough diamonds and the lack of sufficient demand for polished diamonds exported from Surat are the twin factors that have upended Surat's factories.

Since 95% of polished diamonds are exported, global factors always affect the sale of the precious stones, said experts from Surat, blaming the Russia-Ukraine and Israel-Hamas conflicts as some of the main factors responsible for the situation.

The other factor behind the economic downturn for the Surat industry is sanctions imposed by the U.S. and other members of the G7 group of countries on Russian diamonds due to its invasion of Ukraine.

The industry in Surat has been left with large inventories because Russia is one of the largest suppliers of rough stones.

Global diamond mining firm De Beers announced a 15% cut in rough diamond production in the second quarter ending June, as compared to the first quarter, citing "higher than normal" inventories as one of the reasons.

'Rising worker distress'

Last month, the Surat Diamond Workers' Union launched a suicide helpline for those affected by job losses or any financial problems. Within weeks of the launch, over 1,600 distress calls have been received on the helpline from those who either lost their jobs or were struggling with reduced wages that crippled their household finances.

Citing media reports, the union's Surat president Bhavesh Tank claimed that as many as 65 workers have died by suicide in Surat in the past 15 months.

Meanwhile, the industry representatives have asked the Surat diamond factory owners to extend support to workers and their families to tide over the crisis.

ANSWERS ARE IN OUR HISTORY

— The World Economic Forum's 2024 Global Gender Gap Index places India at 142 amongst 146 countries on economic participation and opportunity. Without economic freedom, there is no freedom for women. In our patriarchal society, they have to follow the dictates of the male breadwinners.

— Founded in 1917, the **Women's Indian Association** was the first national women's organisation that aimed to address the various challenges faced by women. **Stri Dharma**, its mouthpiece, carried regular articles highlighting the plight of women including factory workers.

— There were around 2,53,000 women factory workers in 1927. Their activism led to banning of night working hours for women, and the Bombay Maternity Benefit Act, 1929 which gave benefits of eight weeks' wages — four weeks each before and after delivery.

— "It is in the economic sphere that women will have to fight hard to establish her position," Hansa Mehta said in her presidential address at the annual convention of the All-India Women's Conference (AIWC) in 1945.

— In 1947, the sub-committee on women of the National Planning Committee, formed in 1939 by Subhas Chandra Bose, echoed these sentiments in its report. It called for equality of opportunity in employment, advocated a common civil code, and also proposed that inheritance laws be made gender-neutral.

— Recognition of unpaid domestic work must not be limited to paeans about women's resilience. There should be economic compensation in the form of income support for homemakers. Several state governments provide a monthly financial allowance to women — Gruha Lakshmi (Karnataka)…. These need to be replicated across the country and indexed to inflation.

For Your Information:

— After many decades of falling, India's women's labour force participation rate (WLFPR) is today trending upwards — rising to 37 per cent in 2022-23 from its nadir of 23 per cent in 2017-18. This increase is primarily driven by rural women, as rural WLFPRs increased to 41 per cent, with urban WLFPR remaining at 25 per cent.

— Historically, women have faced structural barriers to participating in the workforce and achieving financial independence, despite India's phenomenal growth. Occupational segregation kept women limited to low-growth, low-productivity sectors…

— The Gender Budget of 2024-25 presents the highest financial allocation for schemes designed to promote women-led development since the inception of gender budgeting in 2005, at Rs 3.2 lakh crore. This is about 6.8 per cent of the total expenditure budget and around 1 per cent of GDP. It is an increase of almost 37 per cent over the Gender Budget in 2023-24.

WOMEN AND MEN IN INDIA 2023

— The Ministry of Statistics and Programme Implementation (MoSPI) has released the 25th issue of its publication titled "Women and Men in India 2023".

— It provides data on a wide range of topics such as Population, Education, Health, Participation in Economy, Participation in Decision making etc. among others.

— By 2036, the population of India is expected to reach 152.2 Crore, with a slightly improved female percentage of 48.8% as compared to 48.5 percent in 2011.

— India's population in 2036 is expected to be more feminine compared to the 2011 population, as reflected in the sex ratio which is projected to increase from 943 in 2011 to 952 by 2036, highlighting a positive trend in gender equality.

CHOPPY WATERS

India's goods exports suffered a blip last month after three months of growth that had triggered hope of a notable recovery from a patchy 2023-24 performance. July's merchandise shipments' tally of just under $34 billion marks a 1.5% drop from 2023 levels, but is also the weakest number since November 2023 and the second worst since October 2022. Although 18 of India's top 30 export items clocked growth, including electronics (up 37.3%), readymade garments (11.8%) and handicrafts (13.2%), there was a significant drag from the rest. Petroleum exports dropped 22.2%, while gems and jewellery fell 20.4%, chemicals slipped 12%, and curbs on some food exports continued to hurt. This was accompanied by a tangible 7.5% rise in the import bill, fuelled by a 17.4% surge in petroleum imports, and a significant rise in consumer demand-driven 'non-oil, non-gold' imports such as electronics, pulses and vegetable oils. Gold imports fell 10.7% in dollar terms, but have hovered in the $3 billion-$3.4 billion range since April. With the Union Budget slashing import duties, gold imports could spike further. Moreover, silver imports that have been rising exponentially, mainly due to concessional duties offered under a trade pact with the UAE, shot up almost 440% in July, and are almost 202% higher in the first four months of 2024-25.

Of course, the combination of shrinking exports and growing imports spiked the trade deficit by almost 24% to $23.5 billion — a nine month-peak. Further upside risks remain, especially with domestic demand expected to hold up relative to the global demand for India's exports. The Commerce Ministry still appears sanguine and believes India will surpass last year's record export tally, factoring in robust services exports. But the outlook is uncertain, with existing and fresh geopolitical disruptions (Bangladesh) repeatedly flaring up, and freight cost surges making some exports unviable. A recent decline in commodity prices is another worry, especially with a decelerating Chinese economy, prompting its producers to flood global markets by undercutting prices. Global trade is expected to grow faster than 2023 but India must run harder to keep up, and actualise any gains. While the Centre's steps to tap new markets are laudable, it would do better to offer more certainty for exporters on the fate of official schemes to boost their competitiveness, before global festive orders come up for bidding. A duty remission scheme, RoDTEP, has been extended only till September 30, while an interest subsidy scheme lapsed in June for large players and ceases this month for smaller firms. Inter-ministerial parleys for their continuation and even expansion, must be expedited so that exporters have greater visibility over longer timelines to do their operational math rather than last-minute surprises.

ILLUSORY BLIP

India's retail prices rose 3.54% in July, the slowest pace in almost five years, easing sharply from 5.1% in June. Food inflation, that has been high for about three years now, slid to a 13-month low of 5.4%. This is also the first time since August 2019 that inflation as per the Consumer Price Index

(CPI) has aligned with the Reserve Bank of India's median inflation target of 4%. Last week, the Monetary Policy Committee (MPC) decided to maintain status quo on interest rates for the ninth consecutive time as it awaits a durable decline in the inflation rate. July's pleasant inflation numbers will not trigger a rethink, as the MPC has in fact, hiked its projection for this quarter's inflation average to 4.4% from 3.8%. So it expects price rise to rebound to well over 4% through August and September. There is good reason to see through July's print as a purely statistical outcome of base effects from last July — when the CPI was up 7.4% and food was 11.5% dearer — rather than a tangible softening of persistent price pressures for households.

Vegetable inflation, the biggest driver of last month's decline, slid from June's 29.3% spike to just 6.8% in July. But this was on top a whopping 37.3% rise last July, when prices of tomato, which played a key role in last month's vegetable price trend, had hit around ₹110 per kilo. Moreover, households do not feel the pinch of living costs on a year-on-year basis alone, as they need to readjust spending plans depending on how every passing month plays out. While vegetable (and tomato) prices were already high in May amid a heatwave, July's price levels are over 30% and 14% higher than May and June, respectively. Moreover, inflation in some food items, such as pulses and cereals, remains stubborn despite base effects. The prices of pulses rose in double digits for the fourteenth straight month, by 14.8% on top of 13.3% recorded last July. On the other hand, core inflation (excluding food and energy prices) rose for the first time since January 2023, primarily led by pricier services, including transport and communication that sped thanks to telecom tariff hikes. Private surveys on manufacturing and services signal a hardening of price pressures beyond food, which in turn is expected to see a meaningful reprieve only by October when the next harvest hits the market. While kharif sowing progress holds some hope, the September monsoon spurt predicted by the weatherman may yet hit standing crops. With the prolonged spate of high inflation cramping consumption levels, and in turn, hopes of fresh private investments, the latest optical blip offers neither comfort nor room for complacency.

EXPRESS VIEW: MONSOON AND THE GOOD NEWS FOR INFLATION

The southwest monsoon season had a poor start, with all-India rainfall in June 10.9 per cent below the long period average ("normal") for the month. The rains were subpar everywhere, save the South, Maharashtra, west Madhya Pradesh and east Rajasthan. But as El Niño ebbed and transitioned into a "neutral" phase, July recorded 9 per cent above-normal rains, with all regions, barring the North and East, receiving robust precipitation. The current month has been even better — 26 per cent above normal rainfall, taking the cumulative surplus for the season (June-September) to 6.3 per cent till August 12. The deficiency is now largely in Bihar, Jharkhand and parts of Northwest India where farmers have access to irrigation. In short, the monsoon has been good so far, while also helping recharge groundwater tables and fill up the country's major reservoir dams to 64.7 per cent of full storage capacity — more than 60.8 per cent last year and the 53.7 per cent 10-year-average for this time.

The well-distributed rains, both spatially and temporally, have led to increased area sown under all big-ticket kharif crops — paddy, pulses, maize and oilseeds. There are exceptions like cotton, whose acreage has fallen more due to farmers switching to groundnut, maize or paddy: Pink bollworm insect attacks, and no significant yield-protecting technologies after Bt cotton, have made them hesitant in growing the fibre crop. With global weather agencies predicting a La Niña — El Niño's "cool cousin" generally known to boost rainfall activity in India — to develop by September and persist through winter and spring, the prospects appear encouraging for the upcoming rabi cropping season as well. The last El Niño from April 2023 to almost May this year

not only suppressed the monsoon and post-monsoon rains, but also probably contributed to the winter's late arrival and higher-than-normal temperatures, especially in Central and South Peninsular India. A La Niña, hopefully, will deliver the opposite.

A munificent monsoon and no heat waves will provide welcome relief on food inflation. The latter ruled above 8 per cent year on year for eight straight months from November 2023, falling to 5.4 per cent in July only thanks to a high base inflation of 11.5 per cent last year for the same month. The Reserve Bank of India has refrained from cutting its interest rates — rightly so, knowing how food prices matter in influencing inflation expectations among Indian households and firms. A bumper kharif harvest and benign global prices with no fresh supply shocks could ease food inflationary pressures going forward. That should provide room for the government to lift export and stocking limit curbs on cereals, sugar and pulses, even while keeping the zero/low duty import window open on all major food commodities.

A FINANCING CHALLENGE

A rising and persistent gap between bank deposits and credit growth has led to the worst deposit crunch in two decades. The current and savings accounts (CASA) are banks' bread-and-butter sources of funding. These are typically very low cost and currently account for 41 per cent of total deposits as against 43 per cent last year.

— Core deposits provide a stable source of funding to banks, shielding them from fluctuations in market rates. As the core deposit share funds a smaller portion of their assets, banks face increasing pressure on profits.

— And if at the same time, the maturities of bank assets increase, it raises banks' exposure to interest rate risks. In an environment of "higher for longer'' policy rates and a potential rise in credit costs, there can be additional pressure on the profits and liquidity of the banking industry.

— The negative effects of declining deposit growth can extend beyond the banking sector and spill over into the broader economy. As banks' liquidity risk increases, their ability or willingness to fund loan growth can decrease.

— As a result, at a time when banks are becoming more sensitive to credit risk and tightening underwriting standards and loan terms, deposit erosion can further impair the ability of some borrowers to obtain funds or can increase their cost of funding.

— Multiple disruptive forces are reshaping the foundational construct of the banking sector. Rising competition, technological advances and deregulation over the years have significantly upped the competitive pressures facing banks.

— First, what will be the impact of declining deposits on loan growth? This is a chicken-and-egg question: Do banks seek new deposits because of strong underlying loan growth? Or, do they seek opportunities to lend profitably because their deposit base goes up? Empirical evidence suggests that both are true.

— Second, how widespread is the decline in deposit growth? All banks are facing funding pressures including the biggest public and private sector banks as evidenced by their management commentaries and financial results.

— Third, is the erosion in deposits greater for smaller intermediaries? Since smaller entities have fewer alternatives to deposits, they typically fund a greater fraction of their assets through core and other deposits and rely less on external funds and other liabilities.

— Fourth, will last-mile lending be constrained as a result of the decline in deposit growth? The deposit crunch could impact eventual credit flow via NBFCs, microfinance institutions and other smaller players as they primarily depend on the banks for funds. Such constraints could hurt consumption and investment activities.

— Lastly, are all loan portfolios affected to the same degree by slower deposit growth? So far, the demand for funds is not yet broad-based. Retail demand has remained robust, and industry hasn't yet felt the need to join the fray in a big way…

— Things could change — equity markets could cool off and relative returns may turn benign for banks or the government could chip in with tax breaks on interest from banks.

For Your Information:

— Banks need to take the old-fashioned route to bring back focus on mobilising "small deposits" and not just big deposits in order to reverse the flagging deposit growth rate, Finance Minister Nirmala Sitharaman said.

— Banks are facing challenges on the funding front with bank deposits trailing loan growth. As of July 12, while deposits grew by 11.7 per cent, loan growth increased by 15.5 per cent.

STEP DOWN

Not since the Harshad Mehta scam of 1992 has India's securities regulations and oversight come under such scrutiny. The Securities and Exchange Board of India (SEBI), which was established as a statutory body that year — it was constituted as a non-statutory body in April 1988 through a resolution of the Government of India — now faces allegations of bias and conflict of interest right at the top. The stakes are much higher with the Indian stock market now a $5.3 trillion financial powerhouse. Over the years, SEBI has put in place robust systems of checks and balances that have constantly evolved to ensure that India's securities market and financial system gained the reputation of being one of the most reliable globally. However, the accusations of a conflict of interest levelled by New York-based short-seller Hindenburg Research against SEBI chairperson Madhabi Puri Buch in the conduct of the ongoing investigations against the Adani Group, the Ahmedabad-based global infrastructure to FMCG major, for alleged stock price manipulation and corporate malfeasances, have cast a shadow on the statutory regulatory body. The main conflict concerns investments made by Ms. Buch and her husband Dhaval Buch in obscure offshore funds based in two tax havens, Bermuda and Mauritius, where Adani Group Chairman Gautam Adani's brother Vinod Adani had allegedly also made investments. A second conflict arises over the Buchs' consultancy firms in Singapore and India that the couple said were used by Mr. Buch to advise "prominent clients in the Indian industry" since 2019. It is not clear if some of them are SEBI-regulated. The Buchs claim that these firms "went dormant immediately" upon Ms. Buch's acceptance of the whole-time membership on SEBI's Board. However, Hindenburg, in its rebuttal to this response, claims that not only was the Indian entity functioning but it also clocked revenues of about $3,00,000 between financial years 2022-24.

This is an unprecedented case with wide ramifications where the Indian financial regulator's top appointee is directly involved. The Adani Group has been under SEBI investigation for charges

related to stock market manipulations for the past 18 months. SEBI has said that 23 out of the 24 charges under investigation have been completed. Whether or not Ms. Buch influenced investigations or decisions involving the Adani Group, the real issue is that there can be no room for any lingering doubts about her conduct. It would be in the fitness of things for Ms. Buch to resign from her position to ensure a thorough investigation into the allegations against the Adani Group. After all, the integrity of India's securities regulatory body itself is at stake.

ADANI CASE: SC HAD SAID IT CAN TRANSFER PROBE IF BIAS FOUND

The Supreme Court had said cogent evidence of bias or portrayal of inadequacy would convince it to transfer a probe to an independent agency or a court-appointed Special Investigation Team (SIT) while refusing a plea to drop the Securities and Exchange Board of India (SEBI) from investigating Hindenburg's allegations of share price manipulations and other irregularities against the Adani Group.

The judgment was delivered by a three-judge Bench headed by Chief Justice of India D.Y. Chandrachud on January 3.

In fact, the court had said SEBI's conduct of the investigation "inspired confidence". The court patted SEBI on the back for conducting a "comprehensive investigation". At the time, the SEBI had concluded 22 of the 24 investigations. It was waiting for inputs from "external agencies/entities" before deciding on the future course action to take in the remaining two probes. This was the last report on the status of the investigation in the Supreme Court.

The court's judgment had brought quietus to criticism about SEBI's probe into the Adani Group for the past eight months. However, a storm is gathering with Hindenburg's latest allegations against SEBI chief Madhabi Puri Buch. The shortseller has accused Ms. Buch of having a stake in obscure offshore entities used in what it alleged was "the Adani money siphoning scandal".

The Opposition has taken to social media. Leader of the Opposition in the Lok Sabha Rahul Gandhi has tweeted that the integrity of the SEBI has been gravely compromised by the allegations against its Chairperson.

The top court, in its January 3 judgment, had acknowledged its power under Article 32 and Article 142 of the Constitution to transfer an investigation from the "authorised agency" to the CBI or constitute an SIT.

However, it had said this was a rare power, to be used only if there was strong evidence on record that the investigation was prima facie tainted or biased and its continuation would lead to a "failure of justice".

"Unless the authority statutorily entrusted with the power to investigate portrays a glaring, wilful and deliberate inaction in carrying out the investigation, the court will ordinarily not supplant the authority which has been vested with the power to investigate," the top court had explained.

One of the grounds the SC had highlighted for transferring an investigation was when accusations were levelled against the "top officials of the investigating agency thereby allowing them to influence the investigation". Transfer of the probe to another agency would be then necessary to instil confidence in the investigation.

In fact, the top court had turned the spotlight on Hindenburg. "The loss which has been sustained by Indian investors as a result of the volatility caused by the short positions taken by Hindenburg Research and other entities should be probed," Chief Justice Chandrachud had observed.

AS NEGOTIATIONS FAIL, RAILWAYS CANCELS TENDER FOR 100 VANDE BHARAT TRAINS

The Indian Railways has cancelled a ₹30,000-crore tender given to the French engineering company Alstom to manufacture and maintain 100 aluminium-body Vande Bharat train sets for the next 35 years. The tender was awarded more than a year ago.

The tender was floated in June 2022, and the bids were opened in February 2023. Only Alstom India and a consortium of the Swiss Company Stadler Rail and the Hyderabad-based Medha Servo Drives successfully submitted the bids. While Alstom quoted ₹150.9 crore per train, Medha quoted ₹169 crore.

"Alstom's offer for the 100 aluminium electric multiple units (EMUs) was a very competitive offer and the lowest when benchmarked against similar trains produced globally," an Alstom spokesperson told The Hindu.

After the tender panel found Alstom's offer to be steep, Indian Railways asked the company to reduce the offer to ₹140 crore, but the company asked the Railways to settle at ₹145 crore per train set. "While being the lowest bidder, Alstom worked on Indian Railways' request to further optimise its offer… and looks forward to any new tenders that may come up in this space," the spokesperson said.

At present, India uses train sets made from steel. Trains made from aluminium are better as they are lightweight, energy-efficient, and have better resale value.

"It is a retrograde step. The Indian Railways should have negotiated further and settled at a price," he said.

CENTRE FINALISES TENDER TO PROCURE 1,000 GPUS UNDER INDIAAI MISSION

The government has finalised a tender document to procure 1,000 graphics processing units (GPUs) as part of its ambitious IndiaAI Mission and offer computing capacity to Indian start-ups, researchers, public sector agencies and other entities approved by the government, The Indian Express has learnt. A requirement of data localisation has also been considered in the tender.

The move is part of the Rs 10,370 crore IndiaAI Mission to establish a computing capacity of more than 10,000 GPUs and also help develop foundational models with a capacity of more than 100 billion parameters trained on datasets covering major Indian languages for priority sectors like healthcare, agriculture, and governance. The idea is that if such an infrastructure exists in the country, start-ups could plug into it for developing AI systems.

Computing capacity, or compute, is among the most important elements of building a large AI system, apart from algorithmic innovation and data sets. It is also one of the most difficult elements to procure for smaller businesses looking to train and build such AI systems, given the high costs.

MODI RELEASES 109 HIGH-YIELDING, CLIMATE-RESILIENT CROP VARIETIES

Prime Minister Narendra Modi on Sunday released 109 high-yielding, climate-resilient and biofortified varieties of crops at an event at the India Agricultural Research Institute in New Delhi.

— "The 109 varieties of 61 crops released by the Prime Minister included 34 field crops and 27 horticultural crops. Among the field crops, seeds of various cereals including millets, forage crops, oilseeds, pulses, sugarcane, cotton, fibre and other potential crops were released. Among the horticultural crops, different varieties of fruits, vegetable crops, plantation crops, tuber crops, spices, flowers and medicinal crops were released," The Prime Minister's Office said in a statement.

— The PM also discussed the importance of millets, and about the benefits of "natural farming and the increasing faith of common people towards organic farming".

For Your Information:

— Scientists at the Indian Council of Agricultural Research (ICAR) have been developing biofortified crops in India with a view to eradicating malnutrition amongst the poor sections of the society.

GOVT LAUNCHES GEOSPATIAL DECISION SUPPORT SYSTEM FOR AGRICULTURE: 'WILL BE A MILESTONE'

The Centre on Friday unveiled the Krishi-Decision Support System (K-DSS) portal, a satellite-based geospatial platform that will provide farmers with information on the weather, groundwater levels, soil health, reservoir storage levels etc and include data like satellite images.

— The Krishi-DSS was launched during the National Conference on Space Driven Solutions for Agriculture Transformation in India organised by the agriculture ministry.

— The one-day conference is part of the events planned by the government in the run-up to the first National Space Day 2024, which will be observed on August 23, the first anniversary of India's landing on the moon.

— Nilesh M Desai, Director, Space Applications Centre (SAC), said that the engagement between the agriculture ministry and space sector goes back to 1969 when, for the first time, an experiment was undertaken to examine the disease in coconut plants using remote sensing techniques. Since then, he said, the Indian Space Research Organisation (ISRO) has launched several satellites that are very useful for the agriculture sector.

— The Krishi-DSS is part of the Digital Public Infrastructure for Agriculture announced by Finance Minister Nirmala Sitharaman in her Budget speech on July 23.

— The Krishi-DSS will function as a repository of standardised geospatial data on weather, soil, crop, reservoir, and groundwater data. It will also integrate data related to government schemes and services, an official said.

CENTRE LAUNCHES NEW AI-BASED SURVEILLANCE SYSTEM TO MANAGE PESTS, CONNECT SCIENTISTS WITH FARMERS

The Union government on Thursday launched the National Pest Surveillance System (NPSS) powered by artificial intelligence to help farmers to connect with agriculture scientists and experts by mobile phones on controlling pests.

Launching the programme, Agriculture Minister Shivraj Singh Chouhan said the aim was to reduce the dependence of farmers on pesticide retailers and to inculcate a scientific approach among them towards pest management. The NPSS will analyse latest data using AI tools to help farmers and experts in pest control and management.

The Ministry said the NPSS would help about 14 crore farmers in the country. The Centre envisages connecting scientists with farmers using it. Farmers can take photos of the infested crops or the insect using the system on their phones and this will reach scientists and experts.

HOW CENTRE'S CLEAN PLANT PROGRAMME PLANS TO BOOST INDIA'S PRODUCTION OF FRUITS

The Union Cabinet on Friday approved the Clean Plant Programme (CPP), aimed at increasing the yield and productivity of horticulture crops in India.

First announced in Union Finance Minister Nirmala Sitharaman's interim Budget speech in February 2023, the CPP is also targeted at enhancing the quality of fruit crops across the nation.

The Ministry of Agriculture has sought an allocation of Rs 1,765 crore for the programme. One half of this will be sourced from the budget of the Mission for Integrated Development of Horticulture (MIDH), while the other half will be in the form of a loan from the Asian Development Bank (ADB).

How will the CPP work?

The programme has three main components geared towards helping farmers obtain virus-free, high-quality planting material (plants used for vegetative propagation) in order to increase crop yields and improve income opportunities. These are:

* Development of nine Clean Plant Centers (CPCs) which will provide disease diagnostics and therapeutics, create mother plants to be sent to nurseries, and quarantine all domestic and imported planting materials intended for commercial propagation and distribution;

* Enhancement of infrastructure, including the development of large-scale nurseries to facilitate the efficient multiplication of clean planting material — the mother plants obtained from the CPCs will be multiplied in nurseries and distributed to farmers;

* Creation of regulatory and certification process to ensure thorough accountability and traceability in the production and sale of planting material.

How Centre's Clean Plant Programme plans to boost production of fruits Centre's Clean Plant Programme.

What is the need for the CPP?

India is the second largest producer of fruits and vegetables in the world after China. From 2013-14 to 2023-24, the area under horticulture crops has risen from 24 million hectares to 28.63 million hectares, and production has increased from 277.4 million metric tonnes (mt) to 352 million mt.

India is also a major importer and exporter of fresh fruits. In the financial year 2023-24, India exported fresh fruits worth $1.15 billion, while it imported fruits worth $2.73 billion. With the rising consumption of fruits in the country, demand has specifically increased for planting materials of foreign apples, and "exotics" such as avocado and blueberry.

According to sources, between 2018-20, the EXIM committee for import of planting material of fruit plants permitted the import of 21.44 lakh apple plants in 2018, which increased to 49.57 lakh in 2020. In 2018, permission was given to import only 1,000 avocado plants which increased to 26,500 in 2020. Similarly, permissions for the import of blueberry plants went up from 1.55 lakh in 2018 to 4.35 lakh in 2020.

At present, the process of importing plants is very cumbersome, with imported plants having to be kept in quarantine for two years. The CPCs will cut this period down to six months, and thus make it easier for farmers to access disease free and genuine planting material for horticultural crops in India.

The concept of CPCs is on the lines of projects in countries like the US, Israel, and the Netherlands.

LIFE & SCIENCE

NASA'S SUNITA WILLIAMS AND BARRY WILMORE COULD BE STUCK IN SPACE TILL 2025: WHAT HAPPENS NOW?

A technical snag in the spacecraft that took them to the International Space Station (ISS) has forced astronauts Sunita Williams and Butch Wilmore to spend an extended period in space. Last week, NASA said they might have to wait till February 2025 to return to Earth.

Though in an unprecedented situation, Williams and Wilmore are not in danger. The ISS can comfortably house them for the next six months. Currently, there are seven other astronauts at the space station. The ISS, a permanent space laboratory orbiting Earth at a distance of about 400 km, is continuously manned and has never been without an astronaut since November 2000.

This is not the first time that astronauts have had to extend their stay at the ISS due to technical glitches. Williams and Wilmore, however, would have the longest unscheduled stay if they return in February.

Why are Williams and Wilmore stuck in space?

Williams and Wilmore travelled to the ISS on a Boeing spacecraft called Starliner in June. This spacecraft has made two trips to the ISS earlier but this was the first time it was carrying astronauts. Before the launch, a helium leak in Starliner's propulsion system was detected but was not considered serious enough to abandon the journey. Although Starliner developed two more similar leaks on its way, it reached its destination without any trouble.

According to reports, due to the longer exposure to microgravity on the ISS, astronauts might experience several health-related issues such as bone density reduction, vision-related issues, and are also at a higher risk of cancer due to DNA damage. This is why space exploration missions are kept short, not lasting more than a few weeks.

However, after it docked with the ISS and the two astronauts transferred inside, more problems emerged in Starliner, raising questions over the safety of the astronauts on their return journey — originally scheduled after just a week. So far, ground engineers have not been able to resolve all issues to everyone's satisfaction, leaving Williams and Wilmore stranded as they do not have a vehicle to return home.

Both NASA and Boeing have said they hope to get Starliner in order soon. If that does not happen, the earliest that the astronauts can return to Earth would be in February 2025 on another vehicle that is set to travel to the ISS in September. This spacecraft, operated by SpaceX, is supposed to carry four astronauts to the ISS and bring them back in February. However, if Williams and Wilmore also have to be brought back, then the SpaceX spacecraft will carry only two astronauts in September.

Can the ISS accommodate them?

In recent years, the ISS, which has been operational for 25 years, has usually been hosting seven astronauts at any given time. These astronauts mostly belong to the five countries/regions whose space agencies manage this facility — the United States, Russia, Japan, Canada, and Europe. The astronauts carry out a variety of space-based experiments and are themselves subjects of some

experiments, particularly those regarding the study of impacts of the outer space environment on human bodies.

Nonetheless, the ISS is large enough to accommodate more astronauts. The number increases when a new team comes to take over or when astronauts arrive for short visits like Williams and Wilmore did. The facility is bigger than a typical six-bedroom apartment in the US, according to NASA. It has six sleeping quarters, two bathrooms, and even a gym. When visiting spacecraft attach themselves, additional space is created.

Cargo spaceships routinely make trips to the ISS, carrying essential supplies and attending to maintenance requirements. On their return, these spacecraft take back waste generated at the ISS and dispose of it into space at the time of re-entering Earth's atmosphere where it gets burnt due to friction. In fact, one such cargo spacecraft, called Cygnus, operated by a private aerospace and defence firm Northrop Grumman, docked with the ISS last week. It carried more than 3,700 kg of cargo, which is currently being unpacked by the astronauts on board. It will remain docked with the space station till January after which it will return to Earth. As many as eight spacecraft can simultaneously dock themselves with the ISS.

The cargo spacecraft, however, cannot be used to bring back Williams and Wilmore as they are not equipped with the special capsules that can house humans in space.

Have astronauts stayed in space for a long duration?

Spending nine to 10 months in space is quite a long time but not unusual. Several astronauts have remained in space far longer than that.

The current record is held by Russian cosmonaut Valeri Polyakov, who spent 438 days at the Mir space station between January 1994 and March 1995. Russia's Mir predated the ISS and was operational between 1986 and 2001 before being brought down.

More recently, US astronaut Frank Rubio completed 371 days at the ISS between September 2022 and September 2023.

Several other astronauts, including women, have spent more than 300 days in space.

Williams and Wilmore are likely to spend more than 250 days by the time they return. Both these astronauts are on their third visit to the ISS. Williams spent 196 days on her first visit in 2006-2007 and then another 127 days in 2012. Wilmore, during his two previous visits in 2014 and 2015, has spent a total of 178 days at the ISS.

What happens to the human body in space?

NASA has increasingly been deploying its astronauts for extended stay missions to study the impacts on human bodies. US astronauts flying to the ISS can now volunteer to be part of such experiments. NASA is running a programme to study the impacts of short (up to 3.5 months), routine (up to eight months), and extended stays (more than eight months) of astronauts in space.

Past studies have shown that bone density and muscle quality deteriorate faster in space than on Earth. Low gravity impacts brain fluids and extended stays can potentially alter brain structure. Extended stays can also increase the risk of heart disease.

Several other impacts have also been noticed. The ongoing programme would help in better understanding of these changes.

For these reasons astronauts aboard the ISS spend almost two hours every day in the gym, doing a range of physical exercises.

QUESTIONS IN COSMIC HISTORY

With its huge mirror — five times bigger than that of its predecessor, the Hubble Space Telescope — the JWST, which was launched on Christmas Day in 2021 and arrived at its destination, the Sun-Earth Lagrange point 2 in January 2022, has been peering at the early epochs in the history of the Universe, when the first galaxies had barely formed.

— The rate of expansion of the Universe has been a subject of scientific debate for quite some time. Two different methods of determining the rate have yielded results that differ by as much as 10%.

— One method is based on phenomena in the early Universe — which implies events at a great distance, because the light we see from distant objects started its journey a long time ago. The other method relies on local celestial objects — although 'local' means a region spanning billions of light years.

— Some stars vary their brightness in a periodic manner, and the duration of this change tells us something about how bright they really are. From this, one can figure out their distance and, in turn, how the Universe has been expanding.

— The new space telescope was expected to nail the reason for the mismatch between the results obtained by the two methods. But its measurements seem to have only increased the discrepancy.

For Your Information:

— Researchers used the James Webb Space Telescope to detect an extremely red, gravitationally lensed supermassive black-hole in the early Universe. The black hole's colours suggest that it lies behind a veil of dust that obscures much of the light from the material it is consuming.

— Black holes "accrete" material before consuming it. This accretion lets out massive amounts of radiation brighter than the galaxy it is hosted in, causing it to appear like a bright star sometimes. The image from which the researchers identified the images was of a field of a cluster of galaxies called Abell 2744.

HUGE RESERVOIR OF WATER UNDER MARS, SEISMIC DATA INDICATES

An immense reservoir of liquid water may reside deep under the surface of Mars within fractured igneous rocks, holding enough to fill an ocean that would cover the entire surface of Earth's planetary neighbour.

That is the conclusion of scientists based on seismic data obtained by NASA's robotic InSight lander during a mission that helped decipher the interior of Mars. The water, located about 11.5 to 20 km below the Martian surface, potentially offers conditions favourable to sustaining microbial life, the researchers said.

"At these depths, the crust is warm enough for water to exist as a liquid. At more shallow depths, the water would be frozen as ice," said planetary scientist Vashan Wright of the University of California, San Diego's Scripps Institution of Oceanography, the lead author of the study published on Monday in the journal Proceedings of the National Academy of Sciences.

"On Earth, we find microbial life deep underground, where rocks are saturated with water and there is an energy source," added planetary scientist and study co-author Michael Manga of the University of California, Berkeley.

The InSight lander touched down in 2018 to study the deep interior of Mars, gathering data on the planet's various layers, from its liquid metal core to its mantle and its crust. The InSight mission ended in 2022.

"InSight was able to measure the speed of seismic waves and how they change with depth. The speed of seismic waves depends on what the rock is made of, where it has cracks, and what fills the cracks," Mr. Wright said. "We combined the measured seismic wave speed, gravity measurements, and rock physics models. The rock physics models are the same as the ones we use to measure the properties of aquifers on earth or map oil and gas resources underground."

The data indicated the presence of this reservoir of liquid water within fractured igneous rocks — formed in the cooling and solidification of magma or lava — in the Martian crust, the planet's outermost layer.

"A mid-crust whose rocks are cracked and filled with liquid water best explains both seismic and gravity data," Mr. Wright said. "The water exists within fractures. If the InSight location is representative and you extract all the water from the fractures in the mid-crust, we estimate that the water would fill a 1-2 km deep (0.6-1.2 miles) ocean on Mars globally."

The Martian surface is cold and desolate today but once was warm and wet. That changed more than 3 billion years ago. The study suggests that much of the water that had been on the Martian surface did not escape into space, but rather filtered down into the crust.

Water would be a vital resource if humankind ever is to place astronauts on the Martian surface or establish some sort of long-term settlement. But the depth of the apparent underground liquid water would make it difficult to access. "Drilling to these depths is very challenging. Looking for places where geological activity expels this water, possibly the tectonically active Cerberus Fossae (a region in the northern hemisphere of Mars), is an alternative to looking for deep liquids," Mr. Manga said.

PERSEID METEOR SHOWER

WHAT IS IT?

The Perseid meteor shower this year began around July and will last until late August, but their peak activity is going on now — between August 11 and 13. The shower should be visible to the naked eye in many places between midnight and dawn, especially in the northern hemisphere. Local weather conditions could affect this, however.

A meteor shower is a raining-down of meteors over the earth from space at a particular time of year. The Perseid meteors are debris left behind by the comet Swift-Tuttle, which orbits the Sun in an elliptical path that takes 133 years to complete once. When the earth moves through the

cloud of debris intersecting its path around the Sun, its gravity pulls the debris towards itself, producing the meteor shower.

In the 1990s, scientists studying the Swift-Tuttle comet noticed there was an important chance it could strike the earth or the moon in mid-2126. The impact could be powerful because the comet is 26 km wide. Fortunately, when scientists performed more careful calculations prompted by this concern, they found the earth was safe from a Swift-Tuttle impact for at least two millennia more.

The Perseids shower itself doesn't threaten the earth: most meteors burn up in the atmosphere. Some that take a more tangential path through the air produce small fireballs. During its peak, the shower can produce more than 60 meteors per hour.

WHAT IS THE GOOGLE 'MONOPOLY' ANTITRUST CASE AND HOW DOES IT AFFECT CONSUMERS?

The story so far:

On August 5, Google lost a major antitrust case brought against it by the U.S. Department of Justice (DOJ) that sought to establish that the tech giant had a monopoly in the web search and advertising sectors. The 10-week-long bench trial that took place in September 2023 saw high-profile tech leaders, including Google CEO Sundar Pichai and Microsoft CEO Satya Nadella, testifying before the U.S. District Court for the District of Columbia. The lawsuit accused Google of using its dominant position in the search engine market to elbow out rivals and maintain monopoly. Its exclusive deals with handset makers were brought before the court as evidence. In the end, U.S. District Judge Amit Mehta ruled that Google was a monopolist.

What did the ruling state?

According to the ruling, Google's search dominance was majorly achieved through a strategy of exclusive distribution agreements, or default distribution. This refers to the way Google entered into lucrative contracts with "browser developers, mobile device manufacturers, and wireless carriers" so that it was the first or default search engine that users of such services or new phones were given. Google pays for this privilege and has shelled out more than $26 billion for it in 2021, per the court.

"After having carefully considered and weighed the witness testimony and evidence, the court reaches the following conclusion: Google is a monopolist, and it has acted as one to maintain its monopoly. It has violated Section 2 of the Sherman Act," the ruling noted, referencing a U.S. law that views business monopoly or attempts at monopolising as an offence. Per the court, Google used its monopoly power in two markets: general search services and general search text ads. "Importantly, the court also finds that Google has exercised its monopoly power by charging supra-competitive prices for general search text ads. That conduct has allowed Google to earn monopoly profits," reported the filing. Furthermore, the court harshly criticised the way Google failed to preserve employee correspondence that could have served as evidence.

However, some of the court's conclusions were in favour of the tech giant. It was determined that Google did not have monopoly power in the search advertising market. The court also noted there was no product market for general search advertising and that Google was not liable for actions involving its advertising platform.

In addition to this, Google will not be sanctioned for the way it failed to preserve employee chat messages, though the court warned it might not be so "lucky" in a future case. Interestingly, the judge observed that Google had brought out the "industry's highest quality search engine, which has earned Google the trust of hundreds of millions of daily users."

How do monopolistic practices harm consumer experience?

Regulators around the world monitor how businesses use technology in their countries, to prevent the concentration of power in the hands of a few entities. This ensures healthy competition in the market segment, so that all participants are striving to do better for their customers. When a monopoly comes into existence, however, rivals may be forced out of the market while the company with the most power is able to abuse customers because they have very few other options. Such companies also lose the incentive to keep improving the quality of their product.

The court ruling in the Google case even pointed to this as a risk factor.

"Google's indifference is unsurprising. In 2020, Google conducted a quality degradation study, which showed that it would not lose search revenue if it were to significantly reduce the quality of its search product," observed the filing, "the fact that Google makes product changes without concern that its users might go elsewhere is something only a firm with monopoly power could do."

What did the U.S. DOJ say?

The U.S. DOJ hailed the ruling as a public victory for internet users in the U.S.

"This victory against Google is an historic win for the American people," said Attorney General Merrick B. Garland in a statement on the DOJ website. "No company — no matter how large or influential — is above the law. The Justice Department will continue to vigorously enforce our antitrust laws."

Google is far from the only company in the regulator's line of vision.

The U.S. DOJ is also reportedly teaming up with the U.S. Federal Trade Commission (FTC) to act against other large tech players on antitrust grounds, including Microsoft, OpenAI, and Nvidia, as per The New York Times.

What happens next?

Google will be appealing the ruling. In the meantime, the court has asked both parties, Google and the Department of Justice, to find a remedy ahead of their meeting with Judge Mehta on September 9. The remedy, in this case, could range anywhere between breaking up Google to ordering the search giant to end its exclusive deals with mobile makers.

The former could fundamentally alter the dynamics of consumer digital business market as Google plays a key role by providing its platform to both individuals and businesses to interact. In the latter case, in terms of immediate effect, handset makers could lose billions of dollars they receive from Google to pre-load the company's search engine in the smartphone.

This hefty payment to smartphone makers, particularly Apple, disincentivises them from innovating a rival search engine. Apple, during the hearing, had said that it will continue to use

Google as its default search engine. Apart from this lawsuit, the Justice Department is set to go against Google in another antitrust trial that deals with the internet company's ad technology.

THE CONTAINER THAT COOLS JUST RIGHT

Q: How does water stored in a mud pot remain cool?

A: The molecules of any liquid are in constant motion but all of them don't move with the same speed. Their energies vary over a small range and the temperature we measure represents only the average kinetic energy of all the molecules.

Even when left undisturbed, the fast moving molecules escape from the surface and vanish into air. As a result, the mean kinetic energy or the temperature of the water is lowered. This process is facilitated by a large surface area as more molecules come into contact with air.

The pores in mud pots provide a large surface area for evaporation and significantly cool the water in the pot, especially when the temperature outside is higher.

Interestingly, the water in the pot can never become ice. This is because the pitcher is not a closed system: it can also take up heat from its surroundings. Thus an equilibrium temperature is reached when the process of heat loss and gain are balanced. Further conversion of water (even at 0º C) into ice would require a further removal of heat to bring about a phase change. This will only be possible by using a refrigerant.

WHY CLIMATE CHANGE POSES AN EXISTENTIAL THREAT TO PANAMA CANAL

The first ship passed through the Panama Canal on August 15, 1914, exactly 110 years ago.

The 82-km canal, which remains one of the greatest feats of engineering in history, is a shortcut for ships travelling between the Atlantic to the Pacific Oceans by cutting through the Isthmus of Panama in Central America. It saves approximately 12,600 km in a trip between New York and San Francisco, and is one of the most important shipping lanes in the world.

While more 36 to 38 ships pass through the canal each day on average, last December, traffic had dropped to as low as 22 ships a day, with more than 160 ships stuck in anchor on both sides of the canal. This is because of the drop in the water levels of Lake Gatun, the artificial reservoir key to the Panama Canal system's operation, due to a drought.

Traffic now has been restored to upwards of 35 ships a day, experts know that this is a temporary respite, with climate change posing an existential threat to the canal. Here is how.

System of water elevators

The Panama Canal is not a simple channel of water connecting two larger water bodies — it is a sophisticated, highly-engineered system which uses a system of locks and elevators to take ships from one end to the other.

This is needed because the two oceans that the Panama Canal connects do not lie at the same elevation, with the Pacific slightly higher than the Atlantic. This difference means that for a ship entering the canal through the Atlantic, it needs to gain elevation during its journey to the Pacific. This is achieved using a lock system which lifts and drops vessels to the required sea level at either end of the canal.

Basically, locks are either flooded (to gain elevation) or drained (to lose elevation), and act as water elevators. In total, the system comprises three sets of locks — 12 locks in total — which are serviced using artificial lakes and channels. Here is how a set of locks works.

A ship approaches the first, lowest chamber of a lock, which lies at sea level;

The locked gate opens to allow the ship into the chamber, and closes behind it;

The valve between the first and second chamber (at a higher elevation) is opened to increase the water level of the first chamber;

The gate between the two chambers is opened once the water level is equalised, and the ship enters the next chamber.

This process is repeated to gain elevation. The opposite principle works when losing elevation. Ships entering from the Atlantic side first gain 26 m in elevation at Lake Gaitan, before losing some elevation closer to the Pacific side.

Threat of climate change

The Panama Canal needs massive amounts of fresh water to facilitate the passage of ships using this system of locks. Most of this water is supplied from Lake Gatun using the force of gravity (no pumps are needed).

According to a report by The New York Times, the passage of a single ship needs more than 50 million gallons (almost 200 million litres) of water. Thus, every day, the canal uses two-and-a-half times the amount of water consumed by the 8 million residents of New York City.

Last year, lower water levels in Lake Gatun meant that far fewer ships could pass through the canal every day, and those which did pass, often had to reduce their cargo to make the passage. While water from the oceans can be used to work the system of locks, this increases the salinity of Lake Gatun, which is also the source of drinking water for more than half of Panama's 4.4 million people.

While better rainfall has meant that things are better this year, experts say that this is but a momentary respite. "Rain not only washes the streets, it washes our minds and we think the problem is gone," Carlos Urriola, president of SSA International, which operates shipping terminals around the world, including at the Panama Canal, told The NYT. "The problem of water is a permanent one."

This permanent problem stems out of a much greater one which threatens humanity — climate change. Years of extreme rainfall deficits are not unheard of in Panama. But they have become increasingly common, and experts say as Earth heats up further, they might become even more common in the future.

"Historically there has been a [rainfall] shortage on average once every 20 years due to major El Niño events. In the last 26 years this is the third major rainfall deficit. So it seems that something is changing our rainfall patterns," Steven Paton, a veteran climate change expert at the Panama-based Smithsonian Tropical Research Institute, told The Guardian in 2023. What happened in 2023, statistically "has no analogue in the previous 100 years of data," he said.

A contentious solution

The fix proposed by the Panama Canal authorities is to create a second source of water for the canal by damming the Rio Indio. This is not the first time such a proposal has been made, but previously, an old law made the river untouchable. Last month, Panama's Supreme Court struck down that limitation, opening doors for the building of a $1.6 billion dam which authorities say will fix the problem for at least the next 50 years.

But not everyone is happy with this proposal. The reservoir which would service the canal during droughts will also flood the homes of 2,000 people, predominantly from the lower socio-economic strata. They will have to be relocated, and will lose lands and livelihoods that they have had for decades.

"They want to relocate us, but we don't think that way," Olegario Hernandez, one of the many people who will be displaced by the Rio Indio dam, told The NYT. "There's no place better."

EXPRESS VIEW ON THE HOTTEST JULY: BAD WEATHER REPORT

The National Oceanic and Atmospheric Administration's latest data, released on Thursday, shows that the world has experienced its hottest July ever recorded. The American institute's measurement differs slightly from the EU's Copernicus Observatory which clocked last month as the second hottest July on record. Some of the warming is due to El Nino and there is a distinct possibility that September will be cooler if La Nina keeps its date. However, given the staggering difference between the temperatures of the last 12 months and earlier records, there is now near unanimity on one thing: The world is entering uncharted territory on climate change. This will not only require hastening mitigation measures but also plugging knowledge gaps in diverse realms — weather reporting, making agriculture climate resilient, healthcare and urban planning.

Climate modelling has traditionally been a slow and reactive process. While such studies are, by and large, accurate in simulating global and national trends, they tend to underestimate regional variations. This makes it difficult to plan adaptation to local weather vagaries — for example, switching to crops that can withstand higher temperatures. In recent years, scientists have faced another challenge — hyper-local weather conditions. In India, for instance, the IMD predicts weather at the state, district or city levels. Increasingly, however, it's becoming apparent that blocks and localities within cities and districts require information on the magnitude of heat or rainfall. Delhi, for instance, witnessed its hottest July in 10 years. At the same time, parts of the city went under water after being lashed by torrential rain. Microclimate forecasting is a nascent field of study, and at most places it is heavily reliant on historical data that doesn't account for vagaries like those experienced by Delhi.

One solution is to increase the number of meteorological stations to monitor weather in different urban and rural zones. In India, the Centre plans to set up a weather station in each panchayat to provide granular data on rainfall, frost and humidity. Another imperative is to develop information-sharing mechanisms within countries and across national borders. Several extreme weather events — including the recent Wayanad tragedy and the Pakistan floods of 2022 — have underlined the urgency to co-relate the warming of seas with local climatic conditions. Scaling up projects under the UNFCCC's aegis — the decade-old Lima Adaptation Knowledge Initiative for instance — could go a long way in weathering uncertainties. The world needs a better response to the growing number of floods, droughts, forest fires and glacier loss.

RECORD TEMPERATURES IN GREAT BARRIER REEF SEEN IN LAST DECADE

Water temperatures in and around the Great Barrier Reef, Australia, in the past decade have been the warmest in the past 400 years. The results were published recently inNature. These periods of warming increase the risk of mass coral bleaching and mortality and are likely driven by human-induced climate change. The Great Barrier Reef has undergone a sequence of mass bleaching events in recent years, with the events increasing in frequency since some of the first recorded episodes occurred in the 1980s. Mass coral bleaching can be spurred by warming water temperatures linked to global warming. Analysis of sea surface temperatures in the Coral Sea, which contains the Great Barrier Reef, has until now mainly been limited to recent instrumental observations.

Researchers now reconstructed sea surface temperature data from 1618 to 1995 using coral skeleton samples from within and surrounding the Coral Sea and coupled this dataset with recorded sea surface temperature data from 1900 to 2024. They identified relatively stable temperatures prior to 1900. From 1960–2024, however, they observed an average annual warming for January to March of 0.12 degree C per decade. The average sea surface temperatures for January and March in the mass coral bleaching years of 2016, 2017, 2020, 2022, and 2024 were considerably warmer than in any year in the reconstruction prior to 1900 and were five of the six warmest the region has experienced in the past four centuries. Further modelling suggests that this rate of heating post-1900 can be attributed to human influence.

The authors note there are remaining uncertainties in reconstructed sea surface temperature data due to some of the chemical proportions in the coral that are used to model temperatures being influenced by other variables such as salinity. However, these uncertainties could be reduced with additional sampling of coral cores from the region. The researchers note that even if global warming is kept under the Paris Agreement's goal of 1.5 degree C above pre-industrial levels, 70% to 90% of corals across the globe could be lost, and future coral reefs will likely feature a different community structure with less diversity in coral species.

AS THE WORLD WARMS, MORE ACS ARE SOLD, HEATING UP THE GLOBE FURTHER

An average consumer in India tends to buy the least efficient air conditioner in the market, a recent analysis by the International Energy Agency (IEA) shows. While this pattern of behaviour is similar to the other five countries and regions — Australia, the U.S., China, Japan, and Europe — the range of efficiency in AC units available in India is not as wide as in other markets.

The IEA estimates that globally, people buy AC units that are half as efficient as what is available in stores. The dark line or the AC unit purchased by the average consumer lies on the extreme left end in the range of AC units available in the market.

One significant barrier to buying efficient AC units is the cost involved. While they are cheaper to run in the longer run, the high upfront cost deters consumers from buying them. According to an analysis by Our World In Data, in India, the cheapest AC unit with a 3-star efficiency rating costs around ₹29,000 while the cheapest variant with a 5-star rating costs about ₹36,000. This premium on the upfront cost makes households opt for the less efficient option.

The efficiency of air conditioning units becomes significant because their numbers are set to triple by 2050. The IEA estimates that there are two billion AC units in the world and according to its

projections, this figure is set to rise to over 5.5 billion by 2050. By 2050, China and India will have the highest number of AC units, more than 45% of the total units available globally.

One reason for high demand is climate change. As the world warms, more people will be exposed to heat waves, and those who already live in hot climates will experience more intense ones. The other reason is the rise in incomes. In extremely hot countries, like India or Indonesia, if people can afford an AC, they will buy it. The higher the demand for AC units, the more electricity it would require. According to the IEA estimates, "space cooling," consumed around 2,100 terawatt-hours (TWh) of power in 2022. Global electricity use in 2022 was around 29,000 TWh. That means AC uses around seven per cent of the world's electricity.

Electricity demand for air conditioning has more than doubled in last 22 years. This is also in line with growth rates in total electricity use, which increased by 90% between 2000 and 2022. Some of the electricity AC units use comes from fossil fuels, making them one of the drivers of carbon emissions. According to the IEA estimates, space cooling caused around one billion tonnes of CO_2 from electricity use in 2022. This amounts to 2.7% of total CO_2 emissions from fossil fuels and industry. But, this doesn't take into account the climate impact of refrigerants used in AC units

The AC unit's (cooling) contribution to global emissions is much lower than emissions from heating such as space and water heating. Chart 4 shows the global carbon emissions from heating and cooling over time.

If the release of greenhouse gases from refrigerants is taken into account, it adds another 720 million tonnes of carbon dioxide equivalents (CO_2 eq) to the annual carbon footprint of air conditioners. This takes the greenhouse gas emissions from ACs to 3.2% of all greenhouse gas emissions in 2022. Despite the electricity usage and emissions, research shows that air conditioning makes extreme heat tolerable. The 2021 Lancet Countdown report estimated that air conditioning prevented almost 200,000 premature deaths in 2019.

THE MELTING OF POLAR ICE DUE TO CLIMATE CHANGE IS MAKING DAYS LONGER

Scientists are attributing a slowing in the earth's rotation to climate change. Researchers have discovered that the melting polar ice caps have caused the earth to spin slower. This can lead to minuscule changes in the actual duration of a day — something that, ironically, does not affect our daily lives as much but could affect the technology we rely on.

As we build more connections not just among ourselves in this world but also with outer space, tools that rely on precise timekeeping, like computer networks and the ones involved in space travel, can be thrown off course by this change.

Making the world go around...

A basic physics phenomenon called the conservation of angular momentum is key to what is happening to the earth right now. When an ice skater rotates, if their arms are held in tightly, their moment of inertia decreases, and they spin faster. If they stretched their arms out wide, their moment of inertia would increase, making them spin slower. This is because angular momentum — a product of the moment of inertia and angular velocity — is conserved no matter how the skater is spinning. As polar ice continues to melt rapidly in a warming world, the globe isn't affected very differently from the spinning ice-skater.

"As the ice sheets melt, the earth's oblateness increases, and the region around the equator elongates slightly. The moment of inertia increases, and the rotation rate gets smaller."

Water from the melt flows towards the equator, making the earth bulge out slightly, slowing its rotation and increasing the time taken to complete one rotation, lengthening our day.

'A pretty big thing'

Using a mix of climate models and real-world data, the scientists looked at a 200-year period, between 1900 and 2100. They found that over the last two decades, the changing climate's effects on sea levels around the equator have slowed the rate of the earth's rotation by around 1.3 milliseconds (ms) per century.

Based on their projections, if the high emission scenarios persist, this rate will change to 2.6 ms per century. This will end up making climate change the dominant factor in slowing the earth's rotation, surpassing other factors.

The effect may be in the order of milliseconds, but it can still affect accurate timekeeping with atomic clocks. Even though we have kept time since the 1950s with the help of these ultra-precise devices, we also track the time taken for the earth's rotations and ensure they both match up. Just like the earth's revolution around the sun takes just a bit longer than 365 days, requiring the addition of a leap day, its rotation is also not always exactly 24 hours. It's a couple of milliseconds more.

When a second is a lot

A process called lunar tidal friction, or the moon pulling on the earth's oceans, has already been slowing the planet's rotation at about 2 ms per century. So if right now the earth takes about 2 ms longer to complete one day than the time predicted by atomic clocks, a 100 years later a day will be about 4 ms longer. As the milliseconds added up, leap seconds were added to keep pace with the earth's rotation. This is imperceptible to us, but systems like GPS, stock trading, and space travel bank on accurate measures of time and can be thrown off.

"In the precise timekeeping world, a second is a lot," Dr. Agnews said.

Some other processes, like the slowed rotation of the earth's core, have been speeding up the earth's rotation time. After the previous ice age, a lot of ice melted from the northernmost and southernmost parts of the earth, causing the crust to rebound at the poles. This has also helped the earth to spin faster, so much so that scientists have mooted debates to understand if we need a negative leap second to correct for it.

The axis is shifting, too

Dr. Agnews published a paper in Nature in March showing a similar result: that climate change and the resulting melting ice are slowing the earth's rotation and that that will actually delay the negative leap second.

Either way, both studies are proof climate change is exerting its effects over the entire planet by interfering with something as fundamental as how it spins around its axis.

Dr. Shahvandi and his collaborators published another recent paper in Nature Geophysics detailing the effects of melting polar ice on the earth's axis of rotation. Using observed data and

predictions made by physics-informed neural networks, they found the melting of polar ice and glaciers is one phenomenon driving the earth's polar motion.

The location where the earth's axis of rotation intersects the crust is moving ever so slightly over time.

For people in low-lying coastal areas, rising sea levels because of melting ice lead to more devastating consequences than the mere wobble of the earth's axis or a gradually lengthening day. Nevertheless, this is another example of how climate change is affecting our planet, pushing us towards a desperate need to curb emissions before the situation spins out of control.

AUSTRALIAN FIRM HOPES FUNGI CAN SLOW GLOBAL WARMING BY STASHING CO2 UNDERGROUND

Across 100,000 acres in the vast agricultural heartland of Australia, an unusual approach is taking root to slow down the wrecking ball of climate change. Farmers are trying to tap the superpowers of tiny subterranean tendrils of fungus to pull carbon dioxide out of the air and stash it underground.

— It's part of a big bet that entrepreneurs and investors around the world are making on whether dirt can clean up climate pollution. They are using a variety of technologies on farmland not just to grow food but to also eat the excess carbon dioxide produced by more than a century of fossil fuel burning and intensive agriculture.

— Why fungus? Because fungi act as nature's carbon traders. As they sow crops, farmers are adding a pulverized dust of fungal spores. The fungus latches on to the crop roots, takes carbon that is absorbed by the plants from the air and locks it away in a form that may keep it underground for much longer than the natural carbon cycle.

— It's still early days for most of these ventures, and exactly how much excess carbon they can remove and how long they can keep it underground remains contested. But their side benefits may be equally profound. They are all aimed at restoring the health of soils that have been degraded by decades of intensive agriculture by restoring microbes and minerals that they once contained.

For Your Information:

— The carbon removal potential of soils is huge. Soils hold three times more carbon than the atmosphere and they can potentially absorb more than 5 gigatons of carbon dioxide per year, or one-seventh of all the carbon dioxide that human activity injects into the atmosphere, according to the Intergovernmental Panel on Climate Change. That makes them the world's second-largest carbon store, after oceans.

JAPAN ISSUES ITS FIRST-EVER 'MEGAQUAKE ADVISORY': WHAT DOES IT MEAN?

After a 7.1-magnitude earthquake shook southern Japan on Thursday (August 8), the country's meteorological agency issued its first-ever "megaquake advisory".

The warning said the likelihood of strong shaking and large tsunamis is higher than normal on the Nankai Trough, a subduction zone (a region where tectonic plates collide with each other, and the heavier one slides under another) along Japan's southwest Pacific coast.

However, this does not mean that a major earthquake would definitely happen during a specific period, the advisory said.

What is the Nankai Trough?

The Nankai Trough is an underwater subduction zone (nearly 900 km long) where the Eurasian Plate collides with the Philippine Sea Plate, pushing the latter under the former and into the Earth's mantle. This accumulates tectonic stress which can cause a megaquake — an earthquake with a magnitude larger than 8.

The trough has produced large earthquakes roughly every 100 to 150 years, according to the 2023 study, 'High probability of successive occurrence of Nankai megathrust earthquakes', published in the journal Nature. These tremors usually come in pairs, with the second often rupturing in the subsequent two years — the most recent "twin" earthquakes took place in 1944 and 1946.

Notably, Thursday's magnitude-7.1 earthquake occurred on or near the Nankai Trough, according to the United States Geological Survey. As a result, experts worry that the next tremor along the trough could be devastating.

When can the next megaquake along the Nankai Trough occur?

In January 2022, Japan's Earthquake Research Committee said the next magnitude 8-9 megaquake along the trough has a roughly 70% probability of striking within the next 30 years.

Such a megaquake could send tremors to areas from central Shizuoka — about 150 km south of Tokyo — to southwestern Miyazaki, the Reuters report said.

Tsunami waves of up to 98 feet may reach Japan's Pacific coasts within minutes after the quake.

A 2013 government report found that a major Nankai Trough earthquake could impact an area that covers about a third of Japan and where about half the country's population of more than 120 million people lives, according to a report by Nikkei Asia magazine.

The economic damage due to the disaster could go up to $1.50 trillion, or more than a third of Japan's annual gross domestic product.

But can earthquakes be predicted?

No. An accurate prediction of an earthquake needs a precursory signal from within the earth, indicating a big quake is on the way. The signal must also occur only before large earthquakes so that it does not indicate every small movement within the earth's surface. Currently, there is no equipment to find such precursors.

Thursday's advisory by Japan's meteorological agency was just a warning not a prediction — it had nothing to do with science, Robert Geller, professor emeritus of seismology at the University of Tokyo, told the BBC. The advisory asked residents to prepare, review evacuation routes, and consider potential future warnings.

For Your Information:

— The surface of the Earth is divided into 7 major plates and several minor ones. They move a few centimetres a year, riding on semi-molten layers of rock underneath the crust. As the plates move, they pull apart or collide, unleashing the powerful movements known as earthquakes.

EARTHQUAKE 2,500 YEARS AGO ABRUPTLY CHANGED GANGA RIVER'S COURSE

In 2018, geochronologist Elizabeth Chamberlain, an assistant professor at the Wageningen University & Research, Netherlands, and her team were in Bangladesh to study the movement of river channels in the Ganges delta. They were exploring an almost 2-km-wide "paleochannel" — a well-preserved mud and sand archive of the river's ancient course — about 45 km to the south of the modern Ganga river. Today, the area is used to cultivate rice.

Based on geological measures in this area, they found the Ganga had abruptly changed its course — or avulsed — about 2,500 years ago, leaving behind the palaeochannel.

During their fieldwork, the team also chanced upon two large sand dikes a kilometre to the east of the paleochannel. These dikes are formed when earthquakes disturb the river bed and cause sediments to flow as if they were liquid. Scientists call this process liquefaction.

When Dr. Chamberlain's team spotted these sand dikes, they had a hunch they were looking at a "big event — the type that is rarely recorded and studied by scientists," she told this reporter. They were right: these sand dikes held the first proof that earthquakes can move rivers. In their June 2024 paper published in the journal Nature Communications, the team reported that an earthquake of magnitude 7 to 8 was responsible for shifting the course of the Ganga more than two millennia ago.

The study's findings call for urgent forecasting of major earthquakes that can cause avulsion of rivers like the Ganges, Till Hanebuth, a professor of marine geosciences at Coastal Carolina University in the U.S., said. He added that making decision-makers and the people at large aware of the risk is of paramount importance so they can prepare better for such events in future.

'SCREAMING' MUMMY WOMAN MAY HAVE DIED IN AGONY

It is a startling image from ancient Egypt: a mummy discovered during a 1935 archaeological expedition at Deir el-Bahari near Luxor of a woman with her mouth wide open in what looks like an anguished shriek.

Scientists now have an explanation for the "Screaming Woman" mummy after using CT scans to perform a "virtual dissection." It turns out she may have died in agony and experienced a rare form of muscular stiffening, called a cadaveric spasm, that occurs at the moment of death.

The examination indicated that the woman was about 48 years old when she died, had lived with mild arthritis of the spine, and had lost some teeth, said Cairo University radiology professor Sahar Saleem, who led the study published on Friday in the journal Frontiers in Medicine.

Her body was well preserved, having beenembalmed roughly 3,500 years ago during ancient Egypt's glittering New Kingdom period using costly imported ingredients such as juniper oil and frankincense resin, Ms. Saleem added.

The ancient Egyptians viewed the preservation of the body after death as crucial to securing a worthy existence in the afterlife. It was customary during the mummification process to remove internal organs aside from the heart, but this had not occurred with this woman.

But the quality of the embalmment ingredients "ruled out that the mummification process had been careless and that the embalmers had simply neglected to close her mouth. In fact, they

mummified her well and gave her expensive funerary apparel: two expensive rings made of gold and silver and a long-haired wig made from fibres from the date palm," Ms. Saleem added.

Cadaveric spasm, a poorly understood condition, occurs after severe physical or emotional suffering, with the contracted muscles becoming rigid immediately following death, Ms. Saleem said.

"Unlike postmortem rigor mortis, cadaveric spasm affects only one group of muscles, not the entire body," Ms. Saleem added.

The "Screaming Woman" was found at the site of the ancient city of Thebes during excavation of the tomb of a high-ranking official named Senmut, the architect, overseer of royal works, and reputed lover of queen Hatshepsut, who reigned from 1479–1458 BC.

DIRECTIONAL SWIMMING

Are jellyfish randomly moving organisms?

Despite there being some evidence that jellyfish may actively affect their position, the role of active swimming in controlling jellyfish movement and the characteristics of jellyfish swimming behaviour, have not been fully understood. As a result, jellyfish are often considered as passively drifting or randomly moving organisms. A study using drone videos helped track multiple adjacent jellyfish. The analysis showed that the movement of jellyfish is modulated by distinctly directional swimming patterns that are oriented away from the coast and against the direction of surface gravity waves. The behaviour of individual jellyfish translates into synchronised directional swimming of the aggregation as a whole. The researchers undertook numerical simulations, which showed that the counter-wave swimming behaviour of jellyfish results in biased correlated random-walk movement patterns that reduce the risk of stranding. This provides the jellyfish with an advantage critical to their survival.

SCIENTISTS FIND 'HIDDEN' HORMONE THAT KEEPS MICE MOTHERS' BONES HEALTHY

Osteoporosis is a condition in which the body's bones become weak and brittle. There are more than 10 million cases of osteoporosis every year in India, and it disproportionately affects ageing women more than men. The hormone oestrogen plays a crucial role in this condition because it stimulates the growth and formation of new bone. After menopause, the decreased function of the ovaries leads to oestrogen being depleted in the body, resulting in the loss of bone mass.

In a recent study published in the journal Nature, researchers at the Universities of California in San Francisco and Davis reported uncovering a novel brain-derived hormone that they say is responsible for increased bone mass in postpartum lactating mothers. The hormone is called CCN3.

A 'secret' path

Oestrogen plays a crucial osteoanabolic role: it stimulates the growth and formation of new bone. Consider oestrogen as a manager who tells (or signals) the members of her bone construction crew when to start and finish their jobs. During breastfeeding, the body signals to suppress oestrogen production in the ovaries, diverting energy away from the reproductive system to focus on milk production. This drop in oestrogen should lead to weaker bones.

But surprisingly, mothers' bones become stronger during this time to meet the high calcium demands of their babies and to make up for bone loss during pregnancy.

As a result, scientists have suspected that there is another way in which the body strengthens bones, independent of oestrogen.

For their studies, the researchers started with mice genetically modified to not produce a protein called oestrogen receptor alpha in the hypothalamus. Through systematic studies with these mice, they found that specific neurons, called KISS1 neurons, used the CCN3 hormone to maintain bone mineralisation during lactation.

CCN3 belongs to the CCN family of proteins. They are involved in several biological processes, including embryonic development, tissue repair, wound healing, and cancer progression.

Previous work has shown that KISS1 neurons are located in the arcuate nucleus (ARC), a critical part of the hypothalamus that regulates metabolism, reproduction, and bone health. Scientists also know KISS1 neurons are key to regulating bone mass in females.

The identification of CCN3 presents new opportunities to investigate its potential as a therapeutic agent for hereditary and chronic skeletal disorders, broadening the range of treatment choices for osteoporosis.

TINY BONES SHED LIGHT ON MYSTERY 'HOBBITS'

The discovery of a tiny arm bone suggests that an ancient human dubbed the "hobbit" only shrank down to their diminutive size after they arrived on an Indonesian island a million years ago, scientists said on August 8. Much about the pint-sized Homo floresiensis has been shrouded in mystery since the first fossils suggesting their existence were found on the island of Flores in 2003.

These tool-using hominins are believed to have been living on the island as recently as 50,000 years ago, when our own species homo sapiens was already walking the Earth, including in nearby Australia. From some 60,000-year-old teeth and a jawbone found in an island cave, scientists had previously estimated the hobbits were around 1.06 metres tall.

But the discovery of part of an upper arm bone as well as some teeth at an open-air island site on the island suggests some hobbits stood just one metre tall around 700,000 years ago, according to a study in the journal Nature Communications.

Study co-author Adam Brumm, an archaeologist at Australia's Griffith University, told AFP that it was the smallest humerus fossil of an adult hominin ever found. The discovery could tip the scales in a heated debate among scientists about how H. floresiensis became so small.

One side argues that the hobbits, nicknamed after the little heroes in J.R.R. Tolkien's fantasy novels, descended from an already small earlier hominin which arrived on Flores around a million years ago. Others believe it was our ancestor Homo erectus, which were roughly our size and had spread throughout Asia, that became trapped on the island, only to then evolve into the smaller Homo floresiensis over the next 300,000 years. The researchers behind the latest discovery believe it strongly supports the latter theory. These ancient humans "reduced drastically in body size according to a well-known evolutionary phenomenon known as island dwarfism," Dr. Brumm said.

Under this process, larger animals tend to shrink over time to adapt to their limited surroundings. The tropical island was home to other smaller-than-normal mammals, including a cow-sized relative of the elephant. The newly discovered teeth also look like smaller versions of those from Homo erectus, the researchers said.

"If we are correct, it seems that Homo erectus was somehow able to cross formidable deep-sea barriers to reach isolated islands like Flores," Dr. Brumm said.

"We don't know how they were doing this," he said, adding that "accidental 'rafting' on tsunami debris" was one possibility. Once these ancient humans were trapped on the island, they managed to survive for hundreds of thousands of years, evolving into "strange new forms," Dr. Brumm said.

ALL-NIGHT STREETLIGHTS CAN MAKE LEAVES INEDIBLE TO INSECTS: WHAT A NEW STUDY SAYS

Artificial lights that run all night, such as streetlights, can make leaves grow so tough that insects cannot eat them, which could threaten urban food chains, according to a new study.

The study, 'Artificial light at night decreases leaf herbivory in typical urban areas', was published earlier this month in the journal Frontiers in Plant Science. The analysis was carried out by Yu Cao, Shuang Zhang, and Ke-Ming Ma of the University of Chinese Academy of Sciences (Beijing).

How was the study carried out?

The researchers wanted to examine how artificial lights impact the relationship between plants and insects. To do so, they focused on two common species of street tree in Beijing: Japanese pagoda and green ash trees. Although these trees are similar in many ways, Japanese pagoda trees have smaller, softer leaves which insects prefer to munch on.

The researchers picked 30 sampling sites on main roads that are usually lit by streetlights all night. They then measured illuminance — the amount of light — at each site and collected around 5,500 leaves to evaluate the impact of light on their traits such as size, toughness, water content, and levels of nutrients and chemical defence compounds.

If the leaves were larger, it would mean that plants directed their resources (such as nutrients, water, and energy) to growth. If the leaves were tougher and contained high levels of chemical defence compounds like tannins, it would indicate that the resources were allocated for defence.

What were the findings?

The researchers observed that for both species of trees, the higher the levels of illuminance, the tougher the leaves. The tougher the leaves, the less evidence of insects eating them. The researchers found no sign of insects munching on leaves in areas which were lit the brightest at night.

They also noted that artificial lights altered the levels of nutrients and chemical defence compounds in the leaves that were analysed. For instance, Japanese pagoda trees which were exposed to more artificial light had lower levels of nutrients such as phosphorus in their leaves. Such leaves had less evidence of insects consuming them.

According to the study, this could be a bad sign for the ecosystem. Shuang Zhang, co-author of the study, told The Guardian in an interview: "Decreased herbivory can lead to trophic cascading

effects in ecology. Lower levels of herbivory imply lower abundances of herbivorous insects, which could in turn result in lower abundances of predatory insects, insect-eating birds, and so on. The decline of insects is a global pattern observed over recent decades. We should pay more attention to this trend."

Although researchers said they did not exactly know why trees are reacting to streetlights in this way, they suggested that trees exposed to artificial light at night might be extending their photosynthesis cycle. This can be really stressful for them as when a plant photosynthesises, it takes in energy, and if it does that all the time, the situation can be overwhelming and eventually kill the plant.

MICROWAVE OVENS HOST THRIVING COMMUNITIES OF MICROBES: WHAT A NEW STUDY SAYS

Microwave ovens used in homes, offices, and laboratories host thriving communities of microbes, according to a new study. The findings challenge the long-held belief that microwave radiation used to warm food completely kills bacteria, which can cause food-borne illnesses.

However, this does not mean that the microbes found in microwaves present a unique or increased risk compared with other parts of kitchens. Previous studies have shown that kitchen appliances such as coffee makers and dishwashers host distinct communities of microbes.

What were the findings of the study?

The researchers found 747 different genera of bacteria in the cultured samples. "The dominant ones belonged to the Bacillus, Micrococcus and Staphylococcus genera, which commonly live on human skin and surfaces that people frequently touch. Human-skin bacteria were present in all three types of microwave ovens, but were more abundant in the household and shared-use appliances," according to a report on the study by the journal Nature.

Some bacteria found in domestic microwaves, such as Klebsiella, Enterococcus, and Aeromonas, may pose a risk to human health.

Samples from lab microwave ovens contained the most diverse bacteria, including "extremophiles" or microbes that can withstand high radiation, high temperatures, and extreme dryness.

Belinda Ferrari, a researcher at the University of New South Wales (Australia) told New Scientist that she was not surprised that the researchers found bacteria living in microwaves. "They can survive in almost any extreme-exposure environment and they can adapt to everything," she said.

Ferrari also underlined the importance of cleaning microwave ovens regularly with disinfectant products. "Some workplace microwaves are disgusting and no one cleans them," she said.

HIDDEN DANGERS OF IRRATIONAL USE OF ANTIBIOTICS ON MICROBIOME

Antibiotics are often hailed as miracle drugs, capable of curing once-deadly infections and saving countless lives. However, the overuse and misuse of antibiotics in humans, animals, and agriculture have severe and often overlooked consequences. While the world is acutely aware that such practices drive antimicrobial resistance (AMR), a more insidious danger lies beneath the

surface. The true peril is the profound disruption antibiotics cause to the microbiome — a disruption that ripples out to affect every organ and function of our bodies.

Various roles

The human body is home to a vast, intricate community of microorganisms collectively known as the microbiome. This includes bacteria, fungi, and viruses. Astonishingly, our bodies host approximately 38 trillion microbial cells, outnumbering our cells, which total around 30 trillion. This means we are more microbial than humans. The gut microbiome, in particular, plays a crucial role in maintaining our health. It aids in digestion, supports the immune system, produces essential nutrients like vitamin K and certain B vitamins, and protects against pathogens. The diversity and balance of these microbial communities are vital for our well-being.

While antibiotics are essential for treating bacterial infections, their irrational use can wreak havoc on the microbiome. Antibiotics do not discriminate between harmful pathogens and beneficial bacteria. When we take antibiotics, especially the broad-spectrum ones, they wipe out a large portion of the gut bacteria. This disruption, known as dysbiosis, can have severe and long-lasting effects. Even a single course of antibiotics can produce dysbiosis that lasts for months or even years.

Dysbiosis can cause more severe conditions like inflammatory bowel disease and irritable bowel syndrome. A healthy microbiome is essential for a robust immune system. Dysbiosis can impair immune function, making the body more susceptible to infections and autoimmune diseases. The gut microbiome also plays a crucial role in regulating metabolism.

The gut microbiome interacts with various organs through complex networks known as gut-organ axes. These interactions influence the overall health and functioning of the body. The gut-brain axis links the gut microbiome with the brain, where dysbiosis can alter neurotransmitter levels and brain chemistry, affecting mood, cognition, and mental health conditions like anxiety and depression. The gut-liver axis involves the transport of bacterial metabolites and toxins from the gut to the liver. Dysbiosis can increase gut permeability ('leaky gut'), allowing more toxins to reach the liver and exacerbating liver conditions such as non-alcoholic fatty liver disease. The gut-skin axis involves the influence of the gut microbiome on skin health, where dysbiosis can exacerbate conditions like acne, eczema, and psoriasis by altering systemic immune responses and skin barrier function. The gut microbiome influences metabolic processes, including energy harvesting from food and the regulation of glucose and lipid metabolism. Dysbiosis can disrupt these processes, contributing to conditions like obesity, diabetes, and metabolic syndrome.

Beyond the gut, the microbiome also plays crucial roles in other parts of the body. The skin microbiome protects against harmful microorganisms and supports skin health. The respiratory tract microbiome helps defend against respiratory infections and maintains respiratory health. Antibiotic use can potentially lead to respiratory conditions such as asthma and chronic obstructive pulmonary disease. The genitourinary microbiome, which includes the vaginal and urinary microbiomes, protects against infections and maintains urinary and reproductive health. Dysbiosis in these areas can result in conditions like bacterial vaginosis and urinary tract infections.

Concerning aspects

One particularly concerning aspect of antibiotic use is its impact on colonisation resistance. This is the ability of the native gut microbiome to protect against colonisation by pathogenic

microorganisms. Beneficial bacteria consume available nutrients, limiting resources for pathogens. By occupying adhesion sites on the gut epithelium, commensal bacteria prevent pathogens from attaching and establishing themselves. Antibiotic use can reduce colonisation resistance, allowing harmful bacteria to take hold and proliferate, increasing the risk of infections.

Given the profound impact of antibiotics on the microbiome and the long-term health consequences of dysbiosis, it is crucial to use antibiotics judiciously. Implementing alternative practices, such as better hygiene, vaccination, and the use of bacteriophages, can reduce the reliance on antibiotics.

Antibiotics have revolutionised medicine, but their misuse poses serious threats. The concept of medicine being a poison when misused is particularly relevant here. In the right hands, these miracle molecules cure infections and save lives. However, if misused, they disrupt the microbiome and contribute to a host of health problems, essentially becoming poisons. Antibiotics are a prime example of the medicine-poison paradox. Preserving the balance of our microbiome is essential for maintaining our health. We must carefully consider our use of antibiotics before taking them.

DENGUE CONTROL: THE UNREALISED PROMISE OF WOLBACHIA-INFECTED MOSQUITOES

Reducing mosquito-borne illnesses through proven interventions has an immense potential to reduce the burden on our health systems and productivity. We must resurrect and fund innovative vector control programmes across India to combat the Aedes-borne triple epidemic of dengue, chikungunya and Zika

Dengue, a familiar threat in India, imposes a tremendous burden on the economy, estimated at around ₹28,300 crore in direct costs per year and 5.68 lakh years of young life lost annually. Existing vector control strategies, including insecticides and community education, have achieved only modest success. Clinical trials have yet to define the safety and efficacy of India's two dengue vaccine candidates and unearth effective antiviral agents. Given that a female Aedes mosquito transmits dengue, chikungunya, and Zika, biological vector control methods appear cost-effective, but mixed results limit their use.

Innovative vector control methods have been studied globally since 2009. This method employs a naturally occurring bacterium (Wolbachia) in fruit flies (Drosophila melanogaster) — many insect species in the wild host Wolbachia, but not the Aedes mosquito.

Wolbachia exhibits two facets of a symbiotic relationship (mutualism and parasitism) with the host insect. Scientists observed that Wolbachia provides resistance to viral infections in the fruit fly (mutualism) but can also impose a parasitic cost by shortening its life span and skewing insect populations toward a female majority. Resistance to viral infections could be due to direct competition between the virus and Wolbachia for the host cell's resources. This observation laid the foundation for studying Wolbachia-infected mosquitoes at the University of Queensland. In 2009, McMeniman used the wMelPop strain to reduce the lifespan of Aedes by half. In 2011, Walker and Johnson successfully used the wMel strain to promote viral resistance without reducing the mosquito's life span. The near-normal life span of the wMel mosquito allowed for more mating opportunities, rapidly establishing the bacterium in the study's mosquitoes. It soon became a promising candidate for blocking dengue transmission. The stage was set for field trials and clinical studies, first in Australia and then across Oceania, Latin America, and Southeast Asia under the aegis of the World Mosquito Program.

Using wMel to combat dengue

Laboratory personnel mechanically transfer wMel to the cytoplasm , termed transinfection, and, after establishing successful lines, release them into urban areas. Countries have successfully used two strategies: population suppression and population replacement.

Singapore released infected male mosquitoes (males don't bite humans) into its communities, covering 35% of households. When these males mate with uninfected females, they produce non-viable eggs ("cytoplasmic instability"), drastically reducing the Aedes population by 90%. Singapore estimated that people in the release areas are 77% less likely to have dengue infection.

Australia pioneered the population replacement strategy, releasing infected mosquitoes over population centres over 1-6 months. Mating between infected males and females, or uninfected males and infected females, produced viable wMel carrying offspring. The wMel-Aedes mosquitoes soon became dominant in the wild, with no new releases needed since 2017. Studies performed seven years after the initial releases show a stable wMel genome — a pre-requisite for continued success. Since then, Australia has reported successful outcomes in dengue control, nearing dengue elimination.

In 2021, a multi-national effort resulted in a pathbreaking randomised controlled trial (RCT) in Indonesia. RCTs are considered the gold standard for testing interventions. In this trial, investigators released wMel mosquitoes in 12 geographic regions, with 12 similar no-release areas. At the end of 3 years, people living in the mosquito deployment areas were approximately 77% less likely to contract dengue and 86% less likely to need hospitalisation.

The long-term impact of wMel releases into the ecosystem is unknown. However, Wolbachia naturally occurs within 60% of insect species and doesn't infect humans and vertebrate animals. Importantly, Aedes mosquitoes are a recent import into non-African ecosystems initiated by the slave trade and, in the last 50 years, accelerated by the combination of global trade, travel, and rapid urbanisation. Scientists do not classify wMel transinfection as genetic engineering because the process does not involve integrating the bacterium's genome into the host's genome.

wMel Programs in India

India currently does not have an active wMel mosquito release programme. On July 5, 2022, the Indian Council of Medical Research — Vector Control Research Center (ICMR-VCRC) provided an update about developing two colonies of Puducherry wMel Aedes strains. The update mentioned successful studies since 2018 and pending government approvals. However, the ICMR-VCRC has not issued significant public updates since then. ICMR has recently reported that Wolbachia was found naturally in Aedes in NE India.

The magnitude of results in field trials and the Indonesian trial highlight important implications for India. The wMel strategy could be highly cost-effective given its potential to reduce the burden of other emerging infections like Zika, Japanese encephalitis and chikungunya. wMel strategy also gains importance because we must rely on more than insecticides due to resistance, safety concerns and their limited effectiveness.

Ensuring appropriate public messaging about planned mosquito releases is essential. We can also learn valuable lessons from the experiences of mosquito releases in cities across 14 different

countries. During the monsoon, the surge in similar febrile illnesses overwhelms our healthcare systems.

Reducing mosquito-borne illnesses through proven interventions has an immense potential to reduce the burden on our health systems and productivity. Exploring all possible interventions to ensure a healthy, productive young population and realising our demographic dividend is crucial. We must resurrect and fund innovative vector control programs across India to combat the Aedes-borne triple epidemic of dengue, chikungunya, and Zika.

'NEW STRAINS BEHIND COVID-19 RESURGENCE'

Two strains, namely KP.1 and KP.2, are responsible for the recent surge in COVID-19 cases in India these strains evolved from the JN1 Omicron variant and are highly transmissible, causing symptoms that include fever, cold, cough, sore throat, body ache, and fatigue, which were generally not severe. There has been no associated increase in hospitalisations or severe cases reported.

According to data shared in Parliament, the Ministry said that, until August 5,the KP mutant strain had been reported from Maharashtra (417), West Bengal (157), Uttarakhand (64), Rajasthan (48), and Gujarat (42). Until June 15, India had sequenced 336,892 SARS-CoV-2 viral genomes, out of which 301,451 were sequenced by the Indian SARS-CoV-2 Genome Sequencing (INSACOG).

INSACOG is a consortium of 67 laboratories and 400+ sentinel sites to monitor the genomic variations in the SARS-CoV-2. The NCDC acts as the lead agency for Indian SARS CoV2 Genomics Consortium (INSACOG). The IDSP is coordinating flow of samples from States to Regional Genome Sequencing Labs (RGSLs) and providing feedback to States. The IDSP is also collating WGS results and reporting them to states and UTs for necessary action along with key epidemiological inputs, the Ministry noted.

IS THERE A THREAT OF RESISTANT FUNGAL INFECTIONS?

The rise of drug-resistant fungal infections, notably Trichophyton indotineae, is emerging as a significant health concern in India. This resilient dermatophyte, linked to the misuse of topical steroids, poses challenges for both patients and healthcare providers. Imagine battling a skin infection that refuses to heal despite multiple treatments. This is the reality for many people facing infections caused by Trichophyton indotineae, commonly known as ringworm or jock itch. First identified in India, this fungus has now spread to several countries.

Clinical Challenges

The inappropriate use of steroid creams has exacerbated the problem, making this strain particularly hard to treat.

Patients often present with persistent, treatment-resistant rashes that can easily be mistaken for eczema or other skin conditions, delaying treatment. These rashes can be red, scaly, and itchy, making them similar to more common dermatological issues. The misdiagnosis of these infections often leads to the use of ineffective treatments, which not only prolong patient suffering but allow the infection to worsen. The diagnostic process involves not just clinical examination but also laboratory tests, such as fungal cultures and molecular diagnostics, to confirm the presence of resistant fungal strains. Misdiagnosis and delayed treatment can lead to the spread of the

infection, not only worsening the individual's condition but also increasing the risk of transmission within the community.

Resistance to terbinafine due to genetic mutations in the squalene epoxidase gene is a concern. Additionally, growing resistance to another major antifungal, itraconazole, is of concern. For infections resistant to standard antifungal medications, treatments such as itraconazole may be necessary. However, these alternatives often come with significant side effects, including gastrointestinal issues, liver toxicity, and interactions with other medications, and will require close monitoring.

In addition to antifungal medications, integrating comprehensive skin care regimens can enhance treatment efficacy. This includes maintaining skin hydration, using barrier creams to protect affected areas, and avoiding irritants that can exacerbate the condition. Proper skin care supports the healing process and reduces the likelihood of recurrent infections.

Prevention strategies

The bottom line is that maintaining good hygiene practices is key to preventing the spread. Keeping the skin dry and clean is essential since moisture creates an ideal environment for fungal growth. Washing and drying areas prone to sweating, such as the feet, groin, and armpits, can reduce this risk. Avoiding the sharing of personal items like towels, clothing, and grooming tools is another measure. Wearing breathable clothing helps keep the skin dry and reduces sweating.

Maintaining a healthy lifestyle by boosting the immune system through a balanced diet, exercise, and sleep is also beneficial.