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INTERNATIONAL

REBEL SOLDIERS IN GABON CLAIM TO HAVE OUSTED THEIR PRESIDENT

Mutinous soldiers claimed to have seized power in Gabon on Wednesday and put the President under house arrest, hours after he was declared the winner in an election to extend his family's 55-year rule in the oil-rich Central African nation.

In a video apparently from detention in his residence, President Ali Bongo Ondimba called on people to "make noise" to support him. But crowds instead took to the streets of the capital and sang the national anthem to celebrate the coup attempt against the scion of a dynasty accused of getting rich on the country's resource wealth while many of its citizens struggle to scrape by.

"Thank you, Army. Finally, we've been waiting a long time for this moment," said Yollande Okomo, standing in front of soldiers from Gabon's elite republican guard.

Mr. Bongo has served two terms since coming to power in 2009 after the death of his father, who ruled the country for 41 years. Several members of the family are under investigation in France, and some face preliminary charges of embezzlement, money laundering and other forms of corruption, according to French media reports. There's been widespread discontent with the Bongo family for years, said Maja Bovcon, senior analyst at Verisk Maplecroft, a risk assessment firm.

But she said more immediate inspiration likely came from a recent spate of coups in the Sahel region of Africa where military officers have shown that they can seize power without repercussions.

Early on Wednesday, Mr. Bongo was declared winner of an election criticised by international observers. Within minutes of the announcement, gunfire was heard in the centre of the capital, Libreville. Later, a dozen uniformed soldiers appeared on state television and announced that they had seized power.

Gabon is a member of OPEC, with a production of some 1,81,000 barrels of crude a day, but its over 2 million people face high unemployment and rising prices. Nearly 40% of Gabonese aged 15-24 were out of work in 2020, according to the World Bank.

The soldiers who claimed power Wednesday planned to "dissolve all institutions of the republic," said a spokesperson for the group. He said that Mr. Bongo's "unpredictable, irresponsible governance" risked leading the country into chaos.

The coup attempt came about one month after mutinous soldiers in Niger seized power from the democratically elected government.

WITH THE GENERALS' BLESSINGS

The newly selected Prime Minister of Thailand, former real estate tycoon Srettha Thavisin, is starting his political journey on shaky ground. Just weeks before the May 14 national election, which resulted in three months of gridlock, the 61-year-old political neophyte had told the Voice of America: "I don't believe in military coups." As his Pheu Thai party fought the election with a clear stance against military rule, the ex-property mogul candidly declared while campaigning how he would turn down the Prime Ministerial post if the military was a part of the government.

Cut to the present: he is set to head an 11-party coalition government, including military-aligned and populist parties. Two main parties are led by ex-military generals, one of whom, former Prime Minister Prayut Chan-Ocha, led the 2014 coup against Pheu Thai. Pheu Thai, which was predicted to be the highest vote-getter in the May election, was first allied with the progressive Move Forward Party (MFP), which ended up winning the most number of popular votes. However, after the military-majority senate blocked two attempts by MFP leader Pita Limjaroenrat to form the government, Mr. Srettha's party decided to leave behind the MFP to stitch up an alliance with pro-military parties in order to get through a Senate vote and form the government.

Notably, the Bangkok native Mr. Srettha is a political neophyte who quit his real estate career only last year to join the Pheu Thai, a populist party founded by influential leader Thaksin Shinawatra, whose dramatic return to the country after 15 years of exile came just hours after Mr. Srettha was selected to become the Prime Minister. Mr. Srettha's sudden rise to prominence mirrors that of his confidant Mr. Thaksin, the telecom tycoon-turned-politician who led the country for over five years before being ousted by the military in 2006.

Mr. Srettha started his career at the Thailand arm of Procter & Gamble (PG.N) after attaining economics and business management degrees in the U.S. He is a father of three Western-educated children and is married to popular anti-ageing medicine expert Pakpilai Thavisin. In 1990, along with some members of his family, he founded a company that went on to become property developer Sansiri, eventually sprouting it into one of Thailand's biggest real estate firms.

A Rolex-flaunting Mr. Srettha said in a May interview it was the inequality plaguing Thailand that prompted him to enter politics. Mr. Srettha has also spoken out against Thailand's monopolistic businesses and a culture enabling elite and influential business families.

While a U-turn on the anti-military stance has already impacted his credibility among the electorate, there are also questions about how Mr. Srettha plans to keep the campaign promises. This has a lot to do with the time of Mr. Thaksin's return to the country. Mr. Thaksin was arrested on arrival owing to a graft conviction, but his return raises questions on whether Pheu Thai has cut a deal with the military. Notably, the last two decades of Thai politics have been coloured by the bitter tussle between pro-Thaksin parties and the kingdom's establishment.

While Mr. Srettha has advocated for amending the military-drafted Constitution, addressing social and economic equality and respecting human rights, the fate of his commitments remains uncertain after Pheu Thai's alliance with military elites to run the government.

RAINBOWS, DRAG SHOWS, MOVIES: LEBANON'S LEADERS GO AFTER PERCEIVED SYMBOLS OF THE LGBTQ+ COMMUNITY

BEIRUT: Rainbows, school books, movies and drag shows have all been targeted in Lebanon in recent weeks as politicians, religious leaders and vigilante groups step up a campaign against the LGBTQ+ community in a country that has long shown relative tolerance.

At a time when Lebanon is in the grips of one of the world's worst economic meltdowns in more than a century, the country and its leaders have been deeply split on how to deal with the crisis. Political factions have been so divided they haven't been able to choose a new president for 10 months.

But in recent weeks they united to fight the LGBTQ+ community. Politicians and religious leaders have intensified a campaign that in many ways mirrors the culture wars in the United States,

raising alarm over symbols and trends that might normalize queerness as an existential threat to society.

It comes at a time when an escalating crackdown on the LGBTQ+ community is also underway elsewhere in the region.

In some cases, the targeting comes after a spate of recent Quran burnings in Europe, which sparked angry protests in Iraq and other Muslim-majority countries. Local religious and political leaders have painted the LGBTQ+ community as part of Western attacks on Islamic values. In these demonstrations, many protesters burned rainbow flags.

In Iraq, some lawmakers are pushing a proposal that would expand a 1988 law on prostitution to include a paragraph imposing life in prison or the death penalty on those who have same-sex relations.

Lebanon was once seen as a place of relative tolerance in the region when it comes to LGBTQ+ rights. That has changed in recent years, as crackdowns on free speech and expression have surged.

In recent months, both rhetoric by politicians and harassment by individuals have increased.

Lebanon does not have a law that clearly bans same-sex acts. But Article 534 of the penal code prohibits sexual relations that "contradict the laws of nature" and has been used to penalize homosexuality, although some judges have held that consensual same-sex relations do not fall under the law.

In July, a handful of legislators called for abolishing Article 534. One of them, independent lawmaker Mark Daou, accused Hezbollah of using LGBTQ+ "to create a diversion" and to "terrorize a group within society."

The attempt sparked a backlash. The spiritual leader of Lebanon's minority Druze community, Sheikh Sami Abou el-Mouna, said eliminating the article would promote "vice and permitting what is prohibited." Some lawmakers took back comments backing the abolishment.

The backlash made some strange political allies.

In response to the call to repeal Article 534, Ashraf Rifi, a staunchly anti-Hezbollah Sunni legislator, said he is working on a draft law that criminalizes any attempt to legalize homosexuality. Meanwhile, the Union Centre for Research and Development, a reportedly pro-Hezbollah think tank, put forward a study titled "Resisting Homosexuality in Lebanon," which calls for criminalizing homosexuality. Hussein Ayoub, an official at the centre, said he hopes a parliament member will adopt the study's proposals to put into law. He denied that his centre did the study on behalf of Hezbollah.

Khaldoun Oraymet, a senior Sunni cleric religious judge, called homosexuality "satanic" and "a very dangerous phenomenon." He said mosques, churches, schools and families should fight it.

Many LGBTQ+ people are laying low, even in areas where they once could freely mingle and express themselves. "Do any of these people have solutions for water, electricity, and health care? They have nothing," Zeidan said. "And when they have nothing to offer, they create an enemy."

NATION

OLD TIES

Speaking after a bilateral meeting with Greece's Prime Minister Kyriakos Mitsotakis last week, Prime Minister Narendra Modi highlighted that India-Greece bilateral relations have neither been "diminished" nor has the warmth decreased despite no Indian Prime Minister having visited Greece since 1983. However, the absence of high-level contact has meant a lack of close strategic ties in the way India has with other nearby countries in Europe such as France, Spain, Italy and Cyprus. To that end, Mr. Modi's visit, which came shortly after Mr. Mitsotakis's re-election in June, sought to leap-frog ties. India and Greece agreed to establish a "Strategic Partnership" and announced plans for a dialogue mechanism between their National Security Advisers apart from plans for a skilled migration and mobility partnership, as well as cooperation to complete negotiations for the India-European Union (EU) Free Trade Negotiation on Connectivity partnership. While connectivity between the two countries was forged by Alexander's invasion in 326 BCE, exchanges now have been mainly predicated on tourism, trade (about $2 billion) and migration of labour, without a more comprehensive bilateral strategy at play. Speaking to the Greek newspaper, Kathimerini, Mr. Modi hoped that India's ambition to become a global manufacturing hub could now be melded with Greece's aspirations to become an "economic gateway" to the EU. In addition, India and Greece, once plundered by colonial powers, have also held discussions on the restoration of artefacts. They may find common cause in pushing legislation through UNESCO to help restore some of their historical property.

Their strategic ties have a strong geopolitical impetus as well. Mr. Modi's outreach comes as Greece, which has overcome several years as an "economic trouble-spot" and once over-indebted to Chinese investment, seeks to diversify its options. In Greece's strengthened ties with Israel and Cyprus — in what is seen as a coalition to counter Turkey — India might find some common ground, given Delhi-Ankara tensions over Turkey's role in the OIC and over Kashmir. In addition, India and Greece, once ancient maritime powers, face concerns over the maintenance of maritime security in keeping with international laws. Mr. Mitsotakis referred to the "common" interests that bind the Eastern Mediterranean and the Indo-Pacific regions. Lauding the landing of Chandrayaan-3, he said it showed "favourable omens" for the relationship between the most populous democracy and the first democracy, suggesting that both countries use the favourable winds to set the course for more cooperation, without allowing another four decades to lapse.

MAPPING TIES

A week after the first conversation in many months between Prime Minister Narendra Modi and Chinese President Xi Jinping, India and China appear nowhere near coming to any kind of understanding to repair their relations. On the contrary, relations this week have faced yet another storm, with the two sides clashing over China issuing a new map and reports on Thursday suggesting that Mr. Xi may skip the G-20 Summit in New Delhi next week. The Chinese Foreign Ministry did not confirm those reports, but it also chose not to deny them. Events this week, meanwhile, served a reminder of the currently low levels of trust, with relations arguably at their lowest since the normalisation of ties in the 1980s. On August 28, China issued what it called a "standard map" for 2023, which showed the entire State of Arunachal Pradesh, the Aksai Chin region and the South China Sea as Chinese territory, drawing protests from India, Malaysia and the Philippines. Beijing defended the map as "routine" and asked India to not "over-interpret" it, after the Ministry of External Affairs lodged a strong protest. While it may be true that the map

made no new territorial claims and depicted borders as in previous Chinese maps, it is clear that the needless issuing of a new map, amid multiple, live territorial disputes, has only further complicated them. The responses of China's neighbours make that clear.

When India in 2019 issued a new map following the internal reorganisation of Jammu and Kashmir and creation of the new Union Territory of Ladakh, Beijing responded with strong statements and initiated discussions at the United Nations Security Council, even though that map, too, did not change India's external boundaries or territorial claims vis-à-vis China. In the view of some observers, China's increasingly aggressive mobilisation on the Line of Actual Control, leading to the on-going crisis that has plunged relations to this low level, was partly a response to India's reiteration of its claims to Aksai Chin in 2019. In the recent up-and-down history of India's ties with China, summit meetings have offered the platform for the two countries to dial down tensions by giving the two leaders the opportunity for high-level interventions, as was the case at the 2017 BRICS Summit following the Doklam stand-off. Regardless of whether Mr. Xi visits New Delhi next week, the prospects of a similar rapprochement remain dim. Repairing relations will require slowly rebuilding trust on a foundation of greater mutual sensitivity. Indeed, China would do well to show its neighbours the sensitivity that it demands of them, if it has any inclination towards repairing increasingly fraught relations.

INDIANS MORE LIKELY TO BELIEVE NATION'S INFLUENCE IS GROWING: PEW SURVEY

India enjoyed a positive image across 23 countries, with a median of 46% adults holding a favourable view of India, while a median of 34% held unfavourable views, according to an international survey conducted by the Pew Research Center, a Washington DC-based fact tank.

The report, released ahead of the gathering of world leaders for the G-20 Summit in India in September, pointed to a variance between how Indians perceived Prime Minister Narendra Modi and India's influence, and the views of adults in other countries. For instance, 79% of Indian respondents had a favourable view of Mr. Modi, with a majority 55% having a "very" favourable view. In contrast, in other countries, a median of 37% reported having confidence in Mr. Modi. Kenyans had the highest faith in Mr. Modi, with 60% saying they trusted him to do the right thing regarding world affairs, while only 12% in Argentina said they had confidence in the Indian Prime Minister.

Not a familiar figure

The report also detailed how outside India, substantial respondents in many countries did not offer an opinion on India or Mr. Modi, with 40% of U.S. adults surveyed saying they had never heard of Mr. Modi.

Among Americans who had heard of him, "The prevailing sentiment is negative: 37% have little or no confidence in his ability to do the right thing regarding world affairs, compared with 21% who are confident in him."

A similar pattern was evident with regard to perceptions of India as a rising power. While seven-in-10 Indians believed their country has recently become more influential, only 28% across 19 countries said the same. Most respondents in these countries believed that "India's influence had not changed much in recent years (48% median)," but only 19% of Indians agreed with this view.

While perceptions of India skewed positive across the 23 countries surveyed, European attitudes toward India have turned negative over time, the report said. Favourable views of India had

declined by around 10 percentage points or more in all five European countries where past data was available. The greatest change was seen in France, where only 39% held a favourable view of India now, as compared with 70% in 2008.

Among the key findings, the survey also found that Indians stood out from their cohorts in other countries for their highly favourable views of Russia and Vladimir Putin, and unfavourable views of China. "Whereas a median of only 14% across 22 countries have a positive view of Russia, a 57% majority of Indians see Russia favourably," the report noted. When it came to China, India was "the only middle-income country surveyed where a majority has unfavourable views of China". In contrast, the U.S. was seen more favourably in India (65%) than in many of the countries surveyed.

View next door

One continuing trend from previous surveys was the persistence of negative attitudes toward Pakistan in India. The survey found that around 75% of Indian adults held unfavourable views about Pakistan, with 57% holding a 'very' unfavourable opinion. This pattern has held since 2013, with unfavourable views of Pakistan never dipping below 60%, the report observed.

Interestingly, while the Prime Minister emerged as the politician who commanded the highest percentage (80%) of favourable views within India, 60% of Indians saw Rahul Gandhi in a favourable light while 34% viewed him unfavourably.

The Pew Center report is based on a nationally representative survey of 2,611 adults in India, 3,756 American adults, and 24,674 adults in other countries from Asia, Europe, Australia, Africa, North America and Latin America. The surveys were conducted during February-May 2023.

ALTERING STATUS QUO

The Centre's stand that it is unable to commit itself to a timeline for restoration of Statehood for Jammu and Kashmir (J&K) is quite disappointing. Four years after the State's status was downgraded to that of a Union Territory, all that the Union government can say about it now is that the status as a Union Territory is temporary and that it is taking steps towards making J&K a complete State. When queried by the Supreme Court Bench, which is hearing the challenge to the abrogation of J&K's special status under Article 370 of the Constitution, about a timeline for the return of Statehood, the Solicitor-General said he was unable to give an exact time period. It is true that the State had faced disturbances for decades, but whether it can still be cited as the reason for the delay in restoration of statehood is a relevant question to raise. Alongside the President's declaration of Article 370 as inoperative and the application of the whole of the Constitution to J&K, the State was reorganised into two Union Territories — Jammu and Kashmir, with a Legislative Assembly, and Ladakh, without an Assembly. The Centre favours holding of panchayat and municipal elections as well as polls to the Assembly. The Election Commission of India and the State's Election Commission will have to take a call soon, as even the work of updating the electoral rolls is said to be nearing completion.

Given the government's claim that the situation is quite normal and that terrorism, infiltration and incidents of stone-throwing have all substantially come down, it is difficult to account for any further delay in the holding of elections. However, the picture of normality portrayed by the government should not, and is unlikely to, influence the adjudication of the constitutional issues arising from the manner in which the abrogation of special status was achieved. As the Chief

Justice of India, Justice D.Y. Chandrachud, observed during the proceedings, the development work the government says it has undertaken after August 2019 is not relevant to the constitutional challenge. Any positive change brought about by the administration in the ground situation should be a pointer to the need for early elections and the restoration of popular government as well as Statehood, and should not be used to demonstrate the correctness of the government's actions in 2019. To be fair, the hearing before a Constitution Bench, which has gone on for 14 days so far, has been quite rigorous in its focus on the constitutional and historical issues that will ultimately determine the validity of the manner in which the State's status was altered and its territory reorganised.

CONTROLLING WOMEN'S SEXUAL AUTONOMY

The Bharatiya Nyaya Sanhita, 2023, through Clause 69, proposes to criminalise sex which is based on the promise to marry when there was no intention of fulfilling the same. While the clause also covers "deceit"-based sex beyond the promise to marry, the focus here is on cases where there is a promise to marry.

Fundamental questions emerge from the proposed clause. Should criminal law have a role to play in sexual relationships that involve a false promise to marry? What does it mean for how we understand the sexual autonomy of women? It might seem like a women-centric proposal, but Clause 69 is steeped in misogynistic notions about women's sexuality. It casts women as perpetual victims who can be "duped" into having sex, and effectively denies them sexual autonomy. The understanding is that criminal law has to come to the rescue of a woman since the only way for her to reclaim her position in society as a "good woman" is by filing criminal charges against the man unless he agrees to marry her.

Invisibilising consent

Criminalising sex based on a promise to marry is not a new proposition; the judiciary has for long interpreted such cases as rape under Section 375 of the Indian Penal Code (IPC).Since a woman's consent to sex is based on a man delivering a future promise to marry her, the breaking of such promises culminates in a rape trial. Despite consent being exclusively defined under Section 375 of the IPC through the 2013 amendments, to date courts rely on the definition of consent under Section 90 of the IPC (consent given under fear or misconception) in these cases. Misconception is seen to exist when the promise is made only to "coax" a woman into sex without any intention of marrying her. The empty nature of the promise retrospectively vitiates the consent leading the man to be guilty of rape. But Section 90 also requires the man to know that consent is being given under misconception. Significantly, however, by proposing an offence separate from rape, Clause 69 throws out the element of knowledge on the part of men as well as women's consent. Irrespective of whether the consent of a woman to sex is actually based on a promise to marry, if such a promise is established to exist and be false, consensual sex can be punished.

It is not difficult to foresee a possibility of misuse of Clause 69 by parents of women when they discover (through her pregnancy or otherwise) that their daughter had premarital sex. At the stage of filing the complaint, it may not matter whether any promise to marry was made at all. Of course, men can eventually be acquitted if women deny the existence of a promise to marry, but this does not preclude arrest and detention in prison for a significant period.

This is not an exaggerated concern, especially when most rape trials are initiated by parents/guardians of women, to restrict their sexual autonomy. Nearly 55% of the rape trials I

observed in Lucknow in 2015 for a study fell in this category. Empirical research in other parts of India confirms the existence of these trends. Rape charges are filed by parents/guardians of women against men who elope with the women. Irrespective of their actual age, women are reported as minors. This sets statutory rape charges into motion against their male partners. As a result, many men spend time in prison only for courts to acquit them after finding the women to be adults. In such cases, rape charges arise not as an outcome of lack of consent but because of consent. Cases where there has been a promise to marry follow a similar logic: consensual sex is post-facto framed as a criminal offence if men fail to deliver on their promise of marriage.

Judicial interpretations

Judicial interpretations of promise-to-marry cases as rape are also instructive. Courts have been willing to convict for rape only when the promise is false from the start and not necessarily when it is breached. Therefore, it is not considered rape when the promise has been broken for what the court sees as "legitimate" reasons. For instance, according to the Supreme Court, a man cannot be convicted for rape if the promise to marry has been broken because his parents were opposed to the wedlock (Deelip Singh v. State of Bihar, 2004). The implicit logic is that there is nothing wrong with a man not fulfilling his promise of marriage without parental consent. Similarly, if a woman has sex with a man from another caste based on a promise to marry, she is aware that marriage was never possible. This means that there was consent to sex irrespective of the promise of marriage (Uday v. State of Karnataka, 2003). The underlying basis here is that she should have known that inter-caste marriages are not socially acceptable. In essence, the law does not "protect" women who wish to defy caste and other social hierarchies to marry a man. Arushi Garg's research on promise-to-marry cases in Delhi demonstrates that trial courts closely follow in the footsteps of the Supreme Court.

Promise-to-marry cases also carry the danger of diluting the gravity of sexual violence and strengthening rape myths. While most trials in Lucknow during my fieldwork were elopement cases, a considerable number were an outcome of a broken promise of marriage. It was evident that defence lawyers and police personnel routinely cited promise-to-marry cases as prime examples of women misusing the rape law.

Clause 69 has little to do with punishing sexual violence against women. Instead, it aims at regulating socially prohibited sex. If we are truly committed to the sexual autonomy of women, we must resist the victimhood that Clause 69 looks to assign women.

WHAT THE SUPREME COURT ORDER ON THE VALIDITY OF 'SELF-RESPECT' MARRIAGES SAYS

The Supreme Court on Monday (August 28) observed that there is no blanket ban on advocates solemnising "self-respect" marriages under Section 7(A) of the Hindu Marriage Act, 1955.

In doing so, a Bench of Justices S Ravindra Bhat and Aravind Kumar set aside a 2014 ruling of the Madras High Court holding that marriages performed by the advocates are not valid and that "suyamariyathai" or "self-respect" marriages cannot be solemnised in secrecy.

What are 'self-respect' marriages?

On January 17, 1968, the Hindu Marriage (Tamil Nadu Amendment) Act, 1967, received the President's approval and became the law. This amendment modified the Hindu Marriage Act of 1955, by inserting Section 7-A into it. However, it extended only to the state of Tamil Nadu.

Section 7-A deals with the special provision on "self-respect and secular marriages". It legally recognises "any marriage between any two Hindus", which can be referred to as "suyamariyathai" or "seerthiruththa marriage" or by any other name.

Such marriages are solemnised in the presence of relatives, friends, or other persons, with parties declaring each other to be husband or wife, in a language understood by them. Further, each party to the marriage garlands the other or puts a ring on the other's finger or ties a "thali" or mangal sutra. However, such marriages are also required to be registered as per the law.

The rationale behind the Tamil Nadu government amending the Hindu Marriage Act, 1955, to include "suyamariyathai" or "self-respect" marriages, was to radically simplify weddings by shunning the need for mandatory Brahmin priests, holy fire and saptapadi (seven steps). This allowed marriages to be declared in the presence of the couple's friends or family or any other persons. In a nutshell, the amendment was made to do away with the need for priests and rituals, which were otherwise required to complete wedding ceremonies.

In its recent order, the Supreme Court allowed a petition challenging a Madras High Court order dated May 5 where the court had ordered the initiation of disciplinary action against the advocates who solemnised such marriages in their offices and issued marriage certificates to consenting adults.

What did the top court say?

In the case of "Ilavarasan v. Superintendent of Police", a Bench of Justices Ravindra Bhat and Aravind Kumar was hearing an appeal of a man called Ilavarasan against a Madras High Court order passed in May 2023, rejecting his habeas corpus petition to present his wife before the court.

The petitioner had claimed that he had performed "suyamariyathai" with his wife, who was currently under her parents' "illegal custody". Refusing to accept the "self-respect" marriage certificate issued by the advocate, the Madras High Court dismissed Ilvarasan's habeas corpus plea. Thus, he was compelled to move the top court, which successfully admitted his plea.

In doing so, the court overruled the 2014 ruling of the Madras High Court in "Balakrishna Pandian v. The Superintendent of Police", where it was held that marriages performed by the advocates are invalid and that "suyammariyathai" or "self-respect" marriages cannot be solemnised in secrecy.

The Madras High Court had held in its 2014 ruling: "We are very clear in our mind that even the protagonists of the Suyammariyathai/Seerthiruththa form of marriage did not visualize marriages being solemnised in secrecy. The very idea of performing marriages with celebration is to publicly declare the marital status of the parties. Even Thanthai Periyar used to conduct Suyamariyathai form of marriages publicly so that the world recognised the status of the couples. Hence, celebration of marriage is not antithetical to Suyammariyathai/Seerthiruththa form of marriage.

Therefore, we are of the opinion that a marriage conducted in secrecy with few strangers around, be it Suyammariyathai form, will not amount to solemnisation, as required under Section 7 & 7-A of the Hindu Marriage Act".

Further, the top court also relied on its 2001 ruling in "Nagalingam v. Sivagami", which said that there is no blanket ban on advocates to solemnise marriages under Section 7(A) of the Hindu Marriage Act (Tamil Nadu State Amendment Act).

What has the top court ruled on 'self-respect' marriages in the past?

In "S. Nagalingam vs Sivagami" (2001), a bench of Justices DP Mohapatra and KG Balakrishnan recognised the petitioner's marriage with his wife to be a valid one despite the ceremony of "saptapadi" or seven steps around the sacred fire, not taking place.

Clarifying that the parties in the present case did not consider the "saptapadi" ceremony to be as essential as per their personal law, the court said that Section 7-A of the Hindu Marriage Act (Tamil Nadu State Amendment) would apply instead.

"The main thrust of this provision is that the presence of a priest is not necessary for the performance of a valid marriage. Parties can enter into a marriage in the presence of relatives or friends or other persons and each party to the marriage should declare in the language understood by the parties that each takes the other to be his wife or, as the case may be, her husband and the marriage would be completed by a simple ceremony requiring the parties to the marriage to garland each other or put a ring upon any finger of the other or tie a thali," the court had observed in its ruling.

CHILDREN FROM VOID, VOIDABLE MARRIAGES ARE LEGITIMATE, CAN CLAIM RIGHTS IN PARENTS' PROPERTIES: SC

The Supreme Court on Friday held that children born out of "void or voidable" marriages are legitimate and can claim rights in parents' properties under the Hindu Succession law.

According to the Hindu law, the man and woman in a void marriage do not have the status of husband and wife. However, they have the status of husband and wife in the voidable marriage.

In a void marriage, no decree of nullity is required to annul the marriage. While, in a voidable marriage decree of nullity is required.

The top court's verdict came on a 2011 plea pertaining to the vexatious legal issue of whether non-marital children were entitled to a share in the ancestral property of their parents under Hindu laws. "We have now formulated conclusion, 1. A child of a marriage which is null and void is statutorily conferred with the legitimacy, 2. In terms of 16(2) (of the Hindu Marriage Act) where a voidable marriage is annulled, a child begotten before degree is deemed to be legitimate," a bench headed by Chief Justice D Y Chandrachud said in the judgement. "Equal rights have been granted to daughters in the same manner…," it said.

The top court decided the question whether the share of such children is limited only to the self-acquired property of their parents under Section 16(3) of the Hindu Marriage Act. These questions were referred to a larger bench by a two-judge bench of the apex court on March 31, 2011.

The detailed order is awaited.

EXPRESS VIEW ON GOVERNOR PUROHIT VS CM MANN: FOR PUNJAB'S SAKE

An intense war of words has broken out between Governor Banwari Lal Purohit and Chief Minister Bhagwant Mann in Punjab. Last week, Governor Purohit sent a letter, warning or threatening that he could recommend President's rule and initiate criminal proceedings against Chief Minister Mann if his letters to the CM remained unanswered. The four-page letter also alleged the failure of constitutional mechanisms and pointed to the drug issue in the state. In response, the chief

minister accused the governor of overstepping and questioned the conduct of governors in non-BJP ruled states. To be sure, a pattern has emerged of strained relations between BJP-appointed governors and chief ministers in Opposition-ruled states. A notable instance of the increasingly visible syndrome is the ongoing friction between the Lieutenant Governor in Delhi, Vinai Kumar Saxena, and CM Arvind Kejriwal, which has taken the shape of an impasse. The Telangana government invited the Supreme Court's intervention to address delays by the governor in clearing pending Bills in that state.

Punjab has been moving in the same dismal direction. In March this year, the CM-governor conflict reached the door of the Supreme Court when the governor denied permission to the state government to hold the budget session — eventually, he gave it his nod on the day of the hearing in the apex court. The SC bench headed by Chief Justice DY Chandrachud delivered a rap on the knuckles to both warring parties, saying that there has been dereliction of duty on both sides. The Bench pointed out that Article 167 allows the governor to seek information from the government, and the government is duty bound to provide it. At the same time, the bench said, the governor is also bound by the cabinet's advice to summon the assembly session. The rebuke does not appear to have had a calming or sobering effect on the two sides.

A duly-elected chief minister must be given the space to deliver on the mandate. In times when the BJP-led Centre demonstrates a growing tendency to assert overweening power in states ruled by Opposition parties — as it has by pushing the Delhi Services Bill through Parliament in the Monsoon Session – the chief minister is well within his rights to push back against attempts from Raj Bhavan to assume the powers of "Super CM". But having said that, the friction between the chief minister and governor also takes a toll on governance. The Punjab CM says the governor is yet to clear six bills passed by the assembly. Besides the unanswered letters — the CM says he's answered nine out of the 16 — what appears to be rankling Governor Purohit is the alleged use of derogatory language by the CM. That, surely, is something that can be remedied over a cup of tea. Elected to power with an overwhelming majority last year, CM Mann faces the weight of very high expectations. The constant bickering is only going to sap his energies at a time when he needs to step up to large challenges and crises. Pragmatism demands that he answer the questions he can, and not let language come in the way of his relationship with Raj Bhawan. For Punjab's sake, as the apex court cautioned in March this year, the discourse should not degenerate to a "race to the bottom."

SPECIAL SESSION OF PARLIAMENT: HOW IT WILL WORK

On August 31, Pralhad Joshi, the Union Minister for Parliamentary Affairs, announced that a "special session" of Parliament would be held from September 18 to 22. The Minister was quoted as stating that "important items" were on the session's agenda, which the government would circulate shortly. The announcement has led to speculation about the government's legislative plans for the session. Usually, a few days before a Parliament session, the government convenes an all-party meeting to share its agenda and build consensus on possible issues for discussion.

When does Parliament meet?

India's Parliament has no fixed calendar of sittings. In 1955, a Lok Sabha committee had proposed a timetable for parliamentary sessions. It recommended that the Budget session of Parliament begin on February 1 and go on till May 7, and the Monsoon session start on July 15 and end on September 15.

The committee suggested that the Winter session, the last session of the year, commence on November 5 (or the fourth day after Diwali, whichever is later) and finish on December 22. While the government agreed to this calendar, it was never implemented.

Who decides when Parliament meets?

The government determines the date and duration of parliamentary sessions. The Cabinet Committee on Parliamentary Affairs takes this decision. It currently has ten Ministers, including those for Defence, Home, Finance, Agriculture, Tribal Affairs, Parliamentary Affairs, and Information and Broadcasting.

The Law Minister and the Minister of State for External Affairs are special invitees to the Committee. The President is informed about the Committee's decision, who then summons Members of Parliament to meet for the session.

What does the Constitution say?

The Constitution specifies that six months should not elapse between two parliamentary sessions. This provision is a colonial legacy. The framers of the Constitution borrowed it from the Government of India Act of 1935. It allowed the British Governor General to call a session of the central legislature at his discretion, requiring that the gap between two sessions should not be more than 12 months.

Dr B R Ambedkar stated that the purpose of summoning the central assembly was only to collect taxes, and the once-a-year meeting was for the government to avoid scrutiny by the legislature. The Constituent Assembly reduced the gap between sessions to six months.

How did the Constituent Assembly reach this decision?

Some members of the Constituent Assembly wanted Parliament to meet throughout the year with breaks in between. Others wanted Parliament to sit for longer durations, and cited the examples of the British and American legislatures meeting for more than 100 days a year. One member wanted the presiding officers of the two Houses to be empowered to convene Parliament under certain circumstances.

Dr Ambedkar did not accept these suggestions. He thought that independent India's government would hold regular parliamentary sessions. He argued: "The clause as it stands does not prevent the legislature from being summoned more often than what has been provided for in the clause itself. In fact, my fear is, if I may say so, that the sessions of Parliament would be so frequent and so lengthy that the members of the legislature would probably themselves get tired of the sessions."

How often do Lok Sabha and Rajya Sabha meet?

Before independence, the central assembly met for a little more than 60 days a year. This number increased to 120 days a year in the first 20 years after Independence. Since then, the sitting days of the national legislature have declined.

Between 2002 and 2021, Lok Sabha averaged 67 working days. The situation in state legislatures is much worse. In 2022, 28 state Assemblies met for 21 days on average. This year, Parliament has met for 42 days so far.

On multiple occasions, the conference of presiding officers has recommended that Parliament should meet for more than 100 days. The National Commission to Review the Working of the Constitution set up in 2000 made a similar recommendation.

Individual MPs have introduced private member Bills that stipulated increased sitting days for Parliament. Former Rajya Sabha MP Naresh Gujral, in his 2017 private member Bill, suggested that Parliament should meet for four sessions in a year, including a special session of 15 days for debating matters of urgent public importance.

If the 1955 recommendations of the Lok Sabha committee were accepted, Parliament would be in session for eight months every year. The US Congress and parliaments of Canada, Germany, and the UK are in session throughout the year, and their calendar of sitting days is fixed at the beginning of the year.

What is a special session of Parliament?

The Constitution does not use the term "special session". The term sometimes refers to sessions the government has convened for specific occasions, like commemorating parliamentary or national milestones.

For the two Houses to be in session, the presiding officers should chair their proceedings. The presiding officers can also direct that the proceedings of their respective Houses would be limited and procedural devices like question hour would not be available to MPs during the session. However, Article 352 (Proclamation of Emergency) of the Constitution does refer to a "special sitting of the House".

Parliament added the part relating to the special sitting through the Constitution (Forty-fourth Amendment) Act, 1978. Its purpose was to add safeguards to the power of proclaiming Emergency in the country. It specifies that if a Proclamation of Emergency is issued and Parliament is not in session, then one-tenth of Lok Sabha MPs can ask the President to convene a special meeting to disapprove the Emergency.

LOK SABHA SPEAKER REVOKES ADHIR'S SUSPENSION AFTER PRIVILEGE PANEL'S RESOLUTION

Lok Sabha Speaker Om Birla on Wednesday revoked the suspension of Congress leader Adhir Ranjan Chowdhury from the Lower House.

The decision was taken hours after the Lok Sabha's Privileges Committee, headed by BJP MP Sunil Kumar Singh, unanimously recommended that the Speaker revoke the suspension of Mr. Chowdhury. The Lok Sabha Secretariat issued a circular announcing the decision. He appeared before the panel on Wednesday, and said his remarks were not aimed at hurting anyone and the Hindi dialect he used might have caused the issue.

Panel resolution

A panel member told The Hindu that the committee also adopted a resolution on the matter.

It is learnt that Mr. Chowdhury told the House that he used the Hindi dialect commonly spoken in West Bengal and meanings of certain words may have been misunderstood. He told the House that his mother tongue is Bengali and he may not have conveyed what he wanted while speaking in Hindi in the House.

THE ELECTION COMMISSION — AUTONOMY IN THE CROSSHAIRS

The Supreme Court of India, in a judgment on March 2, directed that the Chief Election Commissioner (CEC) and the Election Commissioners (EC) will be appointed by the President of India based on the advice of a committee made up of the Prime Minister, the Leader of the Opposition in the Lok Sabha or the leader of the single largest Opposition party and the Chief Justice of India (CJI). This judgment of the Constitution Bench was a major step towards broadbasing the ECI and enhancing its constitutional status. Article 324 of the Constitution contains a provision for such a law to be enacted by Parliament.

The significance of this judgment also lies in the fact that this was a unanimous judgment of a five-judge Bench. So far, the top officers of the ECI have been appointed by the President of India on the advice of the central government. However, the government of the day, in an unambiguous move, introduced a Bill in the Rajya Sabha on August 10 which if passed will overturn this verdict.

The Bill seeks to replace the Chief Justice of India from the high-powered selection committee, meaning the committee will be made up of the Prime Minister (Chairperson), Leader of the Opposition in the Lok Sabha (Member) and a Union Cabinet Minister to be nominated by the Prime Minister (Member).

The government, through this Bill, has taken the Supreme Court head on, making it clear that it wants greater weightage in the appointments of the top election officials — and thus a greater hold over the institution. Experience and research show that incumbent governments, especially those with authoritarian streaks, do not usually do away with democratic institutions but, instead, relentlessly work towards making them pliant. The institutional structures remain but are drained of their substance. And, in this case, one is dealing with a matter of electoral winnability and a consolidation of state power.

An issue that has seen much debate

The procedure of appointments of the CEC and the ECs has seen much debate in policy and political circles ever since the Constituent Assembly debates and much has been written about it.

A suggestion during the Constituent Assembly Debates was that the appointment of the CEC should be subject to confirmation by two-thirds majority in a joint session of both Houses of Parliament (Constituent Assembly debates, June 15, 1949). However, Parliament was entrusted with the charge of making appropriate laws on the matter.

The V.M. Tarkunde Committee appointed by Jayaprakash Narayan in 1975, the Dinesh Goswami Committee on electoral reforms set up by the then Prime Minister, V.P. Singh, in the 1990s, and the second Administrative Reforms Commission in its fourth report in 2009 among others made recommendations that the appointments of members of the ECI should be more broad based (through a collegium) than leaving this solely to the government on whose advice the President made these appointments.

In 2006, a suggestion was made by a former CEC, B.B. Tandon, to the former President of India, A.P.J. Abdul Kalam (when both were in office) that a seven- member committee headed by the Prime Minister should choose the CEC and the other ECs. The committee should include the Lok Sabha Speaker, the Leaders of the Opposition in the Lok Sabha and the Rajya Sabha, the Law Minister, the Deputy Chairperson of the Rajya Sabha and a judge of the Supreme Court nominated by the CJI. The Bharatiya Janata Party (BJP) had supported such a suggestion and argued for a

representative collegium, which included the CJI to appoint the apex electoral officials. BJP General Secretary Arun Jaitley in a press release on the CPI(M)'s suggested electoral reforms in 2006 had said, 'Any monitoring of Election Commission by Government or their nominee will be destructive of the independence of Election Commission'.

In 2012, senior leader of the BJP and former Deputy Prime Minister L.K. Advani reiterated the argument that such a collegium should be formed with the Prime Minister as its chairman, with the CJI, the Minister of Law and Justice and the Leaders of the Opposition in the Lok Sabha and the Rajya Sabha as its members. He argued that the prevalent system, whereby members to the ECI are appointed by the President, solely on the advice of the Prime Minister, does not inspire confidence among the people.

Interestingly, all these high-level committees, experienced officers and even the BJP leadership saw the importance of this and recommended that the CJI or a judge appointed by him/her should be a part of this committee; never was a suggestion made that a Union Cabinet Minister should be bestowed with this membership (and that too by replacing the CJI). In asking for reform in the appointment, the idea was to raise the ECI a few notches higher on the free and fair bar and pave the way for expunging biases and attachments to the ruling party. The effort was to curb it from becoming a 'committed', partisan and an incumbent-friendly entity. Through the current Bill, the government, under the BJP, is attempting to push the ECI towards further governmental control strengthening the perception about a democratic weakening.

Suggestions for reforms in the appointment procedure of the ECI came from Opposition parties, wherein the BJP was one of the most vocal parties, mainly during the Congress regime. It was felt, and rightfully so, that ruling parties have a structural advantage over institutions, making them susceptible to manipulation and biases. It was felt that having a more representative selection committee would make elections fairer by reducing the hold of the incumbent party/parties on the ECI. However, during the previous National Democratic Alliance regimes, the BJP leadership did not move on its own (clearly articulated) suggestions. Through the new Bill, it has reversed its own position which it had been voluble about while in the opposition.

Held in high regard

The ECI has been held to be a reliable, responsible and trustworthy institution by the people of India. Handling elections that involve about 900 million voters (2019 election data) through a machinery of 11 million personnel in a setting of economic hardship and inequalities is a remarkable feat. However, going soft on the ruling party or its ideology, as the perception is, whether this has to do with election schedules, electoral speeches, alleged hateful propaganda, electoral rolls or other kinds of malpractices, is eroding not only its own autonomy but also people's trust. Nevertheless, the point remains that the present regime still sees the ECI as an institution with autonomy. And this autonomy does not gel with its goals. It would instead like a firmer grip on the ECI through statutory means.

EXPRESS VIEW: ONE NATION, MANY ELECTIONS

On Thursday, the government announced a special session of Parliament, its agenda undeclared and unknown. And on Friday, it set up a committee under a former president of India to examine the proposal of "one nation, one election", long-discussed and still controversial. The two events may or may not be tied together — it may or may not be that the proposal to hold elections to the Lok Sabha and state assemblies simultaneously will come up in the special session of Parliament

held from September 18 to 22. But both the sudden revival of a consequential and contentious political idea under the stewardship of an individual who occupied the nation's highest non-political office, and the contrived uncertainty surrounding the special session, raise important questions.

The government's big moves need to go through the paces of a deliberative democracy and submit to the checks and balances of a constitutional system. At the very least, they need to play out more transparently. Big policy and political moves should not be scripted like cloak-and-dagger drama, or take the form of an ambush.

The idea of simultaneous elections points to a real problem but the solution it offers is dissonant in a parliamentary system with a federal framework — it promises, or threatens, to give it a more presidential and unitary character. Admittedly, the relentless election calendar in this country is taking a toll.

An election is always around the corner and with expenditure caps freely given the go-by and campaign finance draped in secrecy, it means higher sums of money and other resources spent. It also means, after the model code of conduct kicks in, a pause, if not a paralysis of governance. Parties and governments with one eye on the impending election give in to the seductions of populist moves and shirk long-term policy and planning.

But making elections simultaneous will, for one, impose an artificial fixity on the terms of legislatures in states and at the Centre — at odds with a system that, given its staggering diversity, must remain responsive and accountable. It will also raise questions like this one: What happens if, after simultaneous polls, a five-year term in an Assembly is interrupted by political realignments? Then, simultaneous elections are likely to help the dominant national party and incumbent at the Centre, and disadvantage the regional issue and player. They could flatten the diversity of format and politics that marks India's federal polity ever since the Sixties when the synchronicity of the election calendar was first broken along with the appearance of the first dents in the Congress-led one-party dominance system.

The Narendra Modi government is reviving an idea that has been taken up, at various times, by a parliamentary standing committee, the law commission, the election commission. And yet, it must also address concerns about the proposal being part of its larger project to bring homogeneity in a diverse country. One nation, one election… one civil code, one party, one leader? In a country where elections bring valuable moments of reckoning for the rulers and much-needed opportunities of assertion by the ruled, why should they be shirked? All eyes and ears are now on the panel to see how it goes about addressing these and many other concerns. Given how elections have an almost talismanic power in the nation's democracy, the stakes couldn't be higher.

KARNATAKA TO CREATE FACT-CHECKING UNIT: WHAT THE CONGRESS GOVT HAS PLANNED AND WHY, WHAT OBJECTIONS ARE BEING RAISED

The Karnataka government's decision to create a fact-checking unit to curb fake news on social media has raised concerns regarding the move possibly impinging upon the freedom of press. The Editors Guild of India has issued a statement that any move to check the spread of fake news should not be draconian in nature, and should be fair, independent and democratic.

Since coming to power in Karnataka with a thumping majority of 135 seats in a 224-seat state assembly, the Congress government has stated that it would introduce measures to curb the spread of fake news through social media channels.

The proposal is being seen as part of the Congress's strategy to curb fake news and rumours, which have in the past used social media to target its government, especially in instances of suspicious deaths.

On August 21, a meeting chaired by Chief Minister Siddaramaiah to create a cyber security police for the state approved the formation of fact-checking units to tackle 'fake news syndicates'.

"The CM was of the view that curbing fake news was essential as it was responsible for the weakening of democracy and polarisation in society," a statement from the Chief Minister's Office said after the cabinet meeting. The government would introduce legislation against the propagation of fake news and propose punishment for the spread of fake news, the cabinet decided. The fact checking units would work towards detecting syndicates that spread fake news and prevent the dissemination of such news. The unit will consist of a supervisory committee, fact-finding teams and analysis teams, the CMO statement said.

During the meeting, the state home minister G Parameshwara suggested creating the unit immediately as fake news — though in its infancy — could become a global menace. There were suggestions to coordinate with the information technology ministry for the formation of the fact checking unit.

The progress is creating fact check units

On August 26, the Bengaluru police commissioner B Dayananda announced the setting up of social media monitoring units of the police at three different levels for Bengaluru city. Some personnel have been trained at the station level to identify provocative and fake posts and how to establish the truth, he said.

Karnataka police already running fact checking service

The Karnataka police has been running a fact checking service on its website for the last couple of years, to debunk problematic messages that could create a law and order problem. The police have also, in several instances in recent years, registered FIRs under Indian Penal Code sections for promoting enmity, outraging religious feelings and previously for sedition.

Last year in April, following the death of a 19-year-old youth in west Bengaluru, BJP leaders claimed that the cause of the murder was the inability of the victim to speak in Urdu. The then Bengaluru police commissioner indicated that the incident was one of road rage following an accident even as the then Karnataka BJP home minister Araga Jnanendra initially contradicted the police.

The home minister withdrew his statements on the motive for the murder after a fact check service provided by the Karnataka police website debunked messages floated on social media and on some local TV channels that put out unverified motives for the murder.

Concerns voiced by the Editors Guild of India

The Editors Guild of India, in a statement dated August 27, expressed concerns over some aspects of the Karnataka government's decision.

The statement urged the Karnataka government to "clearly specify the scope of and powers of the proposed fact-checking unit, as well as the governing mechanism under which it will operate".

"While admittedly there is a problem of misinformation and fake news especially in the online space, efforts to check such content have to be by independent bodies that are not under the sole purview of the government lest they become tools to clampdown on voices of dissent. Any such monitoring network should follow principles of natural justice including giving prior notice, right to appeal and judicial oversight," the Editors Guild of India said.

"Such units should also be set up with due consultation and involvement of all stakeholders, including journalists and media bodies so that press freedom is not tampered with," it said.

The Karnataka IT/BT, Rural Development and Panchayat Raj minister Priyank Kharge has stated that the fact checking would not "impinge upon the freedom of the press" and would uphold an "apolitical stance devoid of bias and will transparently explain the methodologies employed to the public.".

Kharge said that the government was in the process of "establishing independent bodies that will be enlisted to assist us in combating fake news and misinformation…Rest assured, we will diligently follow the tenets of natural justice. Let it be clear that the establishment of this unit is in no way an attempt to impinge upon the freedom of the press."

OVER 260 DETAINED DURING TRIPURA STUDENTS' STRIKE DEMANDING ROMAN SCRIPT FOR KOKBOROK

Over 260 people were detained in Tripura on Monday during a 12-hour statewide strike called by the Twipra Students' Federation (TSF) to press for the introduction of Roman script for Kokborok, state's indigenous lingua franca, and other demands.

The strike also had support from the Roman Script for Kokborok Choba (RSKC), an umbrella body of 56 tribal cultural and social organisations. The RKSC had threatened to launch an "aggressive movement" if their demands were not met earlier. As protests continued in different places, heavy contingents of the police and Tripura State Rifles jawans were deployed to maintain law and order.

Tripura's script debate centring on Kokborok is several decades old. Kokborok was first recognised as an official state language of the state in 1979. The language is spoken by many of Tripura's 19 tribal communities as their first language. Tripura has nearly 30 per cent of its 37 lakh population from the tribal communities.

Two commissions were set up under former legislator Shyama Charan Tripura and linguist Pabitra Sarkar. While the erstwhile Left Front government publicly preferred Bengali script, the Roman script for Kokborok Choba claims that two commissions have found Roman as the favoured script for the majority of tribal people.

The tribal language is now taught in 22 degree colleges of Tripura and at Tripura Central University as well.

RSKC chief Bikash Rai Debbarma had earlier explained that Bangla and Roman scripts were equally being used for the Kokborok language in the state and "imposing" Hindi script on the tribal language might create disturbances for the speakers.

After Union Home Minister Amit Shah's comments triggered a controversy in 2021, the late Chandrakanta Murasingh, tribal litterateur and frontline cultural worker, said tribal cultural activists were not against Hindi. But going by local realities, the language balance of Bengali and Kokborok might be disturbed if Hindi is imposed.

A year later, the controversy came back live again as the Opposition TIPRA Motha party flagged media reports where candidates were claimed to have been compelled by exam invigilators on the instructions of the Tripura Board of Secondary Education to write answers of the Kokborok paper in Bengali script. The demand for introducing Roman script for Kokborok has intensified since then.

In June, Motha's student organisation Tripura Indigenous Students Federation agitated over the demand of Roman script for Kokborok. During the protest, 20 people including five security personnel were injured.

PLAYING OUT A FARCE

Given what transpired on Tuesday, it is difficult not to term the functioning of the government and the legislature in conflict-ridden Manipur a farce being played out in the State. The Assembly met just before the stipulated six months after the last session on March 3. Article 174(1) of the Constitution mandates that sittings have to take place within six months of the end of the previous session. Incomprehensibly, the session was adjourned sine die just 48 minutes after it began; there was barely 11 minutes of business with 10 MLAs of the Kuki-Zo community also absent. Chief Minister N. Biren Singh had reportedly invited the absentee Kuki MLAs to the House, by guaranteeing their security, but they denied having spoken to him and refused to buy the guarantee by pointing to the law and order situation in the Imphal valley. This reiterates the breakdown of trust between legislators of one community and the government's leadership despite a sharing of party affiliations. The session was originally set to convene on August 21, but the Governor, Anusuiya Uikey, had, inexplicably, not issued the notification summoning the House, despite the Cabinet's advice to her on August 4. That legislative functions have been so poorly conducted when there are pressing issues related to the rehabilitation of displaced residents, the recovery of looted weapons, the persisting ethnic divide leading up to "economic blockades" and the sporadic violence, indicate the failure of a government that commands an electoral majority in the House.

The Manipur Assembly is no stranger to controversy. In its previous iteration, little heed was paid to parliamentary conventions, as it was marked by rampant defections, exemplified by the case of Congress MLA T. Shyamkumar, who became a Minister in the Bharatiya Janata Party-led government and later stripped of his office by the Supreme Court which had lost patience with the Speaker's inaction after his blatant violation of the anti-defection law. This time around, the BJP regime suffers a severe legitimacy deficit — in its inability to bring about a turnaround in the deterioration of ethnic relations following the May 3 violence and to conduct proper legislative sessions to at least discuss a way out. Ethnic conflicts present complex problems, but the use of constitutional means is a must to enable workable solutions. As things stand, the two sparring communities in the State are veering towards positions that are becoming even more intractable as the government continues to flounder. The BJP is mistaken if it continues to believe that its ham-handed approach to retain the status quo in leadership will yield a breakthrough in the State.

SHARE THE DISTRESS

Distress is not uncommon to the Cauvery basin. As this year's southwest monsoon plays truant in the catchment in Kerala and Karnataka, familiar scenes are unfolding. Tamil Nadu, which has a cumulative shortfall of around 51 thousand million cubic feet (tmc ft) in its share of water as on August 28, has been seeking 24,000 cubic feet per second (cusecs), or about 2.07 tmc ft a day, at Billigundulu on the inter-State border, during the second half of August. After its representatives protested at the meeting of the Cauvery Water Management Authority (CWMA) on August 11 over the CWMA's perceived change in fixing the quantum of water release, it went to the Supreme Court, where the Authority is expected to present its report on September 1. Apart from the release for August, Tamil Nadu urged the Court to direct Karnataka to release the quantum of 36.76 tmc ft for September, as stipulated in the Cauvery Water Disputes Tribunal's final award (2007) and modified by the Court in February 2018. Cauvery delta farmers need water to save short-term standing (paddy) kuruvai crop over 5.6 lakh acres. The situation on the other side is no better. Karnataka, in its affidavit, has informed the Court that the catchments of its two key reservoirs have had deficit rainfall. The CWMA has also assessed the deficit in inflow to Karnataka's four reservoirs in the basin to be about 51%. Its stand is that Tamil Nadu has "failed to understand that 2023 is not a normal water year, but a distress water year".

The plight of both States reinforces the need for a distress-sharing formula — one that is favoured by both as a matter of principle. The Tribunal, in its final award, had advocated the concept of proportionate reduction in allocated shares, which was reiterated by the Court in its 2018 judgment. But, in practice, its implementation appears to be hurdle-ridden, if the decisions of the Authority and its assisting body, the Cauvery Water Regulation Committee (CWRC), are an indication. Early this month, the CWRC's recommendation of 15,000 cusecs was reduced by the Authority to 10,000 cusecs. Even though the Authority says that it accounts for the ground realities and the relevant data, it should not create the perception that its decisions are shaped otherwise. Despite uncertainty about the remainder of the monsoon and rainfall pattern of the northeast monsoon (October-December) that will cover Tamil Nadu, what should not be glossed over is Karnataka's move to comply with the CWMA's directive to release 5,000 cusecs to Tamil Nadu till September 12. The quantum is insufficient for the lower riparian State but the least the two States can do is to ensure that the Cauvery does not become cause for disharmony.

EXPRESS VIEW ON MUZAFFARNAGAR VIDEO: TEACHING HATE

The video from the classroom of Neha Public School, Khubbapur village, district Muzaffarnagar, in which, last week, a teacher instructed students to hit and slap a Muslim classmate, one by one, as punishment for a mistake in his schoolwork, calls for a moment of pause. Admittedly, the incident is set in a larger backdrop. An increasing political polarisation is steadily trickling into public and private spaces, giving electoral contests a new edge, and circumscribing debates in between elections. In the social media age, there are many more incentives for views that veer to the extremes and stay there, than for positions that reflect reason and sobriety, much less openness and tolerance.

Yet, the bigotry in the classroom captured by the Muzaffarnagar video is especially shocking — and it should be a special cause for concern. Because for any society and democracy, the classroom is a sacred space. What is taught and what is learnt in it reaches into the future. The prejudice that made the teacher in Muzaffarnagar choreograph the horrific punishment and draft seven-year-olds into its brutish design, and the normalisation of prejudice which dictates her and-so-what

responses in the aftermath, speak of disquieting things. The incident in Kathua, also last week, in which a Muslim teacher in a government higher secondary school beat up a student for writing "Jai Shri Ram" on the blackboard does not cancel out the Muzaffarnagar outrage — it only adds to it.

The incidents in Muzaffarnagar and Kathua call for a larger reckoning. Such incidents recur in the silence and ambivalence that settles around them, after a perfunctory show of indignation. They repeat themselves in the spaces vacated by a political system that turns a blind eye and deaf ear to them.

The responsibility to counter the brutalisation of the classroom must be owned by civil society, of course, but the onus is primarily on the political leadership, and especially the government. A message must be sent out by the powerful that there will be no more climate of impunity for hate speech and action. They must signal that they will act on the anguished directions of the apex court which has, more than once, urged greater vigilance and stricter action against those who violate the guiding principle of "fraternity assuring the dignity of the individual and unity and integrity of the country" enshrined in the Preamble of the Constitution.

There is too much at stake. Quite simply, the steps forward taken by the new National Education Policy, which seeks to promote a more innovative teaching and a more creative learning, the slogans that celebrate Make in India and the demographic dividend will be tested if hate is allowed to enter the classroom — and get away with it.

THE STATE OF SCHOLARSHIPS FOR MINORITIES

The story so far:

In the past few years, the Centre has discontinued two key educational schemes for religious minorities, narrowed the scope of another and gradually cut down on the expenditure incurred on multiple programmes of the Ministry of Minority Affairs.

Why are there scholarships for religious minorities?

India is home to over 30 crore (20%) people from religious minority communities. These include six religions notified under Section 2(c) of the National Commission for Minorities Act, 1992. Among them, Muslims make up the largest religious minority but face challenges in various sectors. Their participation in salaried jobs is low and many are engaged in the informal sector, characterised by low wages, weak social security and poor working conditions.

The Justice Rajinder Sachar Committee was constituted by the UPA government to look into the social, economic and educational standing of Muslims in India. In a comprehensive 400-page report tabled in Parliament in 2006, the Sachar Committee concluded that the Muslim minority was neglected in almost all dimensions of development. "By and large, Muslims rank somewhat above SC/ST but below Hindu OBCs [Other Backward Classes], Other Minorities and Hindu General [mostly upper castes] in almost all indicators considered," the report stated.

Around the same time, the Manmohan Singh-led UPA government accepted the long-pending demand for a Ministry of Minority Affairs in 2006. The new Ministry was to "ensure a more focused approach" on issues affecting the notified minorities, especially "educational empowerment, economic empowerment, infrastructure development and special needs."

HARYANA'S PARIVAR PEHCHAN PATRA: WHAT IS THIS DOCUMENT, WHY THE OPPOSITION HAS CRITICISED IT

In the recently concluded monsoon session of the Vidhan Sabha, the Opposition raised strong objections against the PPP, terming it the 'Permanent Pareshani Patra (permanent inconvenience document)'.

The PPP was introduced in 2020 and implemented in September 2021. The Opposition has criticised it stridently, alleging discrepancies in the data collection and flagging privacy concerns.

What is the Parivar Pehchan Patra?

Under the PPP, a unique eight-digit Identity number is issued to each family as a single unit. Any family residing in Haryana is required to enroll in the PPP to avail various government services and social security schemes.

Currently, the PPP ID can be made through three channels — Common Service Centers managed by Village Level Entrepreneurs, SARAL Kendras managed by the state government, and through PPP operators registered for data collection. The data for a family is collected on the basis of a signed self-declaration made by an adult member. Each data field is then separately verified through customised and defined procedures.

Linked to it is the delivery of various public welfare schemes, such as subsidised rations to Below Poverty Line households, Old Age Samman Allowance, Divyang Pension, Mukhyamantri Vivah Shagun Yojana, Mukhyamantri Antyodyay Parivar Utthan Yojana, admissions to educational institutions, government recruitment examinations, Scheduled Caste certificates, compensation to farmers, etc.

What data does the PPP collect?

Besides the family members' names, the PPP collects Aadhaar numbers, age, house number, street number, PIN Code, district, block/town, ward/ village, gender, date of birth, proof of date of birth, email, place of birth, mobile number, voter ID card, occupation, bank account number, IFSC code, for how long has one lived at a particular place, annual income, complete details of immovable property owned by each member of the family, marital status, caste, educational qualification, etc. It also asks if the individual has a PAN card, is an Income Tax payee, a freedom fighter, a government employee, a BPL card holder, divyang, etc.

How is the PPP different from the Aadhaar card?

Chief Minister Manohar Lal Khattar had said in the Assembly that "PPP draws from the digital infrastructure and principles created by Aadhar. However, it is many times more complicated than Aadhar in its delivery. Aadhar primarily keeps unique identity information, whereas PPP goes far beyond to maintain socio-economic information besides the unique identity information."

The CM also said that Aadhar does not verify any data except identity, but the PPP verifies "every information field available with it through specific procedures."

What are the Opposition's objections?

Former CM Bhupinder Singh Hooda said glitches in data collection had led to people missing out on government subsidies and benefits.

"It is just a Permanent Pareshani Patra. The agencies used by the government to collect people's data are filling in erroneous data. Based on the wrong information, people are losing their social security benefits. People are running from pillar to post to get their information corrected. This government is solely dependent on portals and is losing connect with the people," Hooda said.

Congress' senior legislator BB Batra listed detailed objections to the scheme, while also alleging that the government was using the data for voter profiling.

"There are 25 columns one has to fill to get a PPP card. The very first column is Aadhaar, which is mandatory. A nine-judge Supreme Court judgement dated August 24, 2017, said Aadhaar card is not mandatory. The judgement said the right to privacy is a fundamental right. How can the state then ask for my Aadhaar number? Another column asks for caste. Social security benefits are given from the Consolidated Fund of the State, and don't require the beneficiary's caste. If the government wants a caste census, it should be done as per proper legal procedures and should be a public document," Batra said.

"Then they [the government] ask for the PAN card, bank account number, property details etc. Why should the government be asking all these personal details? The real purpose of the BJP government is to collect caste-based data and socio-economic profile of the people, and then use it to their benefit in the upcoming elections," he added.

AFTER CHANDRAYAAN-3, WHAT ARE ISRO'S PLANS?

The story so far:

At 6.03 pm IST on August 23, the Chandrayaan-3 lander touched down on the moon's surface, in the south polar region. The landing followed a 19-minute sequence in which the spacecraft used its engines, thrusters, and a suite of sensors to guide itself from an altitude of around 30 km and a speed of 1.7 km/s down to the ground. The success made India the fourth country to have soft-landed a robotic instrument on the moon and the first to have done so in the moon's south polar region. This elite stature also boosts other countries' confidence in the Indian Space Research Organisation (ISRO), which built, launched, and now operates the Chandrayaan-3 instruments.

What are ISRO's focus areas?

ISRO's activities span conducting research, developing satellite systems, working with autonomous bodies, producing rockets (from working with vendors who supply various components to design, testing, integration, and launch), maintaining satellite-tracking infrastructure, operating existing satellites, mitigating orbital debris, etc.

Some of its more prominent focus areas at the moment are —'Gaganyaan', the human spaceflight mission wherein a group of astronauts are being trained as ISRO continues a series of tests of a modified Launch Vehicle Mark-3 (LVM-3) rocket before it can be certified to be safe to carry humans; a Reusable Launch Vehicle Technology Demonstrator (RLV-TD) — a launch vehicle that can be used for multiple missions, unlike the existing rockets, each of which can be used only for one mission, currently undergoing tests; SCE-200 — a powerful engine that uses highly refined kerosene as the fuel and liquid oxygen as the oxidiser, to power the next generation of ISRO rockets, currently undergoing tests; and a Small Satellite Launch Vehicle (SSLV) — a rocket smaller than the workhorse Polar Satellite Launch Vehicle (PSLV) to carry lighter satellites into low-earth orbit with a shorter turnaround time between launches, currently undergoing developmental flights.

Are there major missions coming up?

ISRO's launch manifest — the list of entities to be launched — provides a glimpse of the major missions in the short, medium, and long terms. The earliest one is the Aditya L1 spacecraft, a scientific mission to study the sun in greater detail. It is expected to be launched in September this year onboard a PSLV rocket. This will happen alongside two flights of the modified LVM-3 to test the Gaganyaan mission's crew escape system. ISRO is also expected to launch the XPoSat satellite, to study X-rays streaming through outer space, and the third developmental flight of the SSLV this year.

In January 2024 (as of now), ISRO is expected to launch the much-awaited NISAR satellite. Built jointly by ISRO and NASA, NISAR will study natural processes on the earth's surface for three years in radar frequency, with a state-of-the-art setup that cost $1.5 billion to build. The other major launches in 2024 are the Gaganyaan G1 and G2 flights, when a human-rated LVM-3 rocket will be flown without a crew, and the launch of the GSAT-20 communications satellite. There are also a slew of 'smaller' missions planned; even if ISRO uses the tried-and-tested PSLV rockets for them, they consume time, resources, and attention.

In the midst of all this, ISRO will also have to undertake commercial launches, that is, launch payloads for other space agencies and/or companies and institutes.

Are there projects other than launches?

As missions to space become more complex and as each mission is expected to serve increasingly multifarious needs, any space programme will need better launch vehicles. ISRO developed the PSLV in 1993 to launch remote-sensing satellites in a pole-to-pole orbit. The LVM-3 was developed so that India could launch heavy satellites, like those of the INSAT and GSAT series. The SSLV was developed to tap into the market for launching small satellites.

The next step is the RLV-TD. Its design resembles that of the NASA Space Shuttle, with a winged body that can propel itself using heavy-duty engines or glide through the air, as required. Once ready, the RLV-TD is expected to be able to lift up to 20,000 kg to low-earth orbit. This means heavier and more sophisticated space missions in future.

ISRO has also been working on developing safer and more energy-efficient rocket fuel. One example is the methalox propellant (methane plus liquid oxygen). On a related note, its scientists have also been working on an electric propulsion system for satellites, which are lighter than their chemical propellant counterparts and potentially beneficial to a satellite's lifespan as well.

The organisation has been transferring some technologies, especially related to telecommunications and electronics, to the private sector. It plans to do the same thing with the SSLV once its developmental flights have been completed.

Are there any more moon missions?

Chandrayaan-3 is actually part of a longer roadmap of lunar exploration that could give us Chandrayaans 5, 6 or more. But before that, ISRO's next plan to go (back) to the moon is already in the works: in collaboration with the Japan Aerospace Exploration Agency (JAXA), it is developing systems for the Lunar Polar Exploration (LUPEX) mission, a natural extension of the Chandrayaan-3 mission. Some ISRO scientists have called it "Chandrayaan 4".

LUPEX will also consist of a lander and a rover but they will be more sophisticated. Together, they will extend studies of the moon's south polar region, including using a drill to extract subsurface samples for further analysis.

It is also expected to demonstrate 'night survival'. On the moon, day and night each last 14 earth days. During a lunar night, there is no light and the temperature could drop down to -180 degrees Celsius. During the day, the lander and the rover can be powered by solar panels, but at night, they will need alternative sources of energy. Their electronic components will also need to survive these punishing conditions so that, once the sun dawns after two weeks, they can resume operations. As of today, JAXA is set to provide the launch vehicle and the rover, and ISRO, the lander.

Next, as a result of the various sanctions imposed on Russia, some space agencies and companies have been looking for alternative providers of services that Russia was providing until then. This is why, for example, ISRO launched the OneWeb satellites in 2022 and is expected to launch the European Space Agency's PROBA-3 satellites in 2024.

Finally, ISRO also has plans to return to Mars and develop missions to study Venus — with one called 'Shukrayaan' already in the works.

THE SUN UP CLOSE: ADITYA-L1 MISSION AND ITS OBJECTIVES

The Aditya-L1 mission, launching on Saturday, will take India into an elite group of nations that have sent probes to study the Sun. While India has carried out experiments to study the Sun using satellites earlier, Aditya-L1, which aims to park a spacecraft in the 'L1' spot in space, is the country's first dedicated solar mission. Aditya-L1 is also ISRO's second astronomy observatory-class mission after AstroSat (2015).

Special mission

Indian scientists have so far observed the Sun through telescopes on the ground, and relied on data from solar missions launched by the United States, Europe, the United Kingdom, and Japan.

Eyes in space

Disturbances in the form of solar flares, Coronal Mass Ejection, or solar winds directed towards Earth, can adversely impact space weather; studying the Sun is, therefore, of paramount importance.

While AstroSat, India's first dedicated astronomy mission aimed at studying celestial sources in X-ray, optical, and UV spectral bands simultaneously, remains operational almost eight years after its launch, Aditya-L1 can potentially pave the way for future Indian astronomy missions. AstroSat, weighing 1,515 kg, lifted off with five in situ instruments; Aditya-L1, weighing 1,475 kg, will carry seven payloads, four of which will directly look at the Sun. The other three will perform in situ (on site) studies of particles and magnetic fields at and around the L1 point.

The four remote sensing instruments will probe the solar sources and try to identify the source regions with greater focus — an edge over all predecessor solar missions. This could help better understand the origins of solar eruptions or flares.

Space weather alerts

The mission hopes to generate user-friendly information that can help safeguard a range of satellite-dependent operations such as telecommunications, mobile-based Internet services, navigation, power grids, etc. Once tested, tailormade information obtained from the data can be used to issue space weather alerts.

Dr A N Ramaprakash, one of the two principal investigators who led the team that designed and built the Solar Ultraviolet Imaging Telescope (SUIT), one of the payloads on board, said: "We can also get information about the environment around the L1 point, which is key for understanding space weather."

L1 and afterward

Aditya-L1 will travel for nearly 100 days to cover the 1.5 million km distance to L1. This is a shorter voyage than Mangalyaan, which took 298 days to reach the Martian orbit in 2014.

Like the Chandrayaan-3 mission, Aditya-L1 too, will undergo multiple apogee-raising orbital manoeuvres, and is expected to exit the Earth's orbit on the fifth day after launch.

"After leaving Earth's gravity, it will get into a heliocentric path, and this is crucial. Later, getting into the orbit around L1 is the most crucial aspect. L1 is not an object, just a location in space, which also co-moves with Earth around the Sun," Dr Seetha said.

Six of the mission's payloads — VELC, SUIT, SoLEXS, HEL1OS, PAPA, and MAG — will remain in the 'off' mode until around January 6, 2024, when the spacecraft is expected to be inserted into a 'halo' orbit near L1. The Aditya Solar wind Particle Experiment (ASPEX), built by the Physical Research Laboratory, will turn on while in transit.

"During the cruise phase, ASPEX will turn on and start performing in situ measurements of solar particles and ions," Dr Sreejith Padinhatteeri, who was part of the team at Inter-University Centre for Astronomy and Astrophysics (IUCAA) that built SUIT, said.

Designed to image the Sun in the 200-400 nanometre (nm) of the ultraviolet band, SUIT's imager will continuously record the entire disk of the Sun through 11 filters. SUIT's images of these layers could help improve our understanding of the Sun's immediate atmosphere.

By early 2024, scientists are hopeful of being able to commence a series of experiments lasting 2-3 months towards calibrating the instruments before high quality scientific data begin to roll out.

L1: the MISSION DESTINATION

The place between the Sun and Earth, where the spacecraft will park itself, is called L1, or Lagrange Point 1 — one of the five Lagrange Points that exist between any moving two-body system in space. The destination is the reason the mission is called 'Aditya-L1'.

Lagrange points, named after mathematician Josephy-Louis Lagrange who discovered them, are positions in a moving two-body system where forces acting on a third body of smaller mass cancel each other out. A spacecraft placed between the Earth and Sun, and wanting to move with them, would feel the gravitational pull from each side as well as the centripetal force by virtue of moving in a circular or elliptical orbit. There are five points in any two-body system like this, where the net of all these forces is zero.

Being positioned at a Lagrange point makes sense because the spacecraft requires very little energy to just stay put and make continuous observations. At any other place, the spacecraft would feel additional force, and would need to expend energy to remain stationary relative to both the Earth and Sun.

Among the five Lagrange points, L1 is the most favoured to get an unhindered view of the Sun. L2 is located behind the Earth, and thus obstructs the view of the Sun, while L3 is behind the Sun which is not a great position to communicate with Earth. L4 and L5 are good and stable locations, but are much farther from Earth compared to L1, which is directly between the Sun and the Earth.

SMOOTH OPERATION OF 'LAM' CRITICAL TO ADITYA-L1 SUCCESS

A small but powerful engine going by the acronym 'LAM' will have a critical role to play in the upcoming Aditya-L1 mission of the Indian Space Research Organisation (ISRO) to study the sun.

The successful operation of LAM, short for Liquid Apogee Motor, is vital to the ISRO's plans to place the Aditya spacecraft in a halo orbit at Lagrangian Point L1.

Tried and trusted

Developed by the Liquid Propulsion Systems Centre (LPSC), the ISRO centre for liquid and cryogenic propulsion in Thiruvananthapuram, LAM has played an important role in missions, including the 2014 Mars Orbiter Mission (MOM), Mangalyaan, and the more recent Chandrayaan-3.

In simple terms, LAM engines are used for orbital adjustment manoeuvres of satellites and spacecraft in orbit.

For the Aditya-L1 mission, the ISRO will use a LAM identical to the one used in the Mars and moon missions, says LPSC Director V. Narayanan.

Aditya-L1 is the first 'space-based observatory class Indian solar mission to study the sun', the ISRO said.

Newton thrusters

The ISRO is planning to launch the mission using a Polar Satellite Launch Vehicle (PSLV-XL) on September 2.

Once the Aditya spacecraft exits the earth's sphere of influence and heads toward its destination — the Lagrangian Point L1 which is 1.5 million km away — the LAM will shut down for the best part of the four-month journey.

The propulsion system of the spacecraft comprises the 440 Newton LAM engine plus eight 22 Newton thrusters and four 10 Newton thrusters which will be intermittently fired. The thrusters will be used to correct the orientation of the spacecraft as it traverses the vast emptiness of space.

The big challenge before the ISRO is restarting LAM at the precise moment for 'braking' the spacecraft as it closes in on its destination and nudging it into the desired halo orbit at L1.

During the Mangalyaan mission, this critical manoeuvre, 'waking' the LAM engine after an extended 'hibernation', had given ISRO scientists nail-biting moments.

Identical, yet different

"The propulsion module system on Aditya-L1 is identical to the one used on Chandrayaan-3. The LAM engine is similar. Its propellant combination (mono-methyl hydrazine (MMH) and MON3 (MON, short for mixed oxides of nitrogen) too is the same. Its volume is different, hence propellant tank sizes are also different," says Dr. Narayanan.

About 1.5 million kilometres from the earth between it and the sun is L1, one of the five Lagrangian points or 'equilibrium points' in the sun-earth system.

The Aditya spacecraft is to be placed in a halo orbit at this vantage point in space to carry out studies with its seven scientific payloads.

CORONAGRAPH OF ADITYA-L1 WILL SEND 1,440 IMAGES OF SUN

The Visible Emission Line Coronagraph (VELC), the primary payload on board India's first dedicated scientific mission, Aditya-L1, to study the sun, will be sending 1,440 images of the sun every day to ground stations. The VELC, developed by the Indian Institute of Astrophysics (IIA), Bengaluru, will be able to observe the corona continuously from the Lagrange Point 1 (L1) of the sun-earth system, which is about 1.5 million km from the earth.

Aditya-L1 is scheduled to be launched by the Indian Space Research Organisation (ISRO) from the Satish Dhawan Space Centre in Sriharikota at 11.50 a.m. on Saturday.

"Though Aditya-L1 mission will be launched on September 2, there will be a cruise phase of 100-plus days before it reaches the L1 point. Once it reaches that point, the doors will be open from most likely from the first week of January 2024 and we will make continuous observations for using the VELC payload," Ramesh R., principal investigator of the VELC payload, told The Hindu. Professor Ramesh added that the VELC payload would be sending 1,440 images of the sun in a day.

"With so much data, the ground segment should be ready to process these images in real time and within a turnaround time of 24 hours these should be sent back to ISRO so that the data are disseminated to the scientific community and the public," he said.

"We need tremendous computing power for which the IIA is ready and all the software are being tested so that with the minimum overlap time the data from the spacecraft will be downloaded at the Indian Deep Space Network in Byalalu from where they will process the L0 data [Level 0] data and send them to the payload operations centre in the IIA which will be processed within 24 hours and sent back to the Indian Space Science Data Centre for dissemination," Professor Ramesh said. There will be six other payloads on board the Aditya-L1, whose mission life is five years.

CHANDRAYAAN-3 MISSION: ON MOON, VERY HOT TO VERY COLD — SEPARATED BY JUST A FEW MILLIMETRES

India's Chandrayaan-3 spacecraft has begun releasing important data from the scientific experiments being conducted by the instruments on board. On Sunday, the Indian Space Research Organisation (ISRO) released first-of-its-kind data from the observations made by ChaSTE (Chandra's Surface Thermophysical Experiment), one of the four instruments on the lander module.

ChaSTE is meant to study the heat conductivity of the Moon's surface and measure the differences in temperatures at different points on and below the surface, with the overall objective of creating a thermal profile of the Moon. This instrument has been developed by the Space Physics Laboratory at the Vikram Sarabhai Space Centre in Thiruvananthapuram and the Physical Research Laboratory in Ahmedabad.

Temperature variation

The first set of data released by ISRO showed a very sharp difference in temperatures just above and below the surface of the Moon. A graphical plot put out by ISRO showed that while temperatures on the surface were over 50 degree Celsius, they dropped to nearly -10 degree Celsius just a few millimetres below the surface. The measurements suggested that the topsoil of the lunar surface did not conduct heat very well, and insulated the sub-surface from heat.

The measurements are consistent with what is known about the thermal profile of the Moon from previous expeditions and experiments. But this is the first direct measurement of temperatures of the topsoil and the subsoil near the South Pole of the Moon.

On Moon, very hot to very cold — separated by just a few mm

Temperature variation on the Moon is relatively well-known. Even on the surface, there is a huge difference between day-time and night-time temperatures. Some places on the Moon are known to be colder than -200 degree Celsius at night time while others can get hotter than 100 degree Celsius during the day.

Scientists have been studying the temperature variations on the Moon since the start of the lunar missions in the 1960s and 1970s. In addition, samples brought back by the Apollo and other missions have also contributed to this knowledge, as scientists have been able to study their heat-conducting properties.

explained live

Using this information, scientists have built three-dimensional models of the thermal environment on the Moon. It is known that a thin upper layer of the lunar surface, a few cm thick, shows very low thermal conductivity. Below that, however, thermal conductivity is high, which means that after a few centimetres of depth, temperature is almost stable and no longer shows a sharp drop. But the picture of the thermal environment is far from complete. The kind of observations being made by ChaSTE not just help in validating these existing models, but also provide entirely new insights with exact quantitative measurements.

Knowing the Moon

Human beings are still learning about the Moon. And the current round of experiments, by the Chandrayaan missions and others, is focussed on creating a full knowledge of what it means to be on the Moon.

The temperature profile, for example, is essential to know not just the kind of experience that human beings, when they eventually land again (the first set is slated for 2025 in NASA's Artemis-3 mission), should expect, but also for the kind of materials that can be used on the Moon. Such sharp rise and fall of temperatures can result in appreciable thermal expansion or contraction in materials, and affect experimental set-up and other infrastructure. The kind of activities that can be carried out can be significantly affected by the temperature profile.

Similarly, scientists are trying to have a good idea of the elemental composition of the Moon, the relative abundance of different materials and chemicals, the levels of radiation, and seismic activities. The interest in water stems from this same objective. Water is important not just in sustaining longer-term stays of human beings, but also from the point of view of its utility as a fuel. Water can be split into hydrogen and hydroxyl molecules that can serve as fuel to power rockets into deep space, and for other activities on the Moon.

Ultimately, the objective is to have the Moon serve as a permanent station — like the International Space Station — that can have scientific experiments running continuously and can be visited regularly by astronauts. This would be possible only if scientists are able to utilise the resources available on the Moon to build the infrastructure, and harness energy from a locally available source, like hydrogen from water.

'SHIV SHAKTI', 'TIRANGA', 'JAWAHAR STHAL' AFTER CHANDRAYAAN MISSIONS: WHO NAMES SITES ON THE MOON?

Prime Minister Narendra Modi announced Saturday (August 26) that the point where the Chandrayaan-3 lander touched down on the lunar surface on Wednesday would be named Shiv Shakti. He was speaking at the Indian Space Research Organisation (ISRO) headquarters in Bengaluru, where he met the scientists who contributed to the mission's success.

"In general, there has been a tradition across the world with such kinds of successful missions, to give a name to that point," Modi said. He added that there was a discussion over naming the spot where Chandrayaan-2 crashed in 2019 as well, but they believed that should happen only once the next mission succeeds in soft-landing. That point has now been named "Tiranga".

The Moon does not come under the jurisdiction of any one country – it's what makes global exploration and landing missions possible.

Why no one can own the Moon

In 1966, the United Nations Office for Outer Space Affairs came out with the Outer Space Treaty. Notably, this was during the Cold War era, when the two superpowers, the USSR and the United States, were locked in a rivalry. This manifested in an arms race (over military supremacy), economic competition and the Space race. Here, both were eager to accomplish firsts – the first man on the Moon, the first astronauts to be sent to Space, etc.

Setting some common principles for space exploration, the Treaty said in its Article II: "Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

Simply, this meant countries had to cooperate in their Space exploration activities and could not stake a claim to the Moon. Alexander Soucek, head of public international law at the European Space Agency, said in a DW report, "A nation can plant a flag on the moon, but it doesn't have any legal meaning or consequence…" However, the Treaty does not talk about naming sites on the Moon.

Who names landing sites on the Moon, then?

The International Astronomical Union (IAU) determines some other rules for Space activities. India is among its 92 members. "The IAU has been the arbiter of planetary and satellite nomenclature since its inception in 1919," its website states.

Writing in Smithsonian Magazine in 2012, the late scientist Paul D. Spudis, who worked at the Lunar and Planetary Institute in the US, said the earliest Moon maps were created in the 17th century. The map by Italian astronomers Grimaldi and Riccioli "became the foundation for the official naming reference guide that we use today", he wrote. The first manned mission (the United States' Apollo 11) landed in Grimaldi and Riccioli's Mare Tranquillitatis, the relatively smooth Sea of Tranquility in the Moon's equatorial region.

Spudis explained that initially, limited information was available about aspects like the far side of the Moon. From Earth, we can only see one side because it takes roughly 14 days for it to complete one revolution around the Earth, and it also completes one rotation in the same time period. Therefore, only one side faces the Earth.

But as American and Soviet spacecraft brought with them increasingly higher quality images, most major far-side craters received the names of various scientists and engineers from those countries. Many mission sites first see names being given to them informally. These names are later submitted to the IAU for approval.

"An informal practice of naming landmarks was common during the Apollo missions. Names were given to the small craters and mountains near each landing site (e.g., Shorty, St. George, Stone Mountain) but official names were used as well (e.g., Hadley Rille)," he wrote. This was to develop an easy shorthand instead of always using official names. Most of the informal names assigned during Apollo were later given "official" status by the IAU.

How does IAU consider names for planetary objects?

IAU's website says that its Working Groups normally handle this process. While its decisions and recommendations are not enforceable by any national or international law, they establish conventions that are meant to help our understanding of astronomical objects and processes.

Are there any norms for naming Space objects?

Yes, the IAU gives several suggestions. For planetary objects, it states the name should be "simple, clear, and unambiguous" and should not duplicate existing names.

It has a host of other rules, such as: "No names having political, military or religious significance may be used, except for names of political figures prior to the 19th century." Further, "Commemoration of persons on planetary bodies should not normally be a goal in itself, but may be employed in special circumstances… Persons being so honoured must have been deceased for at least three years, before a proposal may be submitted."

As Spudis wrote, "…The location of specifically named craters has little rhyme or reason. Neither scientific prominence nor contribution guarantees any crater-endowed immortality. Copernicus and Archimedes are rightly honored with spectacular craters named for them. But Galileo and Newton (titans in the history of science) are fobbed off with insignificant or barely detectable features."

The IAU also noted that earlier, for the satellites of Jupiter and Saturn, inspiration was drawn from the Greco-Roman mythology. "The Jovian satellites have previously been named for Zeus/Jupiter's lovers and favourites but now Zeus' descendants are also included as an allowable source of names… In order to internationalize the names, we now also allow names of giants and monsters in other mythologies."

Has India ever named any other site on the Moon?

Following the 2008 mission Chandrayaan-1, a spot where the probe crashed (as it was meant to for the purposes of the mission), was named "Jawahar Sthal" after the first Prime Minister, Jawaharlal Nehru.

According to G Madhavan Nair, the chairman of ISRO from 2003 to 2009, then Indian President and former ISRO scientist Dr. APJ Abdul Kalam had raised the question of making a symbolic note of India reaching the Moon.

Along with the Indian flag depicted on the Moon Impact Probe, carried by the spacecraft, he made a suggestion – to name the impact site after Nehru. It was on his birthday the landing was made, and he had long championed undertaking scientific developments and research in India. The IAU later accepted it, making it official.

There is also a Sarabhai crater, named after the first ISRO Chairman, Vikram Sarabhai. The late Astronaut Kalpana Chawla, the first Indian-born woman to go to Space, also has the Chawla crater named after her. She and other members of the crew died in the Columbia disaster when their spacecraft broke apart while making its re-entry into the Earth's atmosphere. Other members of the Columbia crew have craters named after them as well.

MISSION POSSIBLE

A memorable black-and-white photograph from the early days of the Indian space programme shows the nose cone of a small rocket being taken to the launchpad on the carrier rack of a bicycle. It's an incongruous sight. All around the bicycle is the dusty, palm-bedecked rural India of the 1960s. Cut to 2023, and the image of a jubilant S. Somanath, Chairman, Indian Space Research Organisation (ISRO), declaring, "We have achieved soft-landing on the moon. India is on the moon."

In the slow yet eventful decades separating the two images, the space programme evolved from what many perceived as the frivolous aspirations of an upstart, poverty-stricken country to a sparkling example of scientific excellence that Indians can look up to. Truth is, the ISRO had made it to the elite space club much before the Chandrayaan-3 mission's 'Vikram' lander touched down on the lunar south pole on August 23. The agency has proved its capabilities time and again by placing satellites in precise orbits on modest budgets and embarking upon highly publicised missions to the moon [in 2008 and 2019] and Mars [in 2014].

In 2017, the ISRO turned up the heat on the space race by launching 104 satellites in one go on the 39th flight of its trusted Polar Satellite Launch Vehicle (PSLV). But beyond such immediately visible, high-profile achievements are the countless ways in which the ISRO and its home-grown technologies have touched the lives of the common people; be it weather forecasts, telemedicine, navigation or tele-education. It is this connect with the grassroots that has made ISRO a household name.

Second to none

Vikram Sarabhai, the driving spirit behind India's space ambitions, was keen for India to be "second to none in the application of advanced technologies to the real problems of man and society which we find in our country". To him, the application of sophisticated technologies and methods of analysis "to our problems is not to be confused with embarking on grandiose schemes whose primary impact is for show rather than for progress measured in hard economic and social terms". This is perhaps why it did not surprise anyone when the Vikram Sarabhai Space Centre (VSSC), ISRO's lead facility responsible for launch vehicles, including the hefty LVM3 which put Chandrayaan-3 in orbit last July, turned its skills to developing mechanical ventilators in the bleak days of the COVID-19 pandemic. But then, the beginnings of ISRO too were modest; on land relinquished by the fishing community and a local church in a little-known coastal village in Kerala's Thiruvananthapuram.

"A historic landmark in the entire process of land acquisition was the singular act of grace on the part of the Christian community at Thumba and the bishop of Thiruvananthapuram Rt Rev. Dr. Peter Bernard Pereira, in 1962. The venerated place of worship (the St. Mary Magdalene Church, now a popular space museum) was graciously laid at the altar of science," the book A Brief History of Rocketry in ISRO, by P. V. Manoranjan Rao and P. Radhakrishnan, veterans of the space agency, notes. On November 21 this year, it will be 60 years since the first sounding rocket, an American-made Nike-Apache, lifted off from Thumba.

Over the years, the space agency has had its ups and downs. The occasional mission setbacks aside, the ISRO was rocked by the spy scandal in the early 1990s and the Antrix-Devas case later on. Nevertheless, the agency has always displayed an ability to bounce back stronger. Today, the ISRO, with its many facilities spread over the country, has a pride of place among India's government establishments.

By indigenously developing technologies like the cryogenic rocket engine and the Indian Regional Navigation Satellite System (IRNSS - NavIC), often in the face of sanctions, it has demonstrated to the country's larger scientific community that such things are not the exclusive, impregnable domains of the West alone.

Perhaps, this is ISRO's greatest contribution to the country's scientific community; a 'work culture', epitomised by an unwavering commitment to excellence and teamwork that can be traced back to the days of Sarabhai, Satish Dhawan and A.P.J. Abdul Kalam.

EXPRESS VIEW ON INDIA AND AI REGULATION: THE CUTTING EDGE

With the explosion of artificial intelligence systems, policy makers the world over confront the complex challenge of regulating AI. Acknowledging the far-reaching ramifications of AI systems, tech leaders such as Sam Altman, the founder of OpenAI, have called for the creation of an international regulatory body, while others like Elon Musk had earlier called for a pause on AI development until independent experts developed and implemented a set of shared safety protocols. Seen against this backdrop, the Indian government's decision to move in the direction of actively formulating regulations is welcome.

Even as policy makers across jurisdictions have begun to take steps towards regulating AI, their approaches vary. Under the European model, for instance, the regulatory framework has sought to classify artificial intelligence systems according to the risk they pose. These risks are classified

into four categories — minimal, limited, high and unacceptable. This framework also calls for the establishment of a European Artificial Intelligence Board to oversee the implementation of regulation.

In India, a paper released by the Telecom Regulatory Authority of India in July had outlined the form a regulatory framework could take. It recommended setting up of an independent statutory authority and a multi-stakeholder body which draws its members from the government, academia and industry to advise it. It proposed a matrix to classify AI use cases based on their risk — high or low risk — and regulate them according to principles of responsible AI, which it enumerated as inclusive growth and sustainable development, fairness, transparency and explainability, robustness, security and safety, and accountability.

The impact of AI will not only be felt in the information technology sector, but potentially across a range of areas like education, healthcare and finance. The wide-ranging concerns such AI systems raise, therefore, from issues of privacy to bias and discrimination, security risks and intellectual property rights, and given the fact that technology is constantly evolving, call for a forward-looking approach. Moreover, regulatory frameworks cannot work in isolation. As AI will not be constrained by geographical boundaries, global collaboration will be required.

The TRAI paper also talks about the creation of an international body for the "development, standardisation and use of AI technology". Considering the strong technology ecosystem that exists in India, the country is well placed to play a crucial role in shaping the global AI regulatory framework. However, while policymakers must clearly draw up the regulatory guardrails, they must be careful — they must seek to facilitate innovation, not stifle it.

INDIA NEEDS COMPREHENSIVE SEXUALITY EDUCATION

Earlier this month, a man and his minor son were arrested for sexually abusing a five-year-old girl, who was related to them, over six months. According to the National Crime Records Bureau (NCRB), 51,863 cases were reported under The Protection of Children from Sexual Offences Act in 2021; of them, 33,348 or 64% were of sexual assault. How do we prevent child abuse? An effective approach would be comprehensive sexuality education, which, according to the United Nations (UN), is a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality.

Several State governments and certain sections of society in India have adopted an ostrich-like approach to comprehensive sexuality education. Claiming that it sexualises children, they have either watered down the existing programmes or withdrawn them on the grounds that they violate "Indian values". Traditional values are often shaped by patriarchal and hierarchical social structures. Mass media often propagates such values. All this negatively affects young adults of all genders.

Understanding consent

In the context of POCSO cases, the Madras, Delhi, and Meghalaya High Courts along with the Chief Justice of India have highlighted the frequent criminalisation of consensual adolescent relationships and have asked the government to consider reducing the age of consent. Understanding sexual consent is important not only to learn about violation and abuse, but also to maintain healthy relationships. But are Indian teenagers and even young adults aware of what sexual consent means? A study by the dating app Tinder showed that more than 64% of young

Mumbaikars were hesitant to give consent, ask for it, and to withdraw it when dating someone. This is worrying.

While the concept of sexual consent is evolving through criminal jurisprudence, the term itself may have been borrowed from English or other Western languages. While Sir Richard Burton's translation of The Kama Sutra has a short discussion on consensual sexual pleasure, discussions around the concept have been traditionally absent. With the non-English language speaking population becoming substantial, an explicit creation of vocabulary in regional languages to discuss the concept of sexual consent and its nuances is urgently required.

NCRB data show that it is necessary for schools to impart comprehensive sexuality education not only to children, but also to parents and caregivers. Data show that both male and female children are victims of sexual abuse.

Well-being and dignity

As the UN Population Fund (UNFPA) says, "the right of access to comprehensive sexuality education is grounded in fundamental human rights and is a means to empower young people to protect their health, well-being and dignity". The UN global guidance recommends starting comprehensive sexuality education from the age of five along with formal education. This means that young children will be taught about their bodies, emotions, the basic principles of consent, and how to deal with violence, bullying or abuse. As per the review 'Three Decades of Research: The Case for Comprehensive Sex Education' in the Journal of Adolescent Health quoted by the World Health Organization, with comprehensive sexuality education, young people will be better informed of their rights and sexuality, and will be more likely to engage in sexual activity later. Programmes built only on the concept of abstinence have not been effective.

The ramifications of a comprehensive sexuality education are far-reaching, especially in the matter of intimate partner violence. The UNFPA Operational Guidance for Comprehensive Sexuality Education key intervention area 4 states, "Ensure that the CSE programmes include sound monitoring and evaluation components, with due consideration to inequality, gender norms, power in intimate relationships, and intimate partner violence." On August 10, 2023, the State Council of Educational Research and Training informed the Kerala High Court that awareness about POCSO would be included in the curriculum from 2024-25. With the relationship between sexual health and human rights being complex, non-linear and interrelated, it is hoped that the curriculum is holistic and not simply related to legalities.

The UNESCO 2021 Global Status Report on 'the journey towards comprehensive sexuality education' says that capacity-building of teachers is critical as the curriculum requires non-intuitive participatory pedagogies. The report cautions against the effects of inaccurate information, and values that silence discussions on sexuality and rights. Teachers reported that they lacked the knowledge to talk about diverse topics with the existing programmes. The report highlights a government-NGO case study from Jharkhand, where a school-based programme, Udaan, which began as an Adolescent Reproductive and Sexual Health programme led by the State AIDS Control was Society, got mainstreamed into the Education Department, as a model of commitment to scale up comprehensive sexuality education.

In India, the responsibility of sexuality education is vested with the State governments. Each State has the freedom to develop creative curriculums within the framework suggested by the UNFPA. It is time they did so.

KOTA DISTRICT ADMINISTRATION STOPS COACHING CENTRES FROM CONDUCTING PRACTICE TESTS

Entrance exam coaching centres in Kota of Rajasthan have been ordered by the district administration to stop conducting practice tests for two months following the death of two students. The two NEET aspirants were found dead within a span of four hours on Sunday, taking the number of deaths of students to 22 this year.

District Collector O.P. Bunkar said the tests had been stopped with immediate effect to provide "psychological support and security" to the students. Mr. Bunkar said the decision formed part of the steps for exercising control over the coaching centres.

Bhawani Singh Detha, Principal Secretary (Higher and Technical Education), held a meeting with the Collector and other officers in Kota through videoconferencing on Monday. Mr. Detha, who heads a high-level committee formed last week to look into the issue, interacted with the representatives of coaching centres and hostel associations.

The members of the committee will visit Kota on September 2. Mr. Detha asked the coaching centre operators to hold half-day classes every Wednesday and organise other activities during the remainder of the day. Subject experts will give recommendations on reducing the course content.

Public Health Engineering Minister Mahesh Joshi said in Jaipur that the Centre must formulate a policy for reducing the costs of coaching of students preparing for competitive exams so that their parents were not forced to borrow money for education. The students were under psychological pressure, in addition to the burden of studies, over the expenses of coaching, he said.

Over two lakh students arrive in Kota every year to prepare for competitive exams for admissions to medical and engineering colleges. The number of suicides so far in 2023 is the highest for any year.

'REROUTE RAIL TRACK THROUGH GIBBON SANCTUARY'

Primatologists have suggested rerouting a 1.65-km long railway track that has divided an eastern Assam sanctuary dedicated to the western hoolock gibbon (Hoolock hoolock) into two unequal parts.

Their report in Science, a journal, follows that of the Wildlife Institute of India (WII) on designing an artificial canopy bridge to facilitate the movement of the hoolock gibbons across the broad-gauge line within the Hollongapar Gibbon Sanctuary. The track is yet to be electrified.

The authors of the study are Rohit Ravindra Samita Jha and Gopi Govindan Veeraswami of the Dehradun-based WII, Dilip Chetry of Assam-based biodiversity conservation group Aaranyak, and Nandha Kumar of Assam's Department of Environment and Forests.

Housing about 125 hoolock gibbons, India's only ape, the sanctuary in the Jorhat district covers an area of 21 sq. km.

Like the other 19 gibbon species on earth, it is marked endangered due to habitat loss and habitat fragmentation.

"The sanctuary has become a 'forest island', having lost connectivity with surrounding forest patches. Since gibbons are exclusively arboreal animals inhabiting the forest's upper canopy, they are particularly sensitive to canopy gaps," the WII's technical report on May 2023, advising an artificial canopy across the railway track in the Hollongapar protected area, said.

"Gibbon families on both sides of the railway track have thus been effectively isolated from each other, thereby compromising their population's genetic variability and further endangering their already threatened survival in the sanctuary," the report said.

RAILWAYS TO EXPEDITE INSTALLATION OF SAFETY SYSTEMS ON PASSENGER TRAINS

The Indian Railways will take up expeditious installation of three types of fire safety systems on all types of passenger coaches.

The decision to speed up provision of fire-fighting infrastructure on trains was taken in the second week of August.

According to official sources, the Railway Board has directed the General Managers of all Zonal Railways to expeditiously complete the process of providing fire and smoke detection system in AC coaches, fire detection and suppression system in pantry cars and power cars and fire extinguishers in non-AC coaches.

Asked whether the ill-fated tourist coach that went up in flames in Madurai killing nine persons was fitted with fire extinguishers, a senior official of Southern Railway said the Commissioner of Railway Safety was investigating the circumstances that led to the incident and also the response system.

"It is not clear whether the coach had fire extinguishers. Going by preliminary reports, the shunting staff on noticing the fire emanating from the coach tried to put it out by using fire extinguishers kept in the shunting engine [locomotive]. But the fire was too big to be contained using hand-held extinguishers…four water lorries were deployed to douse the flames triggered by a suspected cylinder blast," the official who did not want to be quoted said.

Safety check

Parrying questions on whether there was any negligence on the part of the shunting staff in moving the coach with passengers on board to the yard where there were no amenities, the officer said the immediate focus of the investigation was to find out how the LPG cylinder was brought on board for cooking purposes without being noticed by railway officials though the coach was subjected to a safety check on two occasions.

Sources in Southern Railway said the Chairman, Railway Board and Chief Executive Officers had called for averting situations where vulnerabilities in infrastructure or negligence of railway staff could cause injury to, or death of, any person.

"We should be alert about the possibility of any location on Indian Railway premises getting hazardous where people can get injured. The safety related issues specifically arising out of rains and waterlogging, in colonies, worksites and circulating areas must be addressed," the Chairman of Railway Board was quoted as saying.

DENGUE VACCINES IN INDIA: A LOOK AT THE ONGOING TRIALS AND DEVELOPMENT

With the expanding geography of dengue infections — in India as well as the world — an increasing need has been felt for an effective vaccine that can protect against all four serotypes. Nearly half the population of the world lives at risk of the disease at present.

The disease in India has spread from just eight states and union territories in 2001 to all states by 2022 — Ladakh was the last bastion from where two infections were reported last year. There have been 31,464 cases and 36 deaths due to dengue reported across the country till the end of July this year, as per the latest available data. There are several efforts ongoing within the country to develop an effective vaccine against the mosquito-borne disease that can lead to internal bleeding, circulatory shock, and death.

Vaccine in human trials

At present, there are three vaccine candidates that are being tested in humans in India. First, a vaccine developed by Panacea Biotec based on live weakened versions of the four dengue serotypes developed by the National Institute of Allergy and Infectious Diseases in the United States. The US laboratory developed weakened versions of all four dengue virus serotypes — they deleted parts of the genetic code of DENV1, DENV3, and DENV4 serotypes of the virus to do so and then genetically engineered DENV2 backbone using parts from weakened DENV 4 on which the others were tacked on. These were grown in cell culture by Panacea Biotec to develop the vaccine.

The company has already completed a phase I/II study in 100 healthy adults between 18 and 60 years of age. This showed that there were no severe adverse events and more than 75% of the participants developed antibodies against all four of the dengue serotypes. A larger phase III trial is likely by December this year after they scale up their manufacturing capability. The trial will be conducted across 20 sites in the country enrolling 10,335 healthy adults between the ages of 18 and 80 years.

A second vaccine candidate was developed by the Serum Institute of India with the same weakened virus from the United States. A phase I trial with 60 healthy adults of 18 to 45 years has already been completed, showing the vaccine to be safe and well tolerated. After phase 2, the company with ICMR will conduct a large-scale study with the help of ICMR in children between the ages of 2 to 18 years. The same technology has also been used by Indian Immunologicals Limited to develop a vaccine that has started the phase I clinical trial in 90 persons between the ages of 18 and 50 years.

Vaccines in the early stages of development

There are at least two indigenous vaccines against dengue under development in research institutes. Both have used similar ideas to come up with different types of vaccines. One of the main challenges of developing a dengue vaccine is antibody-dependent enhancement (ADE) — a person with low levels of antibodies against one serotype of dengue, may end up getting a more severe infection with another serotype of dengue. This was what led to controversy surrounding the first dengue vaccine to be approved. Only after a vaccination programme had been rolled out in the Philippines, it was found that the vaccine could actually increase the risk of severe disease in people who had not been infected before.

To do away with this problem, both the Indian research teams selected a specific part of the envelop protein known to not cause ADE. The team from the International Centre for Genetic

Engineering and Biotechnology (ICGEB) created a Virus-Like Particle using these parts of the virus. The vaccines were shown to offer almost 100% protection against all four serotypes. This has been tested in mice and monkeys but is yet to be tested in humans. The vaccine was developed in collaboration with Sun Pharmaceuticals.

The other team from Tata Institute of Fundamental Research and Rajiv Gandhi Centre for Biotechnology among other institutes again used the same envelope parts of the four dengue virus along with another part called non-structural-1 and constructed a genetic sequence out of it. This resulted in a DNA vaccine with all four serotypes. Although DNA vaccines can be manufactured at lower safety levels, at a lesser cost, and can be stored even at room temperatures, they don't always produce a very good immune response. This is the reason most DNA vaccine candidates failed until the success of the Zydus COVID-19 vaccine.

The researchers are currently optimising the vaccine using nano-plasmids. The vaccine candidate has already been tested on mice.

EXPRESS VIEW ON POLLUTION SHORTENING INDIAN LIVES: A TOLL OF AIR

Alarm bells on the country's air quality have been ringing for at least two decades now. It's well known that exposure to unhealthy amounts of particulate matter takes a toll on the lungs and hearts of a large section of people in the country. In recent years, epidemiological studies have linked poor air to increased vulnerability to various forms of cancer, cognitive disorders and stunted development in children. Last year, a Lancet study estimated that India lost 1.67 million people in 2019 to diseases caused by inhaling hazardous amounts of PM 2.5. Now an Air Quality Life Index (AQLI) prepared by the University of Chicago's Energy Policy Institute (UCEPI), reckons that pollution by these fine particles reduces the average Indian's life expectancy by more than five years. The study's conclusions for Delhi are even more dire — air pollution shaves off the lifespan of the capital's residents by nearly 12 years. The AQLI, which co-related the lifespans of people in more than 200 countries with air quality, reveals that 77 of the worst performing districts are in India.

Most Indian cities today have clean air plans. The trouble, however, is that these plans continue with the failed approaches of the past, including an over-reliance on punitive measures, and do not adequately co-relate the environmental problem with the public health crisis. For nearly a decade, Delhi tried to deal with pollution only when it assumed emergency proportions. Even now, the capital has very little to address the structural problems that make 100 days of satisfactory air in a year a rarity. The city's — and large parts of North India's — geography does impose constraints, especially in winters when pollutants have no escape routes. Reducing the PM 2.5 footprint also requires bringing diverse sections of people — businesses, the middle and working classes, and a variety of professionals — on the same page, especially on re-engineering transportation plans and framing sustainable development strategies. Care needs to be taken so that livelihoods are not hit. Addressing these difficult challenges, however, requires unflinching political resolve. But the political class has never really taken ownership of the task of loosening pollution's choke-hold, even when the judiciary has prodded or pulled up government agencies.

According to last year's Lancet study, the economic losses due to pollution-related deaths and morbidity in 2019 amounted to nearly $37 billion. A Dalberg paper in 2021 reckoned that this figure could go up to $95 billion. A country aspiring to be a $5 trillion economy can ill-afford to neglect people's well-being. The concerns flagged by the University of Chicago study should not be papered over.

MISSED CHILDHOOD TB CASES IMPEDE ACHIEVING 2025 GOAL

With childhood TB continuing to remain a "staggering problem" in India, "eliminating" TB by 2025 might be extremely challenging. Compared with adults, children are more vulnerable to acquiring TB infection and developing the disease. Globally, TB is now regarded as the leading cause of death from infectious diseases for children of all ages. As per a study that looked at 31 studies, the estimated mortality of children with TB who fail to receive treatment is about 22%; the case fatality ratio in children less than five years is 43%.

Childhood TB caseload

According to the WHO, there are critical gaps in detecting TB cases among children despite significant progress and greater understanding of the challenges faced in addressing TB in children.

For instance, globally, at least 1.2 million children aged less than 15 years fall ill with TB every year, and around 67 million children get infected, placing them at the risk of developing TB disease at a later date. However, 56% of the 1.2 million children who develop TB annually are not detected, says an October 2022 paper. As per the 2022 WHO global TB report, last year, children aged less than 15 years across the world accounted for 11% of the total estimated incident TB cases. Notwithstanding the 56% estimated TB detection gap in children globally, India contributes nearly one-third to the global childhood TB caseload. According to the 2022 paediatric TB management guidelines for India, nearly 0.34 million children aged less than 15 years are estimated to get TB disease every year; children in this age group in India are estimated to contribute about 13% of the TB caseload. Even as the number of TB cases being detected and notified in India continued to increase from 85,780 in 2015 to 24,22,121 in 2022, at around 6%, children constituted only a minor fraction of the total annual cases notified during the same period. This points to a "gap of 4-5% in total notification against the estimated incidence".

"Children continue to be relatively underrepresented in the national TB surveillance system," notes the National Strategic Plan 2020-2025 report.

"Under diagnosis of paediatric TB remains a challenge. The most pressing challenges include limited capacity for case detection, lack of sensitive diagnostics..." For instance, while the total notifications in 2022 were over 2.4 million, paediatric TB cases notified were just 1,35,734 — which is 5.6% vis-a-vis an estimated contribution of 13%.

With TB cases among children less than 15 years in India estimated to be 3,42,000 every year, the detection of only 1,35,734 children in 2022 would mean that over 2,00,000 (nearly 40%) children with TB were missed last year alone. With TB notification among children being nearly constant at 6% for many years now despite active case finding of child household contacts of pulmonary TB patients, the cumulative number of children with TB who have been missed would be huge.

"In 2019, the NTEP reported 1.5 lakh TB cases of children aged 0-14 years, indicating a gap of 55% in TB notifications in this age group," notes a July 2021 Collaborative framework to address the burden of tuberculosis among children and adolescents report. "Diagnosis of TB among children is comparatively more challenging, and hence many cases are missed, diagnostic delays are frequent, leading to poor treatment outcomes," says the India TB report 2023. Though children are required to be tested using highly sensitive molecular tests at the first point of contact, smear microscopy is often used. Difficulty of children below five years to produce sputum and low

bacterial load in children and even being paucibacillary pose a huge challenge in TB diagnosis and drug-resistance screening.

"Diagnosis of childhood TB often relies on clinical evaluation supported by tools such as chest X-rays. However, these tools have known limitations in terms of accuracy and reliability," says Dr. Chandrakant Lahariya, physician and public health specialist. For instance, in 2022, of the 3,00,000 molecular tests performed on children, just 37,000 (12%) were bacteriologically confirmed, thus making TB diagnosis in children very challenging. Additionally, "only a small portion of children and extrapulmonary TB patients are successfully screened for drug resistance". Even as the bulk of the cases in children is pulmonary TB, which is easier to detect, up to 32% of TB cases are extrapulmonary, which makes TB detection more challenging.

Finally, there has been a reduction in BCG vaccination of children during the pandemic. "Globally, the estimated number of children who did not receive any vaccine increased during the pandemic. There has been a downslide in BCG vaccine coverage in India as well — [from 92% in 2019 to] 85% in 2020 and 84% in 2021 [which increased to 91% in 2022]," says Dr. Lahariya.

IN INDIA, 74% CAN'T AFFORD A HEALTHY DIET: UN AGENCY REPORT

The report, 'State of Food Security and Nutrition in the World' (SOFI) 2023, published last month, shows that while the cost of a healthy diet has increased in recent years in India, it is still the lowest among the BRICS nations (including the newly added six countries) and India's neighbours. However, the share of people who are able to afford such a healthy diet is still low: India features at the bottom of that list since income levels are stagnant or going down. SOFI is published by the Food and Agriculture Organization and jointly produced with fellow United Nations agencies.

The Data Point published on Wednesday concluded that the cost of meals in Mumbai rose by 65% in five years, while salaries/wages rose by just 28%-37%. Mumbai was chosen as an exemplar due to the availability of consistent data. Today's analysis takes a broader view by comparing India's numbers with other countries.

In the SOFI report, the cost of a healthy diet is arrived at by looking at the cheapest local food items that meet dietary guidelines. The cost and availability of such food items is averaged from national data. To check if the diet is affordable, its cost is compared to the average income in each country. A diet is considered too expensive if it costs more than 52% of a country's average income. This percentage is based on data showing that people in low-income countries spend about 52% of their income on food. The percentage of people who cannot afford this diet is then calculated by using income distributions within a nation.

In India, a healthy diet costs 3.066 PPP dollars per person per day, the lowest among the countries considered. PPP stands for 'Purchasing Power Parity'. In simple terms, 1 PPP dollar in the United States should buy the same amount of goods and services as 1 PPP dollar in, say, India or Brazil. The cost of a healthy diet expressed as 'X PPP dollars per person per day' means that it would cost that much per person every day to maintain a healthy diet, accounting for differences in the cost of living between countries.

In India, 74% were not able to afford a healthy diet, the fourth highest share among the nations considered. The cost of a healthy diet in India, though increasing, is still lower than many comparable economies. However, given the poor income levels in India, a healthy diet is still unaffordable to many.

Between 2019 (before the COVID-19 pandemic) and 2021, the expense of maintaining a healthy diet increased by almost 9% in Asia — the highest across regions.

Between 2019 and 2021, Asia followed by Africa recorded the highest growth in the number of people who could not afford a healthy diet. The two continents together made up 92% of the worldwide increase. In Asia, South Asia had the highest number of people (1.4 billion) and the highest share (72%) who could not afford a healthy diet. This rate was nearly double the average for the region. In Africa, Eastern and Western Africa together had the most people (712 million) and the highest share (85%) who could not afford a healthy diet.

WHAT IS THE CARE PROTOCOL FOR BABIES IN INDIA?

The story so far:

Former British nurse Lucy Letby was sentenced to life in prison earlier this week after being found guilty in the worst child serial killer case in the history of the U.K. Letby was convicted of murdering seven babies and trying to kill six others while working at the Countess of Chester Hospital between June 2015 and June 2016. She was first arrested in 2018. Letby killed infants by injecting them with air, others were force-fed milk and two were poisoned with insulin, court documents said as per news reports.

What are patient safety provisions in India?

Patient safety is a fundamental element of public healthcare and is defined as the freedom for a patient from unnecessary harm or potential harm associated with provision of healthcare, as per the Union Health Ministry document titled, 'National Patient Safety Implementation Framework (2018-2025).'

Patients in India are protected under multiple layers of law that are largely fragmented. The first idea of patient safety is enshrined in the Hippocratic Oath itself. Additionally, the Consumer Protection Act deals with medical negligence and deficiency of services; legal rights of the patients are set out in the Clinical Establishment Act, and the National Pharmaceutical Pricing Authority and Drugs Controller General of India have mechanisms to see that patients' rights in terms of medication and devices are protected and that they are not overcharged, among other things.

What are some of the issues neonates face?

Although the global number of neonatal deaths declined from 5 million in 1990 to 2.4 million in 2019, children face the greatest risk of death in their first 28 days, according to the World Health Organization. Its data shows that in 2019, 47% of all under-five deaths occurred in the newborn period with about one third dying on the day of birth and close to three quarter dying within the first week of life.

The current infant mortality rate for India in 2023 is 26.6 deaths per 1,000 live births, a 3.89% decline from 2022. The infant mortality rate for India in 2022 was 27.6 deaths per 1,000 live births, a 3.74% decline from 2021. Children who die within the first 28 days of birth suffer from conditions and diseases associated with lack of quality care at birth or skilled care and treatment immediately after birth and in the first days of life.

Pre-term birth, intrapartum-related complications (birth asphyxia or lack of breathing at birth), infections and birth defects cause most neonatal deaths.

Women who receive midwife-led continuity of care (MLCC) provided by professional midwives, educated, and regulated to internationals standards, are 16% less likely to lose their baby and 24% less likely to experience pre-term birth, it explained.

The global organisation has also advised families that prompt medical care should be sought in case of danger signs, including feeding problems, or if the newborn has reduced activity, difficult breathing, a fever, fits or convulsions, jaundice in the first 24 hours after birth, yellow palms and soles at any age, or if the baby feels cold. Families are also required to register the birth and bring the baby for timely vaccination, according to national schedules. "Some newborns require additional attention and care during hospitalisation and at home to minimise their health risks," it says.

STUDY ON LIFE CYCLE OF DIFFERENT BLOW FLIES HELPS TO ESTIMATE POST-MORTEM INTERVAL

The flies belonging to the Calliphoridae family in the order Diptera are the first visitors to inhabit and colonise a dead body. Commonly known as blow flies, these flies have significant importance in the accurate assessment of post-mortem interval (PMI), the time that has elapsed since one's death.

However, studies reveal significant differences in the developmental rate of these flies according to seasonal changes. These changes may be due to changes in humidity, rainfall, temperature in the area, and genetic variations of blow flies.

A study conducted by Reject Paul M.P., Assistant Professor, MSc Forensic Science Programme, (Calicut University), Kerala Police Academy, has recorded 17 blow fly species belonging to four subfamilies and eight genera from central Kerala. The study covers four forensically significant blow flies, Chrysomya megacephala, Chrysomya rufifacies, Chrysomya chani, and Hemipyrellia ligurriens, that have been identified based on their morphological and molecular characteristics.

ASSAM-BASED ONCOLOGIST RAVI KANNAN WINS 2023 RAMON MAGSAYSAY AWARD

Surgical oncologist R. Ravi Kannan, Director of the Cachar Cancer Hospital and Research Centre (CCHRC) in Assam, is one of the Ramon Magsaysay award winners for 2023.

He is credited with revolutionising cancer treatment in Assam through people-centric and pro-poor healthcare. Dr. Kannan hails from Chennai, where he earlier worked at the Cancer Institute, Adyar, before moving to Silchar in 2007. He became the Director of the CCHRC that year.

The citation on the website of the Ramon Magsaysay Award Foundation says that under Dr. Kannan's leadership, the CCHRC became a full-fledged comprehensive cancer hospital and research centre. From having limited facilities, the hospital now has 28 departments covering oncology, pathology, radiology, microbiology, epidemiology, tumour registry, and palliative care.

The hospital introduced pro-poor initiatives such as free treatment, food and lodging, ad hoc employment for caregivers, and a home-care programme as patients could not continue their treatment due to difficulty in travelling long distances, and cost, with the underlying reason being poverty.

Hospital team members travelled long distances to train family members in pain management and palliative care, and provided free medicines.

The patient compliance rate in treatment rose from 28% to 70%.

The CCHRC now provides free or subsidised cancer care treatment to an average 5,000 new patients annually, catering to approximately 20,000 poor patients for treatments and follow-ups, the citation read.

UTTARAKHAND PITCHES TEMPLES, HILLS AS WEDDING DESTINATIONS

With the Centre recently launching an 'Incredible India' wedding tourism campaign to showcase the country as a prime wedding destination, Uttarakhand is all set to cash in by pitching its ancient temples and picturesque hills.

Triyuginarayan Temple in Rudraprayag, known in mythology as the place where Shiva and Parvati tied their nuptial knot, is the first wedding destination for which the State has floated a tender seeking consultants.

On the radar

Jim Corbett National Park in Nainital, Narendra Nagar in Tehri Garhwal, and Munsiyari hills in Pithoragarh are some other places the State government is eyeing to market as wedding destinations. Also on the radar is George Everest peak in Mussoorie, named after the British surveyor.

Local wedding planners say they have already put some rules in place given the ecological and religious sensibilities of the region. At Triyuginarayan, for instance, there is a cap of 30 guests and a ban on Hindi film music being played.

Subsidy for homestays

The State government is incentivising the process by offering subsidy to the locals to build homestays. It is also focusing on strengthening air connectivity to Pithoragarh to boost wedding tourism in Munsiyari.

EXPRESS VIEW ON THEFT AT THE BRITISH MUSEUM: STOLEN GOODS

It's been an embarrassing week for the British Museum which has long defended its collection against demands for repatriation by claiming it does a better job of looking after its objects. With an estimated 2,000 objects missing from its vaults — some of which turned up on eBay — the Museum's predicament has invited barbs from countries that point out that many of its antiquities, such as the Parthenon Marbles that were taken to Britain in the 19th century, are imperial loot. "It is very obvious that [Greek heritage] is very well-protected in Greece and not in the British Museum," said Despina Koutsoumba, head of the Association of Greek Archaeologists in a BBC Radio 4 interview.

The thefts — believed to have occurred over a period of years — may have rendered the Museum's position indefensible. True, most of the missing objects, including some Greek and Roman coins and jewellery, are nowhere close in value to, say, the Parthenon Marbles or the Rosetta Stone. And the loss of 2,000 objects out of a collection of 8 million may not seem like a big deal. But the debacle raises longstanding concerns about the continuing viability of so-called encyclopaedic museums: Could they be made more responsive to the present moment? Could their collections be more diverse or taken out from their vitrines and given more authentic contexts?

A big problem is the unwieldiness of vast collections: The British Museum, for example, only puts 1 per cent of its objects on display and several of the missing pieces were reportedly not even catalogued. One promising solution is the practice of progressive deaccessioning, whereby museums sell off a few high-value objects and use the proceeds to acquire artwork by underrepresented artists. For encyclopaedic museums that have long dodged calls to return looted antiquities, perhaps just being open to that conversation for a start might better serve their stated aims and objects.

FROM MAGNA CARTA TO ASHTADHYAYI: ARTEFACTS TO GRACE G-20 CORRIDOR

A copy of the Magna Carta, United Kingdom's famous charter of rights, a 15th century bronze statue of Belvedere Apollo from Italy, and an 18th century Fahua-lidded jar from China would be among the objects of cultural significance on display at the special Culture Corridor which would be set up at the venue of the G-20 summit in the national capital next week. India's contribution would be Panini's Ashtadhyayi, the ancient text.

While these would be among the physical objects on display, there would also be a digital museum for which France has shared the iconic painting Mona Lisa, Germany the Gutenberg's Bible and Mexico a statue of the deity 'Coatlicue'.

The Culture Corridor-G-20 Digital Museum has been conceptualised by the Ministry of Culture to represent and celebrate the shared heritage of G-20 members and invitee countries and will create a "museum in the making".

This exhibition will be unveiled at 'Bharat Mandapam', the venue for the G-20 Leaders' Summit, on September 9.

Submissions were requested from G-20 countries and nine guest nations under five categories: Object of Cultural Significance (as a physical display); Iconic Cultural Masterpiece (as a digital display); Intangible Cultural Heritage (digital display); Natural Heritage (digital display); and Artefact Related to Democratic Practices (physical or digital display).

WCS-INDIA REPORT FLAGS ILLEGAL TRADE OF RED SAND BOA

A report by the Wildlife Conservation Society (WCS)-India has pointed out 172 incidents of seizures of red sand boa (Eryx johnii) between the years 2016-2021. The report, compiled by the Counter Wildlife Trafficking unit of WCS-India, and titled 'Illegal Trade of Red Sand Boa in India 2016-2021'collates information from media reports on the seizures.

'Near Threatened'

The red sand boa is classified as 'Near Threatened' by the International Union for Conservation of Nature (IUCN), with a 'decreasing' population trend in most of their habitat ranges.Uttara Mendiratta, programme head, counter wildlife trafficking programme of WCS-India, said this report is an attempt to bring to light the trade in red sand boas, especially online trade, and to develop a better understanding that might help prevent the illegal collection and sale of the species.

The report points out that incidents of illegal sand boa trade were documented in 18 States and one Union Territory, covering 87 districts across India. The highest number was recorded in Maharashtra (59), often from urban areas such as the districts of Pune (11), Thane (nine), Raigad

(seven), and Mumbai Suburban (five). The second highest number was recorded from Uttar Pradesh (33), often from regions in proximity to the international border with Nepal, such as the districts of Bahraich (eight) and Lakhimpur-Kheri (seven).

"The red sand boa is now acknowledged as one of the most traded reptile species in the illegal trade market, due to its demand in the pet trade, as well as for use in black magic," Nirmal Kulkarni, senior consultant, WCS-India, and an experienced herpetologist, said.

The report points out that illegal trade of sand boas is likely prevalent across India, with concentrations in key areas such as Maharashtra and Uttar Pradesh, where traders mainly deal in live species.

Role of social media

The study also highlights the role of social media in the illegal trade of the species. "YouTube serves as a buyer-seller-interface for red sand boas in India, and sometimes acts as a gateway to facilitate trade via WhatsApp," the report said, adding that up to 200 videos advertising sand boas for sale on YouTube were retrieved during 2021.

The report also suggests that local and international conservation organisations should conduct formative research to better understand the situation of the illegal reptile trade and demand.

EXPRESS VIEW ON JAYANTA MAHAPATRA: THE POET'S HUMANISM

In 1981, Jayanta Mahapatra became the first Indian poet writing in English to receive the Sahitya Akademi Award. About three decades later, he would go on to become the first Indian-English poet to be conferred the fellowship of the Akademi. But much before these, in the Sixties, Mahapatra — who died at 95 on Sunday — had already gone where only a handful of Indian poets had ventured at the time: He had embraced the English language, a creative leap in a newly-independent country, and chosen to write about the land and the people that had nurtured him, in it.

GOLD WINNER

Neeraj Chopra scripted another glorious chapter by becoming the first-ever Indian to secure a gold in the World Athletics Championships in Budapest on Sunday. It was Neeraj's second and India's third medal after long jumper Anju Bobby George opened the account in 2003. Neeraj, the first Indian Olympic champion athlete, hurled the javelin to 88.17m in his second attempt to achieve the crown in a highly competitive field, also comprising Commonwealth Games champion Arshad Nadeem, who took the silver, the first-ever Worlds medal for Pakistan, with 87.82m. Neeraj, who recorded his season best 88.77m in the qualification round, continued his unbeaten streak this year to not only improve upon his 2022 Worlds silver in Eugene but also become the third athlete after Jan Zelezny and Andreas Thorkildsen to win the World and Olympics gold. He formally led India's javelin revolution at a global stage as compatriots, Kishore Jena (84.77m) and D.P. Manu (84.14m), took fifth and sixth spots. Neeraj's feat made India one of the three countries which earned their maiden yellow metal. The Indian men's 4x400m relay team members (Muhammed Anas, Amoj Jacob, Muhammed Ajmal and Rajesh Ramesh) ran out of their skin to create a new Asian record (2:59.05) and enter the final. Ultimately, they finished fifth. Woman steeplechaser Parul Chaudhary set a new national mark of 9:15.31.

However, the long jumpers, triple jumpers, hurdler Jyothi Yarraji and steeplechaser Avinash Sable's below par show brought disappointment. Even though leading athletes have been caught for doping this year, Neeraj, Chaudhary and the relay team's achievements will encourage the Indians for the Asian Games and 2024 Olympics. The mediocre performance of several athletes is a matter of concern for the Athletics Federation of India and the Sports Ministry and calls for an appraisal of the training. The World Championships witnessed several spectacular performances, including the U.S. 4x400m mixed relay team's world record. While the U.S. continued to dominate despite a reduced tally of 29 medals, including 12 gold, Canada improved to claim six, including four gold. With China not getting a single title, Asia's gold count dipped from five to three. U.S. sprinter Noah Lyles became the first male after Usain Bolt to win the 100m, 200m and men's 4x100m relay titles, Kenyan superstar Faith Kipyegon won a 1500m and 5000m double and Spaniard Alvaro Martin and Maria Perez swept the race walks, coinciding with the Chinese and Japanese walkers' failure, to make the edition exciting. The World Athletics would do well to promote track and field sport across the globe.

WHY WAS THE WFI SUSPENDED BY UNITED WORLD WRESTLING?

The story so far:

In the backdrop of the wrestlers' protest over various issues, United World Wrestling (UWW), the world governing body for the sport, has provisionally suspended the Wrestling Federation of India (WFI) primarily for not conducting its elections on time.

What is the impact?

As per the UWW letter to the Indian Olympic Association (IOA) appointed ad-hoc committee, which is running the WFI in the absence of an elected body, "wrestlers and their support personnel (individuals with a high-performance, medical or technical role such as coaches, assistant coach, sport physicians or masseur) remain authorised to participate in all UWW sanctioned events (that is all events on the UWW calendar), however they shall do so under the UWW flag."

This means that Indian wrestlers cannot compete under the national flag in UWW events, including the World championships in Belgrade in September. No national anthem will be played if an Indian wrestler wins a gold medal.

What caused the delay?

As some prominent wrestlers — including Olympic medalists Bajrang Punia and Sakshi Malik and World championship medallist Vinesh Phogat — brought allegations of sexual harassment, intimidation, financial irregularities and administrative lapse against the then WFI president Brij Bhushan Sharan Singh and others and sat in protest at Delhi's Jantar Mantar in January, the Union Sports Ministry asked the federation chief to step aside until an M.C. Mary Kom-headed Oversight Committee (OC) completed its enquiry.

After the enquiry, even though the OC report was not made public, the WFI on April 16 announced that its elections, which were due in February, would be held on May 7. The wrestlers then returned to the protest site and demanded the arrest of former WFI president.

They also demanded that Brij Bhushan's family members should be stopped from contesting the elections. Brij Bhushan himself was not eligible to contest the WFI polls after completing three terms (12 years),

The Ministry halted the polls on April 24 and asked the IOA to form an ad-hoc committee to complete the election process within 45 days. In May, both the International Olympic Committee (IOC) and UWW asked the IOA to conduct the WFI polls within the stipulated time frame. The IOA appointed Justice (retd.) M.M. Kumar as the returning officer for the WFI elections on June 12 after which the polls were scheduled for July 6. Meanwhile, the UWW on July 3, had warned about WFI's possible suspension.

Disgruntled state associations seeking voting rights caused further delays. The stays on the elections, first by the Gauhati High Court on June 25 and then by the Punjab and Haryana High Court on August 11 (a day before the latest date fixed for the elections), were significant.

Therefore, the UWW Disciplinary Chamber found sufficient grounds to provisionally suspend the WFI due to the prevailing situation for at least six months. The absence of an elected president and a board did not comply with UWW regulations and its conditions for membership.

The Chamber also considered the protection of athletes after the allegations against the former WFI president and the necessity to restore the functioning of the federation as another ground to suspend the national body.

What is the way forward?

Even as Brij Bhushan, a six-time influential Member of Parliament from Uttar Pradesh and a Bharatiya Janata Party (BJP) strongman, maintains a firm hold over majority of the WFI State units, the wrestlers, desperately trying to keep Brij Bhushan's loyalists out of power have found a few candidates of their choice in the elections.

Different factions of the WFI need to realise the immense loss the sport has suffered because of the ongoing issue. The only way to bail the country out of international ignominy and give the athletes their right to compete under the Tricolour is to conduct the WFI elections in a free and fair manner.

NEIGHBOURS, RIVALS

The Asia Cup, a tournament originally launched to promote Asian solidarity in cricket, is often caught between the fissures that define Indian subcontinental history. Started in 1984 with bonhomie between the big three — India, Pakistan and Sri Lanka — the championship soon became captive to the political issues that cropped up between these nations with the India-Pakistan narrative being the primary basis for grudges. Still the continental skirmish has developed deep roots, lasted the distance, embraced new teams such as Bangladesh, Afghanistan and even had Hong Kong and the United Arab Emirates. And when the 16th edition commenced at Multan in Pakistan on Wednesday, even Nepal was in the fray. The latest edition also had its share of heartburn. Originally scheduled to be entirely held beyond the Wagah border, India's refusal to tour Pakistan forced a compromise with Sri Lanka stepping in as a co-host. Pakistan bristled and then got practical and it is a sad reality that India's last tour of its neighbouring country happened during the 2008 Asia Cup in Karachi. Much water has flowed down the Indus but old wounds continue to fester. The current version has six teams split into two groups leading towards the super-four stage before concluding with the final at Colombo on September 17.

It is a travesty that matches involving India and Pakistan are reduced to guest appearances within ICC events and Asia Cup jousts. Away from the diplomatic crossfire, India, Pakistan and Sri Lanka will look at the Asia Cup as a preparatory stage for the World Cup commencing in India during

October. The Indian squad will try to fix the missing links in the coming weeks but with K.L. Rahul, Shreyas Iyer and even Jasprit Bumrah winging back from injuries, there is anxiety. The last named did well as a leader during the recent T20Is in Ireland and yet the Indian line-up looks unsettled. Much will hinge on the batting thrust that skipper Rohit Sharma and Virat Kohli can lend while Suryakumar Yadav needs to find his feet in ODIs. Incidentally this Asia Cup will consist of ODIs while in some of its previous avatars it had dallied with T20Is. Sri Lanka too is in a transitory phase but the most heartening story would be Afghanistan's resilience even if back home the Taliban's restrictions tend to suffocate life and sport. Meanwhile Bangladesh, yet to win the Asian title, gets another tilt but all eyes will be glued to Saturday's India-Pakistan tussle at Pallekele. This contest may offer clues to the Asian angle in the upcoming World Cup.

BUSINESS & ECONOMICS

'POPULATION GROWTH NOT A PANACEA'

India's population growth would raise its labour force availability but that alone won't be enough to make the economy stronger or improve fiscal outcomes, due to the quality of education in the country, Moody's Investors Service said in a report on Monday.

Emphasising that better educational outcomes will help countries like India avoid potential job losses from digitalisation and Artificial Intelligence in the long run, especially in services like call centres and BPOs, Moody's bracketed India's current education outcome levels with that of Pakistan and Bangladesh.

In a report titled 'Population growth alone will not drive credit benefits for emerging economies', the rating major said it expects continued population growth in the region to support economic expansion as working-age populations will remain large compared with younger and older citizens.

"There remains a considerable gap in the quality of education between Pakistan, Bangladesh and India compared with China and other peers in South East Asia, which contributes to labour force participation imbalances," Moody's added.

India, Bangladesh, Indonesia, Pakistan, the Philippines and Vietnam will account for a third of the global population increase over the next 20 years and 40% of the uptick in working age population, the agency reckoned.

Moody's said the difference in the proportion of the male and female population that has completed an upper secondary education was most pronounced in India and Bangladesh.

ALL FOR SMALL

Trade and investment Ministers of the G-20 nations, representing 80% of the world economy's output, three-quarters of trade flows and three-fifths of the population, concluded their deliberations under India's presidency of the bloc last week. A comprehensive communiqué was scuttled as China and Russia blocked a reference to geopolitical issues arising from the conflict in Ukraine, as has been the case since last year's G-20 Bali summit. Yet, amid flailing prospects for global trade and investment in the near-term, the G-20 nations did agree to take joint actions to reaffirm the world's faith in cross-border commerce and investment flows as a route to prosperity and growth for all. The government counted five concrete and action-oriented deliverables from the meet, including a dialogue on global standards to bridge regulatory divergences across countries and a compendium on best practices for mutual recognition of qualifications for professional services such as medicine, law and nursing. Asserting that the trade track outcomes were the most significant so far in the G-20 parleys, Commerce and Industry Minister Piyush Goyal highlighted the other three deliverables as new elements that hold importance for India. A generic framework to map global value chains, essentially to identify the weakest links and mitigate any shocks like those seen during the pandemic, is a good idea that may prove tricky to execute. Digitalisation of trade documents to ease flow of goods and services is welcome, but the principles identified in the pact pertain to paperwork on transactions such as transport, insurance, and storage, "not necessarily" to government filings for cross-border trade.

What has been coined as the 'Jaipur Call for Action to enhance Micro, Small and Medium Enterprises' (MSMEs') access to information' may yield quicker and more tangible results. The International Trade Centre, WTO and UNCTAD, which operate the Global Trade Helpdesk, have been urged to work with G-20 members to upgrade their data portal for businesses and bridge the "information asymmetry" that often hinders small players. This resonates with Prime Minister Narendra Modi's plea that G-20 Ministers strive to help MSMEs which account for 60%-70% of employment and 50% of the global GDP, integrate with global value chains as empowering them translates to societal empowerment. India, on its part, must also consider steps to bolster the capacity of its small enterprises. For one, its nudge for greenfield investments through productivity-linked incentives across sectors, can be tweaked to create a separate window for fresh outlays by MSMEs that cannot qualify for incentives based on larger investments. Moreover, bureaucratic red tape may have turned into a 'red carpet' for some large investors, but for smaller firms, getting a project off the ground is not easy yet.

AN UNEVEN REBOUND

India's economy, as measured by the Gross Domestic Product (GDP) as well as the Gross Value Added (GVA), grew 7.8% in the first quarter (Q1) of the year. This is the highest GDP uptick in four quarters, but slightly underwhelming relative to the 8% growth estimated by the Reserve Bank of India (RBI). The central bank's 6.5% growth projection for 2023-24 factors in a decline in the uptick rate in each of the subsequent quarters of this year, culminating at 5.7% in the final quarter. One will have to wait till October's meeting of the RBI's Monetary Policy Committee (MPC) to assess how this math is reworked, although the Chief Economic Adviser V. Anantha Nageswaran believes these GDP numbers do not signal any discomfort in hitting the 6.5% mark for the full year. India remains the fastest growing major economy by a comfortable margin, with China recording a 6.3% rise in the same quarter and facing a fresh slowdown. But the months ahead could prove to be more challenging with global headwinds that have hit goods exports and manufacturing already, combining with domestic pressures from the renewed spurt in inflation and the likelihood of a weak monsoon playing truant with crop yields and farm incomes.

Farm sector GVA maintained its growth pace to rise 3.5% in Q1, but may taper off thanks to the monsoon's tepid progress and the fear that low reservoir levels may also hurt the rabi crop. The headline growth rates for the services sectors were robust. Trade, hotels and transport rose 9.2%, but in absolute terms, the employment-intensive segment remained 1.9% below pre-COVID-19 levels, indicating the recovery is still incomplete. While the government has been asserting that the private investment cycle has finally taken off, the gross fixed capital formation trends indicate it is still government capital spending that is doing the heavy lifting. Manufacturing GVA grew for the second successive quarter after six months of contraction, but only accelerated slightly from 4.5% to 4.7%, so a broader rebound in consumption demand is likely still awaited. Private consumption spending rose 6% but economists believe this is still dominated by demand from high income earners. Depending on how long the current streak of spiked inflation, especially in food items, persists, demand from lower income segments would be dented afresh. A feeble recovery in rural demand could also come undone if farm incomes take a hit. Interventions to counter inflation, such as export curbs on rice and onions, will hurt growth and the external trade balance, while relief measures, such as the ₹200 cut in LPG cylinder prices, that may proliferate ahead of the general election, also pose risks to the fiscal math and growth.

THE PROBLEMS WITH THE PRIME MINISTER'S ECONOMIC CLAIMS

Addressing the BRICS Business Forum Leaders' Dialogue at Johannesburg last week, Prime Minister Narendra Modi said, "Soon, India will become a $5 trillion economy." In 2018, a working group under the Ministry of Commerce and Industry set 2025 as a deadline for achieving the same. The economic slowdown induced by the COVID-19 pandemic has upended the target deadline.

With the revival of the economy now, and the general elections on the horizon, official rhetoric on this count has resumed. While addressing the nation on the 77th Independence Day from the Red Fort, Mr. Modi noted that India was the world's 10th largest economy in 2014, but now stands at fifth spot. He has also invoked a "third term" in office saying that India would be among the world's top three economies by then.

Even if one ignores the political hubris and sidesteps the serious debate over the methodological rigour of India's GDP estimates, the problems with the Prime Minister's economic claims are manifold.

First, Mr. Modi is using nominal Gross Domestic Product (GDP) estimates to make claims about the size of the Indian economy relative to other national economies. This is wrong. Nominal GDP gives an estimate of the national output for a year at the prices prevailing in that year. However, the actual size of the economy is reflected in real GDP, which is adjusted for price changes. In other words, India can become a $5 trillion economy in nominal terms through high inflation, even without any significant changes in the economy's output. It is for this reason that national governments, the United Nations, and other international agencies such as the World Bank and International Monetary Fund base their economic growth estimates on real GDP (price adjusted) and not nominal GDP (estimated at current market prices).

Second, international comparisons between national GDP estimates get further complicated because of exchange rate conversions. Researchers have long held that market-based exchange rates are not the appropriate way in which national GDPs can be converted into a common currency for comparison because of the existence of a substantial share of non-tradable commodities in national outputs as well as the innate volatility in market-determined exchange rates.

Going by nominal GDP, the Indian economy, valued at $3.39 trillion in 2022, ranked fifth in the world, as Mr. Modi said. However, in terms of real GDP, India's economy in 2022 was $3 trillion and ranked sixth in the world. PPP-based GDP estimates (in terms of purchasing power parities estimated through price surveys of a common basket of commodities across countries) show that the Indian economy's size was over $10 trillion in 2022. India's PPP-based GDP has consistently expanded from the 1990s. India surpassed Germany in 2005 to become the fourth largest economy in the world and Japan in 2009 to become the third largest, a rank that has remained unchanged till date.

The third problem with Mr. Modi's narrative regarding the size of India's economy attaining new heights under his regime relates to its socioeconomic implications. Studies in economic development start with the premise that per capita income and output are the key indicators of a country's standard of living, not the total size of the economy. Having surpassed China as the most populous country in the world, India's per capita income (Gross National Income or GNI) and GDP continue to remain the lowest among all the countries in G-20. This means that India is the poorest country in the G20 by per capita income. This is not to deny the importance of economic growth

in advancing economic development, but to underline the fact that being the most populous country in the world today, India needs to become not just the third largest but the largest economy in the world before it can claim to have attained a dignified living standard for the majority of its people. With almost equal populations in 2021, China's per capita income (at 2017 prices) was PPP $17,504 while India's was PPP $6,590; Brazil's per capita GNI was PPP $14,370 and South Africa's PPP $12,948.

India's low per capita income is further compounded by the skewed distribution of that income: 21.7% of its pre-tax national income went to the top 1% of the population in 2021 while only 13% went to the bottom 50% of the population. While in Brazil (9.1%) and South Africa (5.8%) the share of national income for the bottom 50% was even lower than India, China (13.7%) and Russia (15.7%) had higher income shares. This unfair reality of the top 1% cornering a disproportionate share of the national income in emerging economies gets concealed by official rhetoric on trillion-dollar GDPs and their growth.

If India aspires to catch up with China or the U.S. in terms of GDP and per capita income, it needs to move beyond rhetoric and augment resource mobilisation and real investments in physical and human capital to levels much higher than what has been achieved till date.

EXPRESS VIEW ON LPG SUBSIDY: CUT THAT COUNTS

Prime Minister Narendra Modi would appear to have sounded the poll bugle for 2024 by announcing a Rs 200 reduction in the price of LPG cylinders. A domestic 14.2-kg cylinder costing Rs 1,103 in Delhi will, henceforth, be available at Rs 903. Poor households covered under the Pradhan Mantri Ujjwala Yojana, that receive a Rs 200 subsidy on every cylinder and account for 9.6 crore out of the total 31.4 crore active domestic LPG consumers, will pay Rs 703. What is notable about the announcement — Modi called it a "gift to crores of my sisters on the occasion of Raksha Bandhan" — is the timing: Lok Sabha elections are scheduled only in April-May. While polls to five state assemblies are also slated later this year, the sense of urgency seems more discernible this time than in 2019. After all, the popular PM-Kisan scheme, providing Rs 6,000 as direct cash transfer to all farming families, was launched barely two months before the first phase of the national election then.

The difference probably has to do with inflation — "mehengai" was not much of an issue in 2019. Retail food inflation averaged just 0.4 per cent year-on-year in the 12 months leading to the elections of April-May 2019. That isn't the case now, with the latest consumer food price inflation number for July at 11.5 per cent. The monsoon turning out not so good — this August has been the driest in over a century — has aggravated those worries. No party in power would want mehengai to be a talking point among voters. This is more so with the current government that has had an overall good record on inflation control. Anchoring inflation expectations is something that not only the Reserve Bank of India has accorded priority to, but this government too has acknowledged as good economics making for good politics. LPG cylinder price, rightly or wrongly, does influence consumer inflation sentiment, particularly among the poor and lower middle class, for whom it is an aspirational product.

But it isn't LPG alone. Retail prices of petrol and diesel haven't been raised since May 2022. Oil marketing companies being asked to also take price cuts on these could follow next. The cost of it will ultimately fall on the exchequer; so would a higher payout, say Rs 9,000, under PM-Kisan. Nor can one rule out more drought relief and higher crop losses of farmers that may again have to be covered by the government. All this will put further pressure on the finances of both the Centre

and the states, forcing them, in turn, to slash budgeted capital expenditures. With the poll season starting so early and set to continue over the next nine months, the fiscal implications cannot be ignored.

WHY WAS A 40% DUTY IMPOSED ON ONION EXPORTS?

The story so far:

In order to increase the availability of onions in the market, especially ahead of the upcoming festive season, the government on August 19 imposed a 40% duty on the export of onions until the end of the year. Elaborating on the rationale behind the move, Rohit Kumar Singh, Secretary at the Department of Consumer Affairs, said that a "sharp rise" in its exports had been observed in the recent past. Besides imposing this duty, the government will also be offloading its onion stocks in various wholesale markets to reduce retail prices. As per the Department of Consumer Affairs' Price Monitoring Division, on August 25, the (all-India) daily average retail price of onions was 25% higher on a year-on-year basis, at ₹32.6/kg.

What do the measures seek to achieve?

The two measures are aimed at infusing stocks into the market to stabilise prices and mitigate the demand-supply mismatch. The chain of events goes back to February, which experienced higher-than-normal temperatures. This was followed by unseasonal rainfall between late March and early-April. The two climatic occurrences corresponded with the growth cycle of the onion crop.

Onion crops are grown in India across three seasons, namely kharif, late kharif and rabi. The kharif crop is planted around July-August and is harvested between October and December; the late kharif is sown between October and November and harvested between January and March. Rabi is harvested around end of March to May and planted between December and January. Maharashtra is the largest onion-producing State, contributing 39% of the overall production, followed by Madhya Pradesh at 17%. Other major onion-growing States include Karnataka, Gujarat, Bihar, Andhra Pradesh, Rajasthan, Haryana and Telangana. The rabi crop (of onions) contributes the most to production in a calendar year — market intelligence firm CRISIL's report earlier this month pegged this at 70%.

As per the first advance estimates, the production of onion is pegged at 31.1 MT this year, down from 31.7 MT in 2021-22. Further, the area under production is also expected to be lower by 7% at approximately 1.8 million hectares.

What led to concerns about storage?

Onions usually grow best under mild weather conditions. The sudden increase in temperature, like in February, led to the early maturity of the crop, which resulted in a small-sized bulb. Further, the unseasonal rainfall in key growing regions during March also affected the quality of onions and reduced their shelf life from six months by around a month. As per the CRISIL report, this raised concerns about storage and induced panic selling among farmers.

Pushan Sharma, Director-Research at CRISIL Market Intelligence and Analytics, told The Hindu that each year India sees a lean period towards the end of September when rabi stocks deplete and the kharif crop is yet to arrive at the market (by early October). "However, this year, since the rabi crop has seen a reduction in shelf life, the lean season is expected to increase and the rabi

stock is estimated to deplete by early September, leading to the current increase in prices," Mr. Sharma said.

Does India export onions?

India exported about 2.5 million tonnes of fresh onions worth approximately ₹4,522 crore in 2022-23, as per data from India's Directorate General of Commercial Intelligence and Statistics (DGCIS). Further, as per data from COMTRADE, it is the third largest exporter after The Netherlands and Mexico, which command about 15.8% and 11.7% of the market share respectively. India commands about 10%. Its major export destinations include Bangladesh, Malayasia, the UAE, Sri Lanka, Nepal, Indonesia, Qatar, Vietnam, Oman and Kuwait.

These countries are expected to be particularly impacted by the 40% duty.

What lies ahead?

Last week, the government said that the buffer stock has been enhanced to five lakh metric tonnes from three lakh metric tonnes. More importantly, it was informed that onions from the buffers would be made available to retail consumers at a subsidised rate of ₹25/kg through retail outlets and the National Cooperative Consumers' Federation of India (NCCF) from August 21. As per the government, the measures for targeted release, procurement and imposition of export duty would "benefit the farmers and consumers by assuring remunerative prices to the onion farmers while ensuring continuous availability to the consumers at affordable prices."

UNDERSTANDING CURBS ON RICE EXPORTS

The story so far:

In a move to check domestic rice prices and ensure domestic food security, the Indian government has prohibited the export of white rice, levied a 20% export duty on par-boiled rice till October 15, and permitted the export of Basmati rice for contracts with value of $1,200 a tonne or above. The export of broken rice has been prohibited since last September. However, it is allowed on the basis of permission granted by the government to other countries to meet their food security needs and based on the request of their government.

What is the rice production estimate?

According to the third Advanced Estimate of the Department of Agriculture and Farmers Welfare, during the Rabi season 2022-2023, rice production was 13.8% less, at 158.95 lakh tonnes against 184.71 lakh tonnes during Rabi 2021-2022.

Kharif sowing data show that rice is sown on 384.05 lakh hectares this year as on August 25 compared with 367.83 lakh hectares during the same period last year. But, in States such as Tamil Nadu where the Samba crop sowing starts usually in August in the Cauvery delta area, a section of farmers says there will be delayed sowing due to a shortfall in the south west monsoon. Trade and rice millers say that new season crop arrivals will start after the first week of September and that El Nino effects are likely to impact arrivals to some extent. According to M. Sivanandan, secretary of the Tamil Nadu Rice Millers Association, paddy prices that were ₹27 a kg last year this month are at ₹33 a kg now.

What about rice exports?

India is the largest rice exporter globally with a 45% share in the world rice market. Overall rice exports in April-May of 2023 were 21.1% higher compared with the same period last financial year. In May alone, export of Basmati rice was 10.86% higher than its exports in May 2022. Non-Basmati rice shipments were 7.5% more, despite the government introducing a 20% export duty on white rice and prohibiting the export of broken rice last September.

The shipment of non-Basmati rice has been on the rise for the last three years and the export of Basmati rice in 2022-2023 was higher than the previous year, according to data available on the website of The All-India Rice Exporters' Association. The data shared by the government says that till August 17 this year, total rice exports (except broken rice) were 15% more at 7.3 million tonnes as against the 6.3 million tonnes during the corresponding period last year.

Trade sources add that Thailand expects nearly 25% lower production in 2023-2024; Myanmar has stopped raw rice exports; and the crop is said to be hit in Iraq and Iran as well.

What can Indian farmers expect?

The government has increased the Minimum Support Price (MSP) for rice, and the paddy procured now by rice millers are at a price higher than the MSP. The prices will not decline for farmers. The restrictions on exports will ensure that there is no steep climb in rice prices in the market. When the bench mark price set by the government is high, the farmers will realise better prices, say trade sources. For domestic consumers, though there is a slight increase in rice prices at present, in the long run, availability is secured and prices are not expected to spiral. A clear situation on the arrivals and government policy will be known by mid-September.

What are exporters saying?

Prices of Indian par-boiled rice in the international market is competitive even with the levy of a 20% duty. Countries such as Indonesia, which are rice exporters, are looking at imports (raw rice) now. "International demand is very high," says a Tamil Nadu-based exporter.

When the global rice market is bullish, it will absorb volume in high prices too. The government should look at classifying rice as common rice and speciality rice for export policy decisions rather than classifying as Basmati and non-Basmati. As many as 12 varieties of rice have Geographical Indication (GI) recognition and these should be insulated from general market interventions, suggests trade policy consultant S. Chandrasekaran.

In the case of Basmati rice, the government should have permitted exports to continue or fixed the minimum value for exports at $900 a tonne, says Mohit Gupta, a Basmati rice exporter. "Exporters will not buy paddy if there is no demand. This will only affect the farmers," he says. "Since Indian rice quality and the consistency in supply is good, export demand for Indian rice went up. Basmati is a speciality rice and new crop arrivals will start soon and there is no need for restrictions".

WHAT ARE THE CHANGES TO THE PROCESS FOR SALE OF SIM CARDS?

The story so far:

On August 17, seeking to further tackle the menace of cybercrimes and financial fraud, Union Minister for Telecommunications Ashwini Vaishnaw introduced two reforms. These entail a

revision of norms for bulk procurement of SIM cards and registering the final point of sale (PoS) by the licensees (or providers). The reforms are meant to strengthen the citizen-centric portal Sanchar Saathi that was launched in May this year with the same objective.

What is Sanchar Saathi?

Broadly, the citizen-centric portal allows citizens to check the connections registered against their names, block mobile phones which are stolen or lost, report fraudulent or unrequired connections and verify the genuineness of a device (before a purchase) using the IMEI (International Mobile Equipment Identity).

Sanchar Saathi has, till date, analysed 114 crore active mobile connections. Of these, 66 lakh connections were flagged as suspicious, and 52 lakh connections were disconnected because they failed re-verification. Other than this, 66,000 WhatsApp accounts have been blocked and eight lakh bank/wallet accounts were frozen. Furthermore, as per the Department of Telecommunication, more than 300 FIRs have been filed against more than 1,700 dealers.

What is the reform on PoS?

From now on, it will be mandatory for franchisee, agents and distributors of SIM cards — all PoS — to be registered with the licensees or the telecom network operator. The onus would be on the operator to carry out an "indisputable" verification of the PoS. Importantly, police verification (of the dealer) is mandatory. Existing SIM card providers have been given 12 months to comply with the registration requirements.

If the PoS is found to be involved in any illegal activity, the agreement would be terminated with the entity being blacklisted for three years. It would also draw a penalty of ₹10 lakh. The DoT holds that these provisions would help in "identifying, blacklisting and eliminating rogue PoS, from the licensees' system and provide and encouragement to the upright PoS."

What about bulk SIM cards?

Broadly, the latest provisions would replace the system of 'bulk procurement' of SIM cards (by businesses, corporates or those meant for specific events) with a system of entailing 'business' connections — sizeable procurement by a registered business entity or enterprise. Elaborating on the premise, Mr. Vaishnaw observed that 20% of bulk-procured SIMs were misused. "In the guise of bulk connections, a lot of SIMs would be procured and then they would make automated calls using a SIM-box," he said. Mr. Vaishnaw added that another mechanism entailed using a certain number of SIMs from the bulk procurement to make a certain number of calls, destroying them and then using another batch.

The latest reforms would endeavour to address these issues. The new norms maintain that though businesses can procure any number of connections, it would be subject to completing KYC requirements for all end-users. In other words, the final user— the executive who would be holding the connection — would have to undergo the KYC procedure.

In order to prevent the misuse of printed Aadhaar, the provisions mandate that demographic details would be required by scanning the QR code of the printed Aadhaar. Subscribers would also have to undergo the entire KYC procedure for replacing their SIM; for a period of 24 hours, all outgoing and incoming SMS facilities would be barred.

Isha Suri, Research Lead at the Centre for Internet and Society (CIS) observed that it must be examined if the provisions could be properly enforced till the last mile. "The smaller local stores too would be giving out the SIM cards. Thus, it would be essential to determine if they possess adequate infrastructure to carry out the entire process and more importantly have the necessary safeguards while dealing with such sensitive data", she said.

ASUS, DELL, OTHERS APPLY FOR MANUFACTURING LAPTOPS IN INDIA: WHAT THE PRODUCTION LINKED INCENTIVE SCHEME IS

As part of its renewed production linked incentive (PLI) scheme for IT hardware, the Centre has received applications from 38 entities, including the likes of Asus, Dell, HP, and Foxconn, that want to manufacture laptops, personal computers and servers in India.

Apple, however, has opted to skip participation in the scheme.

The development comes weeks after the Centre imposed – and then postponed – a licensing requirement on the import of laptops and personal computers, which had set alarm bells ringing at major electronics hardware manufacturers. The move was deferred until October 31.

What is the PLI scheme for IT hardware?

The Centre had more than doubled the IT Hardware PLI in May this year to Rs 17,000 crore since it was first cleared in 2021 with an outlay of Rs 7,350 crore. The first version of the scheme was a laggard with only two companies – Dell and Bhagwati – managing to meet first year (FY22) targets, and the industry calling for a renewed scheme with an increased budgetary outlay.

The average incentive over six years will be about 5 per cent of net incremental sales compared with the 2 per cent over four years offered earlier. Companies that locally manufacture certain components including memory modules, solid state drives and display panels will also get additional incentives under the restructured scheme. There will be flexibility in choosing the base year as well. Officials said the total benefits – given the sales projections by companies – could add up to PLI of Rs 22,880 crore.

The IT hardware manufacturing drive also seeks to penalise companies if production lags behind the set thresholds, by deducting as much as 10 per cent from the subsidies.

IT Minister Ashwini Vaishnaw said that the scheme will interplay with the semiconductor scheme of the government, with chips made in India, by the likes of Micron Technology potentially being used by laptop manufacturers. Sourcing local components has an added incentive under the scheme.

Why is local production crucial for India?

Even as the country has identified electronics manufacturing as a key sector for future economic growth, India has seen an increase in imports of electronic goods and laptops/computers in the last few years. During April-June this year, the import of electronic goods increased to $6.96 billion from $4.73 billion in the year-ago period, with a share of 4-7 per cent in overall imports.

The highest share of imports is in the category of personal computers including laptops, and palmtops, under which imports from China stood at $558.36 million in April-May this year as against $618.26 million in the year-ago period. China accounts for roughly 70-80 per cent of the share of India's imports of personal computers, laptops.

Which companies have applied?

Apart from Asus, Dell, HP and Foxconn, other companies that have applied for the scheme include Lenovo, Acer, and Flex, which is said to be manufacturing Reliance's JioBook laptop. HP Enterprises (HPE) has also applied for manufacturing servers in India.

It is worth noting that at this stage, these are just applications, and not all companies might win approvals from the Centre.

While the expected incremental production at the end of six years of the scheme is estimated at Rs 3.35 lakh crore, it could bring an incremental investment of just Rs 4,000 crore over these many years. The government estimates the manufacturing process to result in 75,000 direct jobs, said Union Minister for Electronics and IT Ashwini Vaishnaw.

Dell, which was the only big brand to participate in the earlier iteration of the scheme, is understood to migrate to the new scheme. However, the government needs to pay the company close to Rs 50 crore for its production under the first scheme, which is said to be under approval currently.

Did the import restriction on laptops play a role in the uptick in PLI applications?

A day after the import restriction was imposed, two senior officials from the IT Ministry had said as of August 4, only two companies had applied to participate in the IT hardware PLI which was renewed in May this year, with 44 companies having registered with an intent to apply. The number of applicants jumped by another 36 after 26 days, taking the total to 38. The deadline for application was August 30.

The Indian Express had earlier reported about the chaos that ensued at some of the biggest tech companies following the import restriction notification by the Director General of Foreign Trade (DGFT), with companies like Apple and Samsung freezing their imports until more clarity was available. Some manufacturers also had their consignments held at customs due to the immediate nature of the directive.

Earlier this month, industry associations representing companies like Apple, Dell and HP, had written to the US government decrying New Delhi's decision, and seeking its intervention to initiate a conversation with the Indian government and urge New Delhi to reconsider the policy.

DECODING THE OCCRP'S ADANI REPORT

The story so far:

In its order dated March 2, on the batch of petitions concerning the Adani-Hindenburg matter, the Supreme Court of India had directed the Securities and Exchange Board of India (SEBI) to conduct investigations in accordance with specific terms of reference. The first term was to probe whether there has been a violation of Rule 19A of the Securities Contracts (Regulation) Rules 1957. Two more terms were set by the apex court related to non-disclosure of related party transactions and the manipulation of stock prices in contravention of existing laws. In addition, a separate Expert Committee was formed to inter alia examine whether there has been a regulatory failure in dealing with the alleged contravention of laws by the Adani group. Now, a media investigation has brought forth further allegations.

What is Rule 19A?

Rule 19A of the Securities Contracts (Regulation) Rules 1957, inserted through an amendment made with effect from June 4, 2010 under "Continuous Listing Requirement", stipulates that every company listed in the Indian stock market has to maintain at least 25 percent public shareholding. "Public" is defined in the said Rules as persons other than "the promoter and promoter group" — defined as any spouse of that person, or any parent, brother, sister or child of the person or of the spouse, besides "subsidiaries or associates of the company". This 25 per cent minimum threshold for public shareholding vitally ensures that adequate shares of a listed company is available for trading in the stock market to enable price discovery. Violations of this rule indicate likely stock price manipulation and insider trading, jeopardising the integrity of the equity market.

What are the latest revelations?

An investigation conducted by the Organized Crime and Corruption Reporting Project (OCCRP), as reported in the Financial Times and The Guardian on August 31, has found that two Mauritius based funds, namely the Emerging India Focus Fund (EIFF) and the EM Resurgent Fund (EMRF) had invested and traded in large volume of shares of four Adani companies between 2013 and 2018. Two key foreign investors of these funds were Nasser Ali Shaban Ahli from the UAE and Chang Chung-Ling from Taiwan.

The money was channelled through a Bermuda-based investment fund called the Global Opportunities Fund (GOF). The value of the investments of Nasser Ali and Chang Chung-Ling in Adani stocks was around $430 million in March 2017 (approximately ₹2,795 crore at prevailing exchange rate). In January 2017, these two investors together held 3.4% of total shares in Adani Enterprises, 4% in Adani Power and 3.6% in Adani Transmission.

The OCCRP investigation has further revealed that a UAE-based secretive firm named Excel Investment and Advisory Services Limited owned by Vinod Adani, brother of Gautam Adani and member of Adani promoter group, had received over $1.4 million in "advisory" fees from management companies of EIFF, EMRF and GOF between June 2012 and August 2014. The investigators have not only dug up invoices and transaction records, but also internal emails which suggest that EIFF, EMRF and GOF were investing funds into the Adani group stocks at the behest of Excel Investment and Advisory Services Limited, that is, Vinod Adani.

Therefore, there is now prima facie evidence that entities like EIFF, EMRF and GOF were/are fronts through which Vinod Adani has invested massive funds into Adani group companies stocks. If one adds the shareholding of Vinod Adani in three Adani companies — through offshore individuals and entities like Nasser Ali and Chang Chung-Ling via EIFF, EMRF and GOF, with the disclosed promoter group shareholding of those companies — the promoter group shareholding of Adani Enterprises and Adani Transmission stood at over 78% in January 2017. This would be in clear breach of the 75% threshold contained in 19A of the Securities Contracts (Regulation) Rules.

The OCCRP evidence is over and above the ones already provided by the Hindenburg report which alleged a vast global web of tax haven based shell companies run by Vinod Adani through individuals like Chang Chung-Ling and offshore funds such as EIFF, EMRF etc. If more shell companies and transactions are investigated, it could further reveal breaches and contraventions of rules and regulations by the Adani group via the Vinod Adani channel.

The Adani conglomerate, however, has vehemently denied all the charges made by the OCCRP.

SEBI and the DRI probe

A significant revelation by the OCCRP relates to the correspondence between the director general of the Directorate of Revenue Intelligence (DRI) and the SEBI chief in January 2014 on "the dealings of the Adani Group of companies in the stock market". One of the letters was accompanied by a CD of evidence from a DRI probe into allegations of over-invoicing of capital equipment imports against Adani power projects, stating that "there are indications that a part of the siphoned-off money may have found its way to stock markets in India as investment and disinvestment in [the] Adani Group."

SEBI has not disclosed the receipt of such a letter and evidence from the DRI till date before the Supreme Court. Rather, they have categorically stated before the Expert Committee that the investigation into possible contraventions of rules and regulations by the Adani group of companies started on October 23, 2020 after receipt of complaints in June-July 2020.

The revelation of the DRI letter suggests that either SEBI has suppressed facts and provided false information which amounts to perjury; or that the then SEBI chairperson instead of acting on the DRI letter preferred to close the ongoing investigations into the Adani group. The matter deserves the attention of the apex court because the SEBI chairperson in January 2014 retired only in February 2017 and is currently serving as "Non-Executive Independent Director-Chairperson" of NDTV, which was acquired by the Adani group in 2022.

In its latest affidavit before the Supreme Court on August 25, SEBI has stated that they have conducted 24 investigations into Adani-Hindenburg related matters since March 2023, of which 22 investigations have been completed while interim reports have been submitted for two investigations. It is noteworthy that the two incomplete investigations include the one on the violation of Rule 19A of the Securities Contracts (Regulation) Rules 1957.

Mentioning the time period covered under this investigation as between April 1, 2016 to September 30, 2020, SEBI has submitted to the Supreme Court that they have been unable to establish the "economic interest shareholder" in 13 suspected overseas entities because of their tax haven jurisdictions and that efforts are still being made to gather more details. It is noteworthy that the names of EIFF and EMRF, which have been alleged to be fronts of Vinod Adani by the OCCRP investigation also figure in SEBI's list of 13 suspected Foreign Portfolio Investors (FPIs). SEBI owes an explanation as to how a consortium of investigative journalists could collate evidence on such tax haven based entities while a national regulator has failed to unearth so far.

The SEBI investigation and fallout

OCCRP's expose adds to the already substantial body of evidence which suggests that SEBI's role in the Adani group matter goes beyond regulatory failure and possible regulatory capture.

SEBI has already been indicted by the Expert Committee for amending the FPI and Listing Obligations and Disclosure Requirement (LODR) Regulations since 2018 which opened up regulatory loopholes facilitating concealment of "ultimate beneficiary ownership" of FPIs and transactions with "related parties". It is now clear that those amendments were made after the alleged contraventions of the 75% rule of SCRR 1957 by at least two Adani group companies in 2017, as found by the OCCRP investigation. Therefore, the findings of the SEBI on stock price manipulation and insider trading in Adani stocks are difficult to take at face value. The Expert Committee has already reported that 849 alerts were generated vis-à-vis the Adani scrips through SEBI's automated surveillance systems, between April 2018 and December 2022. Out of this, 603

alerts related to price volume movements were closed by SEBI and 246 alerts on suspected insider trading were still work in progress.

As per the Expert Committee findings, 13 FPIs suspected by SEBI sold around 8.6 crore shares of Adani Enterprises Limited (AEL) between April 2021 and December 2022 when AEL's share price skyrocketed from around ₹1,000 to over ₹3,800. The Life Insurance Corporation of India bought 4.8 crore of these shares during the same period. Yet, SEBI gave a clean chit to the suspected FPIs citing their "net seller" status during the period of price rise; whereas, it is obvious that the suspected FPIs were the major gainers of the abnormal price rise and a public sector financial company enabled those gains. It is only through a thorough forensic audit of all the listed Adani group companies and the 13 suspected FPIs by an independent auditor that the real nature and extent of the alleged economic crimes committed by the Adani group via the Vinod Adani channel can be revealed. While being very meticulous, the OCCRP investigation has only been able to expose the tip of the iceberg.

LIFE & SCIENCE

NASA AND SPACEX CREW OF FOUR BLAST OFF TO ISS

The Crew-7 mission is commanded by American Jasmin Moghbeli and includes Andreas Mogensen of Denmark, Satoshi Furukawa of Japan and Konstantin Borisov of Russia.

The Dragon spacecraft carried by a Falcon 9 rocket lifted off at 0727 GMT from Launch Complex 39A at NASA's Kennedy Space Centre in Florida, in front of around 10,000 people gathered to watch the launch.

Seventh mission

Crew-7 is set to be the seventh routine mission to the orbital platform for Elon Musk's SpaceX, with the first coming in 2020.

NASA pays SpaceX for the taxi service as part of a commercial crew program that it put in place to reduce dependency on Russian rockets for astronaut transport after the space shuttle program ended in 2011.

Boeing is the other contracted private partner, but its program remains mired in delays and technical difficulties. It has not yet flown any crew.

Mr. Borisov will be the third Russian to fly on a SpaceX Crew Dragon capsule, fixed atop a Falcon 9 rocket.

Space remains a rare area of cooperation between the United States and Russia despite Moscow's invasion of Ukraine, with Americans also continuing to fly aboard Russian Soyuz rockets that launch from Kazakhstan.

Main goal

The crew will spend six months aboard the ISS, where they will carry out science experiments including collecting samples during a spacewalk to determine whether the station releases microorganisms through its life-support system vents.

The goal is to understand if microorganisms can survive and reproduce in space.

Another experiment will aim to assess the physiological differences between sleep on Earth and in space.

Crew-7 will join the seven people already aboard the ISS, before members of Crew-6 leave for Earth a few days later.

The first segment of the ISS was launched in 1998, and it has been continuously inhabited by an international crew since 2001.

Its operations are set to continue until at least 2030, after which it will be decommissioned and crash into the ocean. Several private companies are working on commercial space stations to replace it.

SUPER BLUE MOON OF RAKSHA BANDHAN: WILL IT BE BLUE IN COLOUR AND SUPER IN SIZE?

What is a super moon?

The orbit of the moon around the earth is not circular; it is elliptical, that is, an elongated or stretched-out circle. It takes the moon 27.3 days to orbit the earth.

(It is 29.5 days from new moon to new moon, though. This is because while the moon is orbiting the earth, both the earth and the moon are also moving around the sun — and it takes additional time for the sun to light up the moon in the same way as it does at the beginning of every revolution around the earth. The new moon is the opposite of the full moon — it is the darkest part of the moon's invisible phase, when its illuminated side is facing away from the earth.)

The point closest to earth in the moon's elliptical orbit is called perigee, and the point that is farthest is called apogee. A super moon happens when the moon is passing through or is close to its perigee, and is also a full moon. (This happens with a new moon as well, just that it is not visible.)

A full moon occurs when the moon is directly opposite the sun (as seen from earth), and therefore, has its entire day side lit up. The full moon appears as a brilliant circle in the sky that rises around sunset and sets around sunrise. The moon appears 'full' not just on Purnima, but also on the night before and after the full moon night.

And what is a blue moon?

Though the expression "once in a blue moon" implies a rare or unusual occurrence, a blue moon is not that rare an astronomical phenomenon. There are a couple of definitions of a blue moon, but the one that is most commonly understood — and is endorsed by NASA — describes the situation when a full moon is seen twice in a single month.

Because the new moon to new moon cycle lasts 29.5 days, a time comes when the full moon occurs at the beginning of a month, and there are days left still for another full cycle to be completed. Such a month, in which the full moon is seen on the 1st or 2nd, will have a second full moon on the 30th or 31st. According to NASA, this happens every two or three years.

The first full moon of August 2023 occurred on August 1. That was also a super moon, but the super moon of August 30-31 will be bigger because the moon is now closer to the perigee.

So will the moon actually appear blue?

No. Sometimes, smoke or dust in the air can scatter red wavelengths of light, as a result of which the moon may, in certain places, appear more blue than usual. But this has nothing to do with the name "blue" moon.

Speaking of colours, you may have noticed that the moon appears more yellow/ orange when it is lower in the sky (closer to the horizon). This is because moonlight travels for longer through the atmosphere at this stage, and along the way, more of the shorter, bluer wavelengths of light are scattered, leaving more of the longer, redder wavelengths. The NASA explainer points out that dust or pollution can end up deepening the reddish colour of the moon.

And will the super moon be bigger in size?

According to NASA, a full moon at perigee (super moon) is about 14% bigger and 30% brighter than a full moon at apogee (called a "micro moon"). However, it is unlikely the difference in size will be noticeable by most people. The moon could appear somewhat brighter, though — but whether you are able to make out the difference will depend on factors such as the so-called 'Moon illusion', and how cloudy or polluted it is at your location.

HOW SCIENTISTS FOUND THAT LK-99 IS PROBABLY NOT A SUPERCONDUCTOR

The key seems to be the way the material was prepared. The South Koreans made lead sulphate react with copper phosphide to produce polycrystalline LK-99 and some by-products. One of the by-products was copper sulphide, which could have become embedded in the LK-99 matrix

When we use a room heater on a cold day and cosy up with a cup of tea, little do we think of the physics that makes the heater work. Most electrical conductors resist the flow of electric current, converting some of the electrical energy into heat. With a heater, we use this effect to generate the warmth that we feel.

While this property of conductors allows us to stay warm in the winter, in most instances, it is undesirable. For example, a substantial amount of electricity generated is lost while being transmitted between power plants and our factories and households as heat. Tiny wires inside computers and cellphones dissipate heat, draining the batteries in the process. So it is natural that scientists are looking for materials that can conduct electricity without resistance, especially for applications where heat loss is a deal-breaker.

An elusive material

More than a century ago, scientists discovered that many metals become superconducting – i.e. allow current to flow with zero resistance – if cooled to below -250º C. This gave birth to a big physics puzzle: why does a material become a superconductor at all? The breakthrough came in the 1950s and 1960s, when scientists developed a theory of superconductivity. With this theory, they found that superconductors aren't just materials with zero resistance: they have a remarkable new quantum state in which the electrons in the material work together. Several fantastic properties of superconductors then came to light, opening the door to new technologies – including advanced medical imaging, 'maglev' trains, and quantum computers.

However, superconductivity also remained an extremely-low temperature-phenomenon for a long time. It was only in the mid-1980s that scientists discovered copper-oxide superconductors, whose transition temperature was higher than -200º C. But to this day, scientists haven't made significant progress to elevate this figure to at or near ambient conditions. One of the highest transition temperatures has been found in a sulphide compound, but it needs to be placed under extreme pressures – like that found at the centre of the earth! The all-important discovery of an ambient-condition superconductor, which can herald radical new technologies, has eluded several generations of scientists.

Surprise and scepticism

In July 2023, a group of scientists in South Korea uploaded two preprint papers claiming that a lead apatite material was an ambient condition superconductor. Apatites are materials that have a regular arrangement of tetrahedrally shaped phosphate ions (i.e. one phosphorus atom and four

oxygen atoms). When lead ions sit in between these phosphate motifs, it is lead apatite. While apatites have been well-studied, no one had anticipated that they could be superconductors – let alone one in ambient conditions.

The novelty of the South Korean group's work was to replace 10% of the lead ions in lead apatite with copper, to produce the supposed wonder material that they had christened LK-99 (after their own last names). The group's two papers elicited a mixture of surprise and scepticism in the scientific community – surprise because of the apatite, and scepticism because of the history of superconductivity.

Independent verification

In their papers, the group described subjecting their LK-99 samples to a variety of tests. They measured the material's electric resistance, which seemed to drop below a certain temperature. They showed that the low resistance state vanished when a sufficiently strong magnetic field was applied. They also showed that the resistive state was restored if a sufficiently large amount of current was passed through the sample. They even included an image of the sample partially levitating over a magnet in their second paper – a famous test for superconductivity. But while all of these data suggested superconductivity, the group also missed several crucial tests, including some to confirm the quantum nature of the microscopic state of the system.

Despite their scepticism, research groups from around the world worked fervently to reproduce the South Korean team's results. In their second paper, the team had provided instructions to synthesise LK-99. Researchers in Australia, China, India, the U.S., and several European countries followed them and tried to replicate the South Korean team's findings – but no one found conclusive evidence of superconductivity in their samples. In fact, the Indian group, from the CSIR-National Physical Laboratory, New Delhi, was one of the first to report that it didn't find any signs of superconductivity in LK-99.

Some groups did find a drop in resistance, and others found that their samples showed partial levitation in a magnetic field. Some of the most recent work also tried to produce LK-99 using alternative methods. At least one group was able to make a highly pure crystal – where all the ions are regularly arranged in space. It had a brownish-purple hue and was transparent, which was unusual for a superconductor. More remarkably, this single crystal behaved like an insulator, showing no signs of superconductivity from low temperatures up to 800º C. Researchers also found that it was ferromagnetic – i.e. it could be magnetised by, say, rubbing a magnet on it. Superconductors cannot have this property.

Science in action

How can we reconcile these findings with those of the South Korean team? The key seems to be the way the material was prepared. The South Koreans had made lead sulphate react with copper phosphide to produce polycrystalline LK-99 (i.e. small crystallites randomly arranged in space, unlike in a single crystal, where the atoms are arranged regularly over very large distances) and some by-products. One of the important by-products was copper sulphide, which could have become embedded in the LK-99 matrix. Independent researchers confirmed this by using X-rays to 'look' inside the crystal.

Scientists who were already studying copper sulphide, for other purposes, pointed out that its arrangement of ions changes when heated to 100º C, and that the material's resistivity also jumps at that temperature for reasons quite unrelated to superconductivity. The South Korean LK-99

samples had shown a jump in resistance at almost the same temperature, meaning that the tantalising graphs in their papers were the handiwork of copper sulphide rather than LK-99. Researchers also found a more mundane way to explain the levitation: that the LK-99 sample also contained impurities (other by-products) that were diamagnetic, i.e. materials that could be magnetised but whose magnetic field is the opposite direction of the applied field. Diamagnetic materials can also partially levitate above magnets as a result.

The current evidence suggests that LK-99 is not a superconductor. Even as the replication efforts were underway, some scientists also made models of LK-99's quantum properties. They found that if copper atoms replaced a certain set of lead atoms in LK-99, the material would have some electronic states that are very interesting in that their kinetic energy could take on very restricted values. These are called flat-band systems. Electrons in flat-bands can interact strongly with each other and are predicted to form superconducting phases, but only at very low temperatures.

The LK-99 story provides a view of science in action, even as the narrative remains that we are yet to find an ambient-condition superconductor.

DSA: HOW THE PIONEERING EU LAW IS FORCING BIG TECH TO REDUCE DIGITAL SURVEILLANCE

As Europe's sweeping rules to regulate the ways in which big tech uses algorithms to target users kick in, a number of companies including Meta, Google, and Snap, have been forced to make changes to their platforms — including more disclosures on how they use artificial intelligence (AI) to offer "personalised" content to users, and allowing them the option to opt out of being subjected to digital surveillance by these platforms.

The European Union's groundbreaking Digital Services Act (DSA) went into effect last week. It constitutes an overhaul of the EU's social media and e-commerce rules, and tightly regulates the way intermediaries, especially large platforms such as Google, Meta, Twitter, and YouTube, moderate user content.

Key features of the Digital Services Act

* Faster removals, opportunity to challenge: Social media companies are required to add "new procedures for faster removal" of content deemed illegal or harmful. They must explain to users how their content takedown policy works. Users can challenge takedown decisions, and seek out-of-court settlements.

* Bigger platforms have greater responsibility: The legislation has junked the one-size-fits-all approach and put a greater burden of accountability on the big tech companies. Under the DSA, 'Very Large Online Platforms' (VLOPs) and 'Very Large Online Search Engines' (VLOSEs), that is, platforms with more than 45 million users in the EU, have more stringent requirements.

* Direct supervision by the European Commission: These requirements and their enforcement will be centrally supervised by the European Commission itself, ensuring that companies are not able to sidestep the legislation at the member-state level.

* More transparency on how algorithms work: VLOPs and VLOSEs will face transparency measures and scrutiny of how their algorithms work, and will be required to conduct systemic risk analysis and reduction to drive accountability about the societal impacts of their products.

VLOPs must allow regulators and researchers to access their data to assess compliance and identify systemic risks of illegal or harmful content.

* Clearer identifiers for ads and who's paying for them: Online platforms must ensure that users can easily identify advertisements and understand who presents or pays for the ads. They must not display personalised ads directed towards minors or based on sensitive personal data.

Changes big tech has been forced to make

The DSA imposes heavy penalties for non-compliance, which can be up to 6 per cent of the company's global annual turnover. Companies that do not wish to abide by the rules cannot function within the EU. Due to the harsh repercussions and the threat of losing a market of around 450 million users, major social media companies have fallen in line, and announced they will allow more freedom to users in the way they interact with their platforms.

So far, the EU has designated 19 sites as VLOPs: Alibaba AliExpress, Amazon Store, Apple AppStore, Booking.com, Facebook, Instagram, Google Maps, Google Play, Google Shopping, LinkedIn, Pinterest, Snapchat, TikTok, Twitter (rebranded as X), Wikipedia, YouTube, Zalando, Microsoft Bing and Google Search.

NEWS MEDIA VERSUS OPENAI'S CHATGPT

The story so far:

A group of news media organisations, including The New York Times, Reuters, CNN and the Australian Broadcasting Corporation, recently shut off OpenAI's ability to access their content. The development comes in the wake of reports that The New York Times is planning on suing the artificial intelligence (AI) research company over copyright violations, which would represent a considerable escalation in tensions between media companies and the leading creator of generative artificial intelligence solutions.

What does OpenAI do?

The company is best known for creating 'ChatGPT', which is an AI conversational chatbot. Users can ask questions on just about anything, and ChatGPT will respond pretty accurately with answers, stories and essays. It can even help programmers write software code. The hype around ChatGPT — specifically, the breathtaking advancements in the field of AI required to create it — has propelled OpenAI into becoming a $30 billion company.

What started the face-off between news outlets and OpenAI?

Software products like ChatGPT are based on what AI researchers call 'large language models' (LLMs). These models require enormous amounts of information to train their systems. If chat bots or digital assistants need to be able to understand the questions that humans throw at them, they need to study human language patterns. Tech companies that work on LLMs like Google, Meta or Open AI are secretive about what kind of training data they use. But it's clear that online content found across the Internet, such as social media posts, news articles, Wikipedia, e-books, form a significant part of the dataset used to train ChatGPT and other similar products. This data is put together by scraping it off the Internet. Tech companies use software called 'crawlers' to scan web pages, hoover up content and put it together in a dataset that can be used to train their LLMs.

This is what news outlets took a stand against last week when The New York Times and others blocked a web crawler known as GPT bot, through which OpenAI used to scrape data. They told OpenAI that the company can no longer use their published material and their journalism, to train their chat bots.

Why are media companies upset?

Search engines like Google or Bing also use web crawlers to index websites and present relevant results when users search for topics. The only difference is that search engines represent a mutually beneficial relationship. Google, for instance, takes a snippet of a news article (a headline, a blurb and perhaps a couple of sentences) and reproduces them to make its search results useful. And while Google profits off of that content, it also directs a significant amount of user traffic to news websites.

OpenAI, on the other hand, provides no benefit, monetary or otherwise, to news companies. It simply collects publicly available data and uses it for the company's own purposes.

"Anyone who wants to use the work of Wall Street Journal journalists to train artificial intelligence should be properly licensing the rights to do so from Dow Jones," Jason Conti, general counsel for News Corp.'s Dow Jones unit, said in a statement earlier this year.

But it's also true that some news outlets probably view ChatGPT as a potential competitor that will profit off their journalism. After all, if you ask ChatGPT to describe the coffee and food served by the best cafes on Manhattan's Upper East Side, the answer probably comes from some AI-generated mixture of reporting done by The New York Times' features team and reviews put out by food-centric publications.

What is the way forward?

Looking ahead, there are two key questions to be answered. If your data was used to train ChatGPT without permission or compensation, have your rights been violated? And just how much can companies like OpenAI pay out before it makes the whole endeavor financially unfeasible? Tech gurus like to argue that the value of online content only exists in the aggregate. Or in other words, ChatGPT could still exist as a high-quality product without CNN's reporting. But if all media publications across the world refused to provide access to OpenAI, it's likely that the final product would be of lower quality. And, of course, if every single creator of online content turned down OpenAI, then ChatGPT would almost certainly not exist.

However, at the same time, it's clear that OpenAI does believe some data is worth paying for. Last month it signed a licensing arrangement with The Associated Press, in a deal that would allow the company to use the news agency's archival content as a training dataset. But what happens when people refuse to accept payment and sue OpenAI for copyright infringement, the way a group of novelists did last year? The legal battles ahead will have interesting implications for journalism, intellectual property and the future of artificial intelligence.

HOW BLOTTING PAPER WORKS

Q: How does a blotting paper absorb ink?

A: A blotting paper absorbs ink by capillary action, which is a natural phenomenon exhibited by liquids in their attempt to reduce surface tension.

Any thin tube with a very fine bore – say, less than 1 mm – is called a capillary tube. When such a tube is immersed in a liquid, the liquid rises inside the tube to a level higher than that outside it. Only liquids which have an angle of contact lower than 90 degrees will rise. Other liquids, like mercury, will dip.

Blotting paper is made of cellulose obtained from the pulp of cotton linter, wood or straw. A purified pulp paste is directly pressed to form blotting paper sheets without any treatment, so as to incorporate microscopic capillaries. When such paper is placed in ink, water or any other aqueous solution, the solution immediately enters into these capillaries and spreads all over the sheet.

Capillary action is also responsible for many common phenomena in our everyday life. It helps plants raise the sap from the roots to the top through the stem. The action also makes kerosene or oil in wick-stoves come up to the wick tip, where it is burnt.

ECHOLOCATION: WHAT GOES AROUND COMES AROUND

What do bats, dolphins, and submarines have in common? They use the same technique to get a sense of their surroundings: echolocation. Here, an animal or a device emits sound waves, and listens for their reflections by objects in their surroundings. Based on what the reflected waves, or echoes, sound like, the animal or device understands its environment.Animals that use echolocation emit high-frequency sound pulses, often beyond the range of human hearing. Bats, which have poor eyesight, use this ability to hunt and navigate in the dark while dolphins use it to locate objects and communicate underwater. Whales and some birds, such as the tawny oilbirds, swiftlets and the tenrec (from Madagascar), also use echolocation.

Humans have harnessed the principles of this ingenious technique to create devices like sonar and radar. Sonar' is an acronym of 'sound navigation and ranging'. It is widely used for underwater navigation, communications, and even as a method to find fish. Radar – an acronym of 'radio detection and ranging' – is used in aviation, weather forecasting, and military applications, to detect and track objects by bouncing radio waves off them.

More recently, engineers have used echolocation to develop smartphone apps that can create a map of a room to help people with visual impairments navigate their environs better.

FINDING 'NESSIE': THE ENDURING LEGEND OF THE LOCH NESS MONSTER

There are few creatures in history to have fascinated humans as much as the Loch Ness monster. Affectionately called Nessie, the monster is a creature in Scottish folklore, believed to live in the stygian depths of the Loch (lake in Scottish) Ness, in the Scottish Highlands.

Over the years, Nessie has drawn thousands of monster hunters to Scottish shores, has had multiple claimed sightings, and become an enduring symbol in popular culture. Yet definitive proof of Nessie's existence has been elusive, with many famous 'findings' ultimately turning out to be hoaxes.

This weekend, Loch Ness Exploration, a volunteer research group, is leading the latest search, billed as the largest conducted from the surface of the lake since 1972. With the help of heat-detecting drones and a hydrophone, which detects acoustic signals under water, the group hopes to detect "unusual" movements in the lake.

Here, we look at the enduring legend of the Loch Ness monster and how it captured imaginations across the world.

First mention in the 6th century AD

Loch Ness is the United Kingdom's largest lake by volume, at 36 km long and with a maximum depth of 240 m. It lies approximately 37 km south of Inverness and nearly 300 km from Glasgow. Notably, its water is really murky with visibility exceptionally low due to the high peat content in the surrounding soil.

Nessie made its first recorded appearance in the biography of Saint Columba, a Catholic missionary from Ireland who travelled to Scottish shores to preach and proselytise. His account recounts the burial of a man who had been killed by a "water beast". When the monster returned to attack another swimmer in River Ness, which flows from the lake, Saint Columba, as per his biography, made the sign of the cross, causing the beast to swim away.

Over the years, the Loch Ness monster became a recurring fixture in Scottish folklore, with the earliest depiction of its form dated to the 12th century. Notably, unlike the more modern dinosaur-like representation, this 12th century painting portrays it as similar to being a bear.

Nessie becomes a global phenomenon

"Wherever the poetry of myth is interpreted as biography, history, or science, it is killed," Joseph Campbell wrote in his highly influential The Hero with a Thousand Faces (1949). In many ways, the myth of the Loch Ness monster defies this axiom.

While many myths have died down, or been mundanely explained in the 'Age of Reason', the legend of the Loch Ness monster only grew exponentially in the 20th century. In 1933, a local newspaper, The Inverness Courier, reported a couple sighting a "fearsome-looking monster" as they were driving along the loch.

This was followed by a flurry of sightings that British tabloids milked for what they were worth. In 1934, the Daily Mail published the now famous photo of the Loch Ness monster, bringing global attention to Nessie. While later revealed to be a hoax, the grainy black and white image continues to inspire conspiracy theorists across the world.

In 1934, the photo prompted what is recognised as the first organised search for the Loch Ness monster when a rich businessman sent 20 people armed with Kodak cameras and field glasses to watch the loch. The crew reportedly sighted Nessie 22 times.

Till date, as per the Loch Ness Center, there have been 1,100 officially recorded sightings of the monster.

Large-scale investigations yield no evidence

In 1976, an extremely well-funded American investigation however, dampened the enthusiasm. Using underwater cameras and sonar equipment, the month-long search scoured the bottom of the lake for potential skeletons and carcasses. It yielded nothing.

An even bigger expedition in 1987 also found no new evidence to explain the Loch Ness monster. Neither did a 2003 search by the BBC. Notably, during its search, the BBC also carried out an experiment on visiting tourists. It placed a fence-like structure underwater, and as tourist boats

drew near, it slowly raised it to catch tourists' eyes. It found that many onlookers later reported seeing "monster-shaped heads".

In 2018, a DNA survey conducted by a group of researchers on water samples collected from across the lake found no evidence of any large animals in Loch Ness, only detecting the presence of numerous eels. Professor Neil Gemmell who led the research told The NYT, "what people see and believe is the Loch Ness monster might be a giant eel."

But, the legend endures.

In 2021, a scientific paper reported the discovery of plesiosaur fossils — teeth, vertebrae, and one humerus from a young juvenile — in what was once a freshwater river in Morocco. Plesiosaurs had till then known to be exclusively marine creatures.

Interestingly, this paper got a lot of attention among Nessie enthusiasts who claimed that this increased the plausibility of the presence of such an aquatic dinosaur in the freshwater Loch Ness. The media picked the story up and drummed up interest. This, is how the Loch Ness monster legend survives – through speculation and fascinating, yet ultimately futile, conspiracy-mongering.

It also endures, in no small part due to the workings of capitalism. Today, Nessie is commonly featured in Scottish memorabilia and the legend of the monster is also a driver for the tourism industry.

In the wake of the latest search, hotels along the loch are packed and business is thriving. Fraser Campbell, director of the Cobbs Group, which owns hotels and restaurants along the western shore of the loch, told The Guardian that the renewed interest in the monster legend had led to "unbelievable" bookings across this summer season.

HAVE YOU HEARD OF NATURE'S JEKYLL AND HYDE?

Along with cellulose which belongs to the domain of plants and provides the fibre so good for us and chitin, which is what insect exoskeletons and wings are made of – keratin. It has got to be one of the three natural super-substances without which life would be very difficult indeed. It is a structural protein that basically comes in two avatars: alpha keratin and beta keratin. The first is found in all vertebrates, the latter in reptiles and birds.

Alpha keratin manifests itself in skin, hair, horns, hooves, claws and nails, while beta keratin is in beaks, feathers and talons of birds, the beautiful scales of snakes and in the shells of reptiles such as tortoises, turtles and terrapins. Keratin is what makes our skin waterproof and tough, and it is even present in the cell walls of our internal organs. In its hard, muscular avatar it arms buffaloes and rhinos with their horns, with which they can so easily disembowel a lion and a bear, with claws, that can rip your face right off with a single swipe. Keratin will absolutely not dissolve in water as well as organic solvents such as acetic acid and benzene; it really is one tough son of a gun. And it is something of a Jekyll and Hyde!

It's astonishing to think that this one substance can be present in soft silky human hair through which we so love running our fingers, in the fuzzy fur of a puppy, the warm cosiness of a Kashmir-wool pullover, as well as in the deadly horns of a buffalo or rhino, or the fearsomely hooked beak and grappling-iron talons of an eagle. The silk of insects and spiders is also made of keratin and a spider's silken thread, maybe stronger than steel wire of the same diameter.

I still remember how every so often we had to pull out hair from our Boxer's bum, often in the middle of the road, after halting all traffic: the silly dog would investigate the wastepaper basket and snaffle up the hair my sisters removed from their hairbrushes and then panic and whirl like a dervish when it finally emerged from the other end! Cats, as we all know, regularly bring up hairballs. Even when buried, hair takes its own sweet time to decompose naturally – two to four years maybe, depending on temperature and humidity. If kept in cool, dark, places it can last for thousands of years as manifested by well-preserved, excavated mummies. But, unlike plastic, it ultimately does decompose naturally, being broken down by enzymes and bacteria into its various components including nitrogen, carbon and sulphur. In nature, nothing is really ever wasted and everything is recycled. That's something we really need to take heed of and prioritise these days.

Because of its 'recalcitrant' nature, hair and fur can be hard to dispose of. This can be advantageous when seeking the DNA of long-dead and buried people to establish genetic links with the living. But when dumped in large tangled clumps it clogs up drains and water-ways – and even your shower outlet. We can and do, of course, recycle hair: directly in the form of wigs, and use the fur of some unfortunate animals like foxes and seals for coats and hats. Recently, I read that Indian students somewhere have used human hair to reinforce concrete! In Australia, scientists are trying to use it in electronic devices. Really, it's the natural way to go for this extraordinarily tough protein!

Feathers, too, are made of keratin and look at how strong and versatile they are. From the hair-like filoplumes which some birds use as sensors and for flight orientation and balance, to the incredibly soft down feathers of ducklings and ducks, and the blizzard-proof impervious overcoats of King Penguins, to say nothing of the magnificent flight feathers of birds: all are keratin-reinforced. Feathers are light, strong, flexible, sometimes waterproof, each flight feather aerodynamically shaped to enable maximum lift and thrust and able to deal with the stresses of wind and storm.

Many wild predators have recognised that horns and hooves are not the most appetising or nourishing parts of their meal and will either not eat them at all or let them pass through their gut and out again, unchanged. Also there is always the danger that horns and hooves may splinter and damage their mouths, stomachs and intestines if they are consumed. Tigers and other large carnivores regularly remove the fur of their kills before consuming them, shaking their heads in disgust as they spit out mouthfuls! Eagles, falcons and hawks pluck their victims, too, before consuming them. As for us?

Men in southeast Asia pay astronomical amounts for small quantities of powdered rhino horn – again nothing but indigestible keratin – thinking it will make the ladies swoon into their arms. So much so that rhinos are now highly endangered all over the world and need to be deliberately dehorned so that they are not poached to extinction. Really, our stupidity seems to be as indestructible as keratin itself!

Even now, hunters proudly display the heads (and horns) of their kills as trophies on their walls.

For us, as an integral part of our skin keratin provides a waterproof armoured layer: Rub your fingertip consistently against a hard surface, or practice like a lunatic on an acoustic guitar with sharp steel strings and soon your sore fingertips will be protected from pain and damage by a tough callus, which you could say is keratin! This really is one super substance!

EXPRESS VIEW ON FUNGI: BELATED RECOGNITION

Recognition of fungi as a part of the 'flora, fauna, funga' trinity was long overdue. Studying and protecting them on equal footing with plants and animals is crucial

They nourish soil, create carbon sinks, provide sustenance to all manner of creatures and are a crucial part of nature's clean-up committee. And yet, the hardworking denizens of the fungal kingdom have long suffered from an image problem, thanks to centuries of association with disease and death (only a small minority of fungal species are responsible for these).

The unfortunate reputation may be set to change with a recent call put out by the Fungi Foundation, in association with the UN, to recognise "funga", along with flora and fauna, as part of the trinity of life on Earth and of being as deserving of research and conservation attention as the other two.

Because when it comes to multitasking, few life forms can match the monumental capacity of these microscopic workers. Need to clean up pollutants, like during an oil spill? Deploy the prodigiously hungry fungi to break them down. Plants need to communicate a potential aphid attack to each other? The underground mycorrhizal fungi network kicks into action, transmitting danger signals — a "wood wide web" in action. Looking for sustainable alternatives to plastic? Explore the possibilities in the styrofoam-like qualities of certain mushrooms.

From turning grape to wine and dough to fluffy buns to being the source for a host of antiviral and anti-cancer compounds, fungi have much to offer.

Yet, apart from the tiny number valued for their culinary and medicinal properties, fungi are neglected. Only an estimated 10 per cent of all fungal species have been described so far — until 1969, fungi were not even recognised as a distinct kingdom. The little that is known about them now makes it clear that life on Earth is impossible without fungi — placing them alongside plants and animals, and studying and protecting them with equal urgency, could be key to protecting it from the grave challenges of the future.

TROPICAL FORESTS MAY BE GETTING TOO HOT FOR PHOTOSYNTHESIS

An estimated 0.01% of all leaves currently surpass this critical temperature but there are uncertainties in the range of potentially critical temperatures in tropical trees. Modelling suggests that tropical forests can withstand up to a 3.9 degree C increase over current air temperatures before a potential tipping point, therefore action is needed to protect the fate of tropical forests under future climate change.

"But the uncertainty in the plasticity and range of critical temperature in tropical trees and the effect of leaf death on tree death could drastically change this prediction," the authors warn.

"The 4 degree C estimate is within the 'worst-case scenario' of climate change predictions for tropical forests and therefore it is still within our power to decide the fate of these critical realms of carbon, water and biodiversity," the authors write.

Recent studies have indicated a resilience of tropical forests to how warming impacts carbon uptake and long-term drought. "However, the critical temperature acts as an absolute upper limit and it seems that, if our assumptions in the model are correct, crossing such a threshold is within the range of our most pessimistic future climate change scenarios," they note.

Leaf temperatures

In addition to temperature increase caused by global warming, deforestation and fragmentation can amplify local temperature changes. "The combination of climate change and local deforestation may already be placing the hottest tropical forest regions close to, or even beyond, a critical thermal threshold," they add.

"Therefore, our results suggest that the combination of ambitious climate change mitigation goals and reduced deforestation can ensure that these important realms of carbon, water and biodiversity stay below thermally critical thresholds."

Tropical forests serve as critical carbon stores and host most of the world's biodiversity and may be particularly sensitive to increasing temperatures. The critical temperature beyond which photosynthetic machinery in tropical trees begins to fail averages at about 46.7 degrees C. However, whether leaf temperatures experienced by tropical vegetation approach this threshold, or soon will under climate change, remains unclear.

LONGEVITY GENE

Naked mole rats have long lifespans and exceptional resistance to age-related diseases. By introducing a specific gene responsible for enhanced cellular repair and protection, from naked mole rats to mice, researchers at the University of Rochester have been able to improve the health and extend the lifespan of mice, as per a release. The transfer of the gene from the naked mole rats to mice led to nearly 4.4% increase in median lifespan of the mice. The study was published in Nature. The gene in question is responsible for making high molecular weight hyaluronic acid (HMW-HA). The Naked mole rats have about ten times more HMW-HA in their bodies. When the researchers removed HMW-HA from naked mole rat cells, the cells were more likely to form tumours.

Naked mole rats can live up to 41 years, nearly ten times as long as similar-size rodents. Naked mole rats do not often contract diseases — including neurodegeneration, cardiovascular disease, arthritis, and cancer.

WHY YOU NEED MORE FISH OIL THAN VEGETABLE OIL: OMEGA-3 LEVELS NEED TO BE HIGHER THAN OMEGA-6 TO KEEP DISEASES AT BAY

Most of us are told that we need sufficient amounts of polyunsaturated fatty acids (PUFA) or what we call "essential" fatty acids — Omega-3 and Omega-6 – to keep chronic illnesses at bay. These two are particularly significant because they have a role to play in controlling two key body processes, one of blood clotting and the other of inflammation. The last is double-edged because it preps your body to fight back infection aFnd injury but for prolonged periods can also cause severe damage and chronic illnesses. In short, you need both but need them in the right ratio to maintain good health. And this is something we do not calculate and end up harming our body instead of healing it.

Now regulating is a tough task since your body doesn't have the enzymes to produce them and you must get them from your diet. Which means that you have to regulate and balance their intake yourself. Going by studies, we know that while Omega-3 fatty acids are anti-inflammatory, which makes them essential for cardiovascular health and protects us from some of the most serious chronic diseases like heart disease, metabolic syndrome, diabetes, arthritis, Alzheimer's and

certain types of cancer, Omega-6 fatty acids are pro-inflammatory. Research shows that a diet high in Omega-6s but low in Omega-3s increases inflammation, while a diet that includes balanced amounts of each reduces inflammation. So the two should be used in tandem without cancelling out the effect of each other.

WHY OMEGA 3?

Omega 3 fatty acid reduces the formation of molecules and substances that lead to inflammation. Some studies show that fish-eating communities had lesser prevalence of heart attacks because of Omega-3. It reduces triglycerides, increases HDL and keeps blood platelets from clumping together, thereby taking care of all risk factors related to heart health.

Apart from preventing heart disease, it is also good to counter autoimmune diseases like lupus, ulcerative colitis, dementia, and cancer, especially colon, prostate and breast cancer. It reduces liver fat and inflammation. It is considered to be good for several mental health issues, including depression, anxiety, ADHD (Attention Deficit and Hyperactivity Disorder), schizophrenia and bipolar disorders. It improves eye health and prevents macular degeneration, improves cognitive development of the foetus in pregnant women and reduces risk of developmental delay.

It basically comes in three types, ALA (alpha linolenic acid), DHA (Docosahexaenoic acid) and EPA (Eicosapentaenoic acid). ALA is found in plants in the form of chia seeds, coconuts and flaxseed oils. DHA and EPA are found in animal sources, particularly fatty fish like salmon and tuna as well as fish oil. Should not be taken more than 3 grams a day.

WHY OMEGA 6?

Omega-6 fatty acids, which are found in walnuts, safflower oil, peanut butter, tofu and avocado oil, help stimulate skin and hair growth, maintain bone health, regulate metabolism and maintain the reproductive system. But because they are pro-inflammation, one needs to calibrate their use. One can have a maximum of 11 to 20 grams a day.

SCIENTISTS FINALLY FINISH SEQUENCING 'WEIRD' MALE Y CHROMOSOME

The Y chromosome is a never-ending source of fascination (particularly to men) because it bears genes that determine maleness and make sperm. It's also small and seriously weird; it carries few genes and is full of junk DNA that makes it horrendous to sequence.

However, new "long-read" sequencing techniques have finally provided a reliable sequence from one end of the Y to the other. The paper describing this Herculean effort has been published in Nature.

The findings provide a solid base to explore how genes for sex and sperm work, how the Y chromosome evolved, and whether – as predicted – it will disappear in a few million years.

Making baby boys

We have known for about 60 years that specialised chromosomes determine birth sex in humans and other mammals. Females have a pair of X chromosomes, whereas males have a single X and a much smaller Y chromosome.

The Y chromosome is male-determining because it bears a gene called SRY, which directs the development of a ridge of cells into a testis in the embryo. The embryonic testes make male hormones, and these hormones direct the development of male features in a baby boy.

Without a Y chromosome and a SRY gene, the same ridge of cells develops into an ovary in XX embryos. Female hormones then direct the development of female features in the baby girl.

A DNA junkyard

The Y chromosome is very different from X and the 22 other chromosomes of the human genome. It is smaller and bears few genes (only 27 compared to about 1,000 on the X).

These include SRY, a few genes required to make sperm, and several genes that seem to be critical for life – many of which have partners on the X. Many Y genes (including the sperm genes RBMY and DAZ) are present in multiple copies. Some occur in weird loops in which the sequence is inverted and genetic accidents that duplicate or delete genes are common.

The Y also has a lot of DNA sequences that don't seem to contribute to traits. This "junk DNA" is comprised of highly repetitive sequences that derive from bits and pieces of old viruses, dead genes and very simple runs of a few bases repeated over and over.

This last DNA class occupies big chunks of the Y that literally glow in the dark; you can see it down the microscope because it preferentially binds fluorescent dyes.

Why is the Y like this? Blame evolution.

We have a lot of evidence that 150 million years ago the X and Y were just a pair of ordinary chromosomes (they still are in birds and platypuses). There were two copies – one from each parent – as there are for all chromosomes.

Then SRY evolved (from an ancient gene with another function) on one of these two chromosomes, defining a new proto-Y. This proto-Y was forever confined to a testis, by definition, and subject to a barrage of mutations as a result of a lot of cell division and little repair.

The proto-Y degenerated fast, losing about 10 active genes per million years, reducing the number from its original 1,000 to just 27. A small "pseudo-autosomal" region at one end retains its original form and is identical to its erstwhile partner, the X.

There has been great debate about whether this degradation continues, because at this rate the whole human Y would disappear in a few million years (as it already has in some rodents).

Sequencing Y was a nightmare

The first draft of the human genome was completed in 1999. Since then, scientists have managed to sequence all the ordinary chromosomes, including the X, with just a few gaps. They've done this using short-read sequencing, which involves chopping the DNA into little bits of a hundred or so bases and reassembling them like a jigsaw.

But it's only recently that new technology has allowed sequencing of bases along individual long DNA molecules, producing long-reads of thousands of bases. These longer reads are easier to distinguish and can therefore be assembled more easily, handling the confusing repetitions and loops of the Y chromosome.

The Y is the last human chromosome to have been sequenced end-to-end, or T2T (telomere-to-telomere). Even with long-read technology, assembling the DNA bits was often ambiguous, and researchers had to make several attempts at difficult regions – particularly the highly repetitive region.

So what's new on the Y?

Spoiler alert – the Y turns out to be just as weird as we expected from decades of gene mapping and the previous sequencing.

A few new genes have been discovered, but these are extra copies of genes that were already known to exist in multiple copies. The border of the pseudo-autosomal region (which is shared with the X) has been pushed a bit further toward the tip of the Y chromosome.

We now know the structure of the centromere (a region of the chromosome that pulls copies apart when the cell divides), and have a complete readout of the complex mixture of repetitive sequences in the fluorescent end of the Y.

But perhaps the most important outcome is how useful the findings will be for scientists all over the world.

Some groups will now examine the details of Y genes. They will look for sequences that might control how SRY and the sperm genes are expressed, and to see whether genes that have X partners have retained the same functions or evolved new ones.

Others will closely examine the repeated sequences to determine where and how they originated, and why they were amplified. Many groups will also analyse the Y chromosomes of men from different corners of the world to detect signs of degeneration, or recent evolution of function.

It's a new era for the poor old Y.

INFRASTRUCTURE SHORTFALLS, LOW BUDGETS WORSEN MENTAL HEALTH ISSUES IN INDIA

Mental health-related issues are rising in India according to the Standing Committee on Health and Family Welfare, which tabled its 148th report on 'Mental Health Care and Its Management in Contemporary Times', in Parliament, earlier this month, cautioning that the country lags with inadequate staff, medical infrastructure and budgetary allocation.

According to the panel mental health refers to a state of well-being that enables people to cope with the stress of life. The Committee stated that India currently has 0.75 psychiatrists per lakh people, which is significantly low.

The Committee observed that if India targets having three psychiatrists per lakh people, it will need 27,000 more psychiatrists. This scenario is similar for other professionals such as psychologists, psychiatric social workers, and nurses. The Committee also suggested increasing the number of seats for MD Psychiatry courses.

Highlighting the adverse impact of the COVID-19 pandemic on the psycho-social well-being of all groups, especially children, adolescents, and caregivers, it noted the need for evidence-based interventions for developing infrastructure and other policies around mental health.

Quoting the Ministry of Health and Welfare commissioned mental health survey in 2015-16, the Committee said that the issues highlighted in the 2015-16 survey have remained the same in 2023. "There is considerable scope to improve the treatment gap. Reasons for the gap include lack of mental health professionals, weak infrastructure and stigma," said the report.

The total Budget Estimate (BE) for the Ministry of Health & Family Welfare (MoHFW) is ₹ 89,155 crore. Of this allocations for mental health were as follows - National Institute of Mental Health and Neuro-Sciences, (NIMHANS), Bengaluru (₹ 721 crore); Lokpriya Gopinath Bordoloi Regional Institute of Mental Health, Tezpur (₹. 64 crore) and the National Tele-Mental Health Programme (₹ 134 crore).

Jaswant, senior resident, Department of Psychiatry, All India Institute of Medical Sciences, Delhi, said: ``In 2010, global economic losses of around $2.5 trillion annually were attributed to poor mental health, stemming from diminished well-being and productivity. This will surge to $6 trillion by 2030. The latest report highlights inadequate funding for care and research. Addressing this requires not only increased financial support and expanded psychiatry residency programmes, but also establishment of positions for trained psychiatrists within institutions and district mental health programmes. Furthermore, ensuring an ample number of working psychologists is essential to effectively operate any mental health facility and reduce the treatment gap."

The Committee also recommended that the Ministry should ensure essential medicines are available concerning mental health issues and suggests that the government further leverage the network of wellness clinics and tele-medicine to benefit patients.