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INTERNATIONAL

SQUARE ONE

With the exit of Nikki Haley, former Governor of South Carolina, from the U.S. Republican nomination race for the 2024 presidential election, the country is now set to witness a rematch of the 2020 contest between the incumbent, President Joe Biden, and his challenger, former President Donald Trump. It is hardly a surprise that the contest has reverted to this match-up yet again, given that they are the only two leaders who have made the cut as viable candidates for their respective parties over the many months on the campaign trail. On the Republican side, Ms. Haley likely reflected the hopes of some among those who stood for the conservative values of the Republican Party mainstream, which is facing an unprecedented challenge from Mr. Trump and his nativist-populist style of politics. Nevertheless, voters at the primaries and caucuses clearly leaned towards Mr. Trump, perhaps under the assumption that he had left behind, at the end of his term in the Oval Office, an unfinished political agenda to Make America Great Again. On the Democratic side, at 81 years of age, it is Mr. Biden's ability to yet again live up to the rigours of being in office that remains a question mark, even among the party faithful. Yet more worrying from the perspective of the long-term prospects of the Democratic Party is the fact is that there has been no other leader from among their ranks with the national stature and sufficient charisma to navigate the party through an election in which they are challenged by the likes of Mr. Trump.

While polls have given Mr. Trump a robust lead over Mr. Biden, at this stage in the election cycle, the outcome of the political clash between the two men will depend on factors such as voter turnout, the preferences of independent voters in swing States, and the impact that the many legal cases against Mr. Trump could have on his ability to campaign and persuade voters that he is a victim of a conspiracy by the Democrats. The absence of alternative leadership in both parties beyond the two current contestants suggests that politics in America has not moved past pre-existing conditions of partisan deadlock, even though it is abundantly clear that business-as-usual politics does not serve the U.S.'s national interest. The best that the country could hope for in the next election cycle, perhaps, is for alternative voices within both parties to articulate a new vision undergirding the American Dream, a brand of leadership that embraces the new paradigm of national and global politics today.

WHAT HAS FRANCE RULED ON ABORTION RIGHTS?

The story so far:

In a global first, France inscribed the guaranteed right to abortion in its constitution on March 8 sending a powerful message of solidarity with women's rights on International Women's Day. Justice Minister Eric Dupond-Moretti used a 19th-century printing press to seal the amendment in France's constitution at a special public ceremony. The measure was approved at a joint session of Parliament on March 4. The move comes after a rollback of abortion rights in the U.S. in recent times, especially the U.S. Supreme Court's decision in 2022 to overturn a 50-year-old ruling in Roe versus Wade.

What is the reform's legislative history?

The amendment had already been passed by the National Assembly in January and by the Senate last week. However, final approval by parliamentarians at a joint session was needed to effect

constitutional change. During the voting session, out of the 902 legislators, 780 voted in favour of the reform, 72 voted against it and 50 abstained. Abortion, although legal in France since 1975, will now be a "guaranteed freedom" for women. Although rare, amending the constitution is not without precedent in France. The French constitution has been modified nearly 25 times since it was adopted in 1958. The last instance was in 2008 when Parliament was awarded more powers and presidential tenure was limited to a maximum of two consecutive five-year terms in office.

What does the amendment stipulate?

The Bill, introduced last year, amended the 17th paragraph of Article 34 of the French constitution and stipulates that "the law determines the conditions by which is exercised the freedom of women to voluntarily terminate a pregnancy, which is guaranteed." This means that future governments will not be able to drastically modify existing laws which permit termination up to 14 weeks. Indicating how abortion rights have come under the scanner in many countries across Europe, the introduction to the legislation states, "Unfortunately, this event is not isolated: in many countries, even in Europe, there are currents of opinion that seek to hinder at any cost the freedom of women to terminate their pregnancy if they wish."

Is this a first-of-its-kind precedent?

France is the only country to currently have such a specification about abortion, although former Communist-run Yugoslavia's 1974 constitution said that "a person is free to decide on having children" and that such a right can only be limited "for the reasons of health protection." After its disintegration in the early 1990s, several Balkan states adopted similar measures without an explicit constitutional guarantee. For instance, Serbia's constitution in less specific terms states that "everyone has the right to decide on childbirth."

However, some argue that abortion was already constitutionally protected following a 2001 ruling in which France's constitutional council based its approval of abortion on the notion of liberty enshrined in the 1789 Declaration of the Rights of Man, which is technically a part of the constitution.

How has it been received?

Unlike in the U.S., the issue of abortion is not highly divisive across the political spectrum in France. Most French people believe that abortion is a woman's right and an essential public health service. A poll conducted by the French Institute of Public Opinion (IFOP) in 2022 showed that 81% of respondents were in favour of enshrining the right to have an abortion in the constitution. According to government figures, 2,34,000 abortions were carried out in France in 2022.

The right to abortion has not faced any significant challenges from political parties in France, including conservatives and the far-right National Rally party. While some right-wing senators from the Républicains party voted against the first attempt to change the constitution in October 2022, the stance of major political parties has generally aligned with that of the French public. Marine Le Pen, leader of the far-right National Rally, told Reuters earlier that the move was unnecessary and a political gimmick, although her party would not vote against it. Critics have however warned that the move is a conscious effort by French President Emmanuel Macron to appeal to left-leaning figures in his Renaissance party after controversial pension and immigration reforms.

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What about other European countries?

Abortion is currently accessible in more than 40 European nations, but some countries are seeing increased efforts to limit access to the procedure. In September 2022, Hungary's far-right government made it obligatory for women to listen to the pulse of the foetus, sometimes called the "foetal heartbeat," before they can access a safe abortion.

Poland, which has some of the most stringent abortion laws in Europe, allows termination only in the event of rape, incest or a threat to the mother's health or life. Restrictions were further tightened in 2020 when the country's top court ruled that abortions on the grounds of foetal defects were unconstitutional.

The U.K. permits abortion up to 24 weeks of pregnancy if it is approved by two doctors. Delayed abortions are allowed only if there exists a danger to the mother's life. However, women who undergo abortions after 24 weeks can be prosecuted under the Offences Against the Person Act, 1861. Italy resisted Vatican pressure and legalised abortion in 1978 by allowing women to terminate pregnancies up to 12 weeks or later if their health or life was endangered. However, the law allows medical practitioners to register as "conscientious objectors," thereby making access to the procedure extremely difficult.

The French initiative could, however, embolden efforts to add abortion to the European Charter of Fundamental Rights.

What is India's stance on abortion?

India implemented the Medical Termination of Pregnancy (MTP) Act in 1971 to allow licensed medical professionals to perform abortions under specific conditions as long as the pregnancy did not exceed 20 weeks. The Act was further amended in 2021 to permit abortions up to 24 weeks for certain cases.

The opinion of only one registered medical practitioner will be required for the abortion of a foetus up to 20 weeks of gestation. If a pregnancy is 20-24 weeks, the right to seek abortion is determined by two registered medical practitioners but only under certain categories of forced pregnancies, including statutory rape in case of minors or sexual assault; women with disabilities; or when there is a change in the marital status of the woman during pregnancy. After 24 weeks, the Act requires a State-level medical board to be set up in "approved facilities", which may "allow or deny termination of pregnancy" only if there is substantial foetal abnormality.

CLOSED AND INSULAR

Portugal, ever since it transitioned into a multiparty democracy in the 1970s, has been seen as one of Europe's most stable liberal democracies. But Sunday's parliamentary election results suggest that the country cannot remain an island when far-right populist parties are on the rise elsewhere in Europe. When 99% of the ballots were counted, the centre-right Social Democratic Party and the Socialist Party won 29% each, with the former taking a narrow lead of 2,058 votes. While the Social Democrats were expected to do well, the surprise was the rapid rise of the far-right Chega party, which ran a campaign promising to "clean up Portugal", clamp down on immigration and implement measures such as chemical castration for some sex offenders. Chega (meaning Enough), which was founded in 2019, had won 7% votes in the 2022 elections, announcing its arrival as a force to reckon with. And in Sunday's elections, it emerged as the third largest party, with 18% votes. Chega's head André Ventura has said the vote is a victory for the

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right wing (right-of-centre, far-right and conservative parties have won 52% votes among themselves) and has expressed an interest in joining coalition talks. But Social Democratic Party's leader Luís Montenegro has ruled out any tie-up with Chega. As the Socialists have already conceded the election, he is likely to form a minority government.

The Socialist government, led by Goan-origin Prime Minister António Costa, collapsed last year amid investigations into the government's handling of mining and hydrocarbon projects. After the police raided government offices, including the office of Mr. Costa's Chief of Staff and the Ministries of Environment and Infrastructure, Mr. Costa, an elderly statesman of the European left, announced his resignation, saying the probe was "incompatible" with his official duties. The scandal had tarnished the Socialists, but the party that made gains out of it was the anti-establishment Chega whose rise blunted the edge the Social Democrats had had in the early stage of the campaign. Going forward, it will not be easy for Mr. Montenegro. If he sticks to his word of not aligning with Chega and forms a minority government, he will be dependent on other parties to pass legislation. Mr. Costa's leadership during COVID-19 earned him praise and the economy grew faster than the EU average, but other structural economic problems persisted. The country is grappling with persistent low wages and higher inflation, and housing prices have doubled in less than a decade. Portugal has also seen protests over lack of access to health care. The new Prime Minister will have to address these challenges and offer a transparent corruption-free administration, while keeping the far-right, which is accused of xenophobia and racism, at bay.

WHAT ARE THE CAUSES OF THE FLARE-UP IN EASTERN CONGO?

The story so far:

Renewed clashes in the eastern Democratic Republic of Congo (DRC) have sparked global concern, worsening the humanitarian crisis. Fighting between the Congolese army and Rwandan-backed M23 group intensified around Sake and Nyanzale, resulting in deaths, displacements, and food security risks. The U.S. urged both countries to avoid war, calling for Rwanda to withdraw its personnel and missile systems. The United Nations and several Western countries have also denounced the attacks and called on the M23 rebels to cease their offensive.

What is the conflict?

An unending cycle of violence has engulfed the eastern region of the central African country for decades, with the conflict originating in two civil wars. In 1994, an estimated eight lakh minority ethnic Tutsis and Hutu moderates were killed by extremist Hutus in 100 days, in what is now known as the Rwandan genocide.

In the subsequent days, around two million people crossed the Congolese border (then known as Zaire) to settle in refugee camps in the eastern provinces of North Kivu and South Kivu as a Tutsi government gained control of Rwanda.

Tutsi militias also banded together to fight extremist Hutus as tensions heightened between local Congolese and Rwandan emigrants. The ethnic tensions further set the stage for the First Congo War between the Zairean soldiers on one hand and the Tutsi militia and the Alliance of Democratic Forces for the Liberation of Congo (AFDL) on the other, with the backing of Rwanda and Uganda which wanted to root out the remaining perpetrators of the genocide. In 1997, the AFDL captured the capital Kinshasa and Zaire was renamed as the Democratic Republic of the Congo.

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Another deadly war followed in 1998 after the new regime ordered Rwandan refugees and troops to leave the country. It feared that Rwanda would join forces with Uganda. The war that followed was dubbed 'Africa's world war.' A new Rwanda-backed rebel group, the Rally for Congolese Democracy (RCD), began invading parts of Congo. In response, Congolese President Laurent-Désiré Kabila allowed armed Hutu refugees to organise in the east to fight against Rwanda.

Since then, several agreements have been signed to put an end to what has been called one of the world's deadliest conflicts since the Second World War, but fighting has continued.

Who are the M23 rebels?

The March 23 Movement or M23, formed in 2012, claims to defend Tutsi interests against Hutu militias. Originating from a 2009 ceasefire agreement, it broke away from the Congolese army, accusing the government of failing to integrate Tutsis. The group resurged in 2022, citing attacks by Hutu militias. Recent attacks near Goma have escalated the humanitarian crisis, prompting protests urging Rwanda's withdrawal of support.

The worsening violence has led to an escalation in tensions between the DRC and Rwanda, with Congo accusing the latter of backing M23 rebels. Rwanda has repeatedly denied these allegations. Rwanda has claimed the escalation is due to Congo's decision to send back regional peacekeepers.

The new fighting could lead to an escalation of regional tensions and involve more countries. The International NGO Forum in Congo said the escalation has involved artillery attacks on civilian settlements, causing a heavy toll and forcing many health and aid workers to withdraw. There are concerns a new disaster could go unnoticed because of the attention on the war in Gaza and Russia's invasion of Ukraine.

NUMBER OF POOR PEOPLE INCREASE IN SUB-SAHARAN AFRICA

At a time when the number of people living in poverty has been declining worldwide, and significantly in some regions, Sub-Saharan Africa has seen a high increase. In 1990, 278 million people were identified as poor in Sub-Saharan Africa. This number increased to 397 million in 2019. The increase was particularly profound in the last decades, from 2008 onwards, when conflicts occurred in many countries in this region. These statistics were compiled by the World Bank.

This is in contrast to other regions. In South Asia, for instance, 1.62 billion people were identified as poor in 1990. This number came down to 221 million in 2019. In fact, in 1990, 80% of the world's poor were living in South Asia, while only 13.8% were in Sub-Saharan Africa. In 2019, though, the share in South Asia fell to 31.4% while that of Sub-Saharan Africa increased to 56.6%. The overall estimated numbers of poor people, the world over, fell from 2.01 billion in 1990 to 702 million.

The number of people living below the poverty line of $2.15/day (2017 PPP).

While the number of poor people in Sub-Saharan Africa increased, poverty in terms of the share of the region's population reduced from 53.8% in 1990 to 35.4% in 2019. The corresponding number for South Asia fell from 49.8% to 10.5%, a drastic decline that is offset slightly by the fact that the share increased marginally from 10.4% in 2018 to 10.5% in 2019.

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In West Asia and North Africa, poverty levels which were steadily declining from 1990 took a turn for the worse in 2014 and steadily increased from then to reach 9.6% in 2018, higher than 6.3% in 1990. This increase coincided with the civil wars in Syria, Libya, and Iraq, and the conflicts in Yemen. Besides, states have been fragile in this region in the aftermath of the Arab Spring.

The World Bank also infers that within Sub-Saharan Africa, "poverty is increasingly concentrated in fragile and conflict-affected states (FCS)". These include Madagascar, Burundi, South Sudan, the Central African Republic, Malawi, Mozambique, Democratic Republic of the Congo, Republic of the Congo, and Zambia. In fact, the only country outside Sub-Saharan Africa included as an FCS that registered a poverty rate above 60% was Syria. Yemen was a close second with 58%. The World Bank also mentions that African countries that managed to avoid fragility, such as Benin, Cape Verde, Gabon, Ghana, Equatorial Guinea, and Senegal, also managed to steadily reduce poverty.

According to World Bank Data, in FCS, Sub-Saharan Africa, and the rest of the world. South Sudan and Burundi, with a poverty rate of over 70%, had the highest poverty rate globally. In at least eight Sub-Saharan countries, the poverty rate was over 60%. Among countries in the rest of the world, which are not in the list of FCS, Uzbekistan leads the list with a poverty rate of 28% followed by Belize (18%), Djibouti (17%), Honduras (12%), and Suriname (11%).

In total, the 43 countries which had the highest poverty rates in 2019 were either in the FCS list or were in Sub-Saharan Africa, which, according to the World Bank, points to the importance of stability. Instability and conflict increased debt distress in these nations. "Economic growth is premised on stability, and the fact that China and India were stable for the past 30 years is easily taken for granted," the World Bank blog observed. Both these countries have dominated global poverty reduction due to strong economic growth in recent decades.

A SYMBOL OF DEFIANCE

Lying in the waters around the Spratly Islands, a derelict ship at the Second Thomas Shoal has become a symbol of the Philippines' defiance in the hotly contested South China Sea. A recent incident in the area, where the Philippines claims that China Coast Guard ships caused two collisions with their boats and water cannoned one of them, has renewed global interest in the flashpoint.

The Philippine vessels were part of a routine mission to deliver provisions to troops stationed on the grounded navy vessel BRP Sierra Madre at Second Thomas Shoal.

The incident happened a day after Philippine Foreign Minister Enrique Manalo called on China to "stop harassing us", defending the country's strategy of publicising Chinese manoeuvres in the South China Sea.

The Chinese Coast Guard ships and accompanying vessels blocked the Philippine vessels off the disputed Second Thomas Shoal and executed dangerous manoeuvres that caused two minor collisions between the Chinese ships and two of the Philippine vessels, Philippine officials said. An hour later, another Chinese Coast Guard ship collided with a supply boat the Philippine coast guard was escorting.

A Philippine government task force dealing with territorial disputes said four crew members were injured, and called China's actions "another attempt to illegally impede or obstruct a routine resupply and rotation mission." Similar skirmishes were also reported in December.

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The Spratly Islands themselves are claimed by multiple countries in the region, including China, Taiwan, Vietnam, the Philippines, and Malaysia. The Philippines first took possession of the Second Thomas Shoal in the late 1990s, setting an outpost on the drowned BRP Sierra Madre. This Second World War-era ship was intentionally grounded by the Philippines to create an outpost for the country and boost the Philippines' claim over the Spratly Islands.

The country continues to maintain its presence there and the ship serves as a military outpost, manned by a small contingent of troops. The Philippines claims that the shoal lies within its exclusive economic zone (EEZ), which, under international law, extends up to 200 nautical miles. The Second Thomas Shoal lies about 108 nautical miles (200 km) from the Philippine island of Palawan.

China's claims

China claims sovereignty over most of the South China Sea, including the Second Thomas Shoal, based on the historical and controversial Nine-dash line. China's claims cut into the EEZs of Vietnam, the Philippines, Malaysia, Brunei and Indonesia. In 2013, the Philippines had filed a case against China with the Permanent Court of Arbitration in The Hague, challenging the legality of China's claims and activities in the South China Sea.

The Philippines took China to international court after the latter seized effective control of the Scarborough Shoal in 2012. The court ruled in favour of the Philippines in 2016, but China rejected the judgment.

The incident is concerning for the Philippines since in 1995, when China took over the Mischief Reef, a low-tide elevation located in Spratly Islands that was claimed by the Philippines. The distance between Mischief Reef and Second Thomas Shoal is just 22 nautical miles (around 40 km), and China's presence on the Mischief Reef leaves the Philippines potentially exposed to attacks from its neighbour. In 2022, it was reported that China has "fully militarised at least three of several islands it built in the disputed South China Sea", on Mischief Reef, Subi Reef and Fiery Cross.

The recent flare in tensions between the two countries can be attributed to Philippine President Ferdinand Marcos Jr.'s proximity to the U.S. Experts believe that once the BRP Sierra Madre falls apart, China may attempt to take over the Second Thomas Shoal, which will also bring it dangerously close to Palawan Island. One of the military bases that the U.S. gained access to in 2023 is located on the Palawan Island.

UK COUNTER-TERRORISM REPORT WARNS OF EXTREMIST INFLUENCE OF PAKISTAN GROUP

'Understanding and Responding to Blasphemy Extremism in the UK', an independent report commissioned by the British government's Commission for Countering Extremism and released on Monday, documents the emergence of a UK wing of the extremist Pakistani anti-blasphemy political party, Tehreek-e-Labbaik (TLP).

Responses to perceived acts of blasphemy in the UK are more organised than ever and some of the most prominent voices involved have links to violent anti-blasphemy extremists in Pakistan, a new UK counter-terrorism report has found.

"Blasphemy-related incidents in the UK which involve extreme sectarianism, intimidation, and threats of violence have increased in frequency over recent years," the report notes.

"The reactions to each incident have been orchestrated by anti-blasphemy activists in the UK, some of whom have associations to violent anti-blasphemy extremists in Pakistan," it said.

The report specifically highlights three major "flashpoints", mostly in northern England, which have "inspired" British anti-blasphemy activists since 2021.

These include protests in 2021 against a teacher at a school in Batley after they allegedly showed students a picture of Prophet Mohammed, protests against the screening of a so-called Shia-influenced film 'Lady of Heaven' in 2022, and protests against schoolboys in Wakefield for allegedly disrespecting a copy of the 'Quran' last year.

"None of the activists linked to these three incidents call for violence in the UK and expressly call on British Muslims to express their anger in peaceful and democratic ways. However, their rhetoric and the support some of them have expressed for violent anti-blasphemy extremists in Pakistan has the potential to radicalise their audience around the issue of blasphemy," the report points out.

"Anti-blasphemy activism in the UK is focused on what is perceived to be two of the major threats Islam faces: the Ahmadiyya Muslim Community, whose beliefs are viewed by activists as blasphemous, and non-Muslims who insult Islam usually by disrespecting either Mohammad or the Koran (Quran)," the analysis reads.

According to the study, before he died in 2020, TLP founder Khadim Rizvi had a long record of calling for and supporting vigilante violence and murder against accused blasphemers. It flags worrying signs for the UK as since his death, there have been three annual events in the country organised by TLP-UK commemorating Rizvi and celebrating his work to violently eliminate blasphemy against Islam.

Among its recommendations for the government, the report calls for a review of the charitable status of bodies and organisations linked to anti-blasphemy extremism, especially those linked to supporters of blasphemy violence abroad, such as in Pakistan.

It concludes: "As part of its counter-extremism work, the government should investigate principal actors and the existence or role of coordination activities and connections to violent anti-blasphemy extremists in Pakistan.

"Related to this, the government should consider proscription of groups associated with anti-blasphemy extremism, such as the TLP; and a ban on their non-British members and supporters entering the country." The report comes as the UK government is said to be preparing to table a revised definition of extremism in Parliament later this week.

NEW COALITION, OLD POLITICS

Last week, Nepal saw dramatic political developments. On March 4, Pushpa Kamal Dahal 'Prachanda' abruptly ditched the Nepali Congress, his key coalition partner, and joined hands with the Communist Party of Nepal (Unified Marxist-Leninist), or UML. The Nepali Congress, the largest party in the 275-member parliament with 88 seats, has been forced to the other side of the aisle.

With the formation of a new Cabinet under Prachanda, also the chairman of the Communist Party of Nepal (Maoist Centre), a communist-dominated dispensation was back in Kathmandu.

While the abrupt collapse of the Maoist-Congress coalition took many by surprise, signs of cracks in the alliance were visible for some time. On March 7, Prachanda used the parliamentary pulpit to slam the Nepali Congress. He blamed the Nepali Congress's General Committee meeting decisions for irritants between the two parties. The General Committee's discussions on not forging alliances with any party in the next elections and on a proposal against secularism, Prachanda said, were among the reasons that forced him to form a new alliance.

The Nepali Congress, on the other side, has described Prachanda's move as political chicanery.

As the blame-game continues, Nepal is witnessing the rise of a Maoist-UML coalition for the second time in recent years; earlier in 2018, the same parties had come together and even merged, only to last three years before imploding.

NATION

HOW DID INDIANS END UP IN THE RUSSIA-UKRAINE WAR?

The story so far:

The deaths of two Indian nationals in the ongoing Russia-Ukraine war and the recent raids by the Central Bureau of Investigation (CBI) which uncovered a human trafficking network recruiting Indians as "security helpers" and other personnel for the Russian military have sparked widespread concern. This has highlighted the plight of dozens of Indians stuck on the frontlines of the Russia-Ukraine war after they were deceived into working with the Russian military under false pretences.

What happened?

The presence of Indians in combat roles on the Russian side, first surfaced in February this year. In a series of reports, The Hindu brought attention to the situation, stating that some Indian nationals, initially hired as "army security helpers," were compelled to fight against their will after their passports and documents were seized.

One of the men, a resident of Uttar Pradesh, told the daily that he went to Russia with the help of an agent in November last year after he was assured that there would be no deployment in the war zone. However, he was sent to the frontline in January after some basic training in handling weapons. "We were categorically told that we would not be sent to the battlefield and promised ₹1.95 lakh salary and ₹50,000 additional bonus per month. Except for the ₹50,000 bonus for two months, I have not received any money," he said. The U.P. resident claimed that he tried to contact the Indian Embassy in Moscow but all his pleas went in vain. In the subsequent days, more Indian citizens and their families came forward to seek the government's intervention. A group of seven Indians from Punjab and Haryana released a set of videos, claiming that they arrived in Russia on tourist visas but were forced to join the Russian Army as "helpers" after being detained.

An Indian-origin Russian official associated with the Russian Ministry of Defence told The Hindu that approximately 100 Indians were recruited at the Moscow recruitment centre in the past year. However, the actual number of Indians hired could be higher, since there are several recruitment centres across Russia. The official said all recruits had to sign a contract to join as "army security helpers." He added that the contract requires a minimum of one year of service and prohibits signees to leave or exit before six months of service.

How did the agents con people?

A multi-State human trafficking network busted by the CBI in a crackdown on visa recruiters in seven cities across India last week revealed how Indian youths were allegedly pushed into the war zone by consultancy firms on the pretext of a better life and livelihood with the Russian military as security guards and helpers, as well as higher education. So far, the probe agency has found 35 instances of people sent to Russia and listed at least 17 consultancy companies spread across India who were involved in the trafficking.

As per the CBI, the "organised network" lured Indian youth through social media and local agents, offering them highly paid jobs and lucrative employment opportunities in Russia. A number of students were reportedly tricked into enrolling in dubious private universities by agents promising low fees and visa extensions. Once the aspirants reached Russia, the local agents seized

their passports and forced them to join the armed forces, the CBI said. At least two Indians with the Russian military have lost their lives in the fighting so far.

What has the government said?

The Indian government is in talks with the Russian authorities about the early release of Indian citizens who were duped into working with the Russian military. "We are doing our best to locate them. We are in touch with the Russian authorities so that they can be released and discharged early," MEA spokesperson Randhir Jaiswal said at a regular media briefing last week. "We remain committed to the early release of our nationals serving as support staff with the Russian Army and their eventual return home," the spokesperson added. Noting the findings of the CBI raids, the MEA appealed to Indian nationals not to be "swayed" by offers made by agents for support jobs with the Russian Army.

'INDIA WAS THE TOP ARMS IMPORTER IN 2019-2023'

India was the top arms importer in the world in the period 2019-23, with imports having gone up by 4.7% compared with the period 2014-18, according to Swedish think tank Stockholm International Peace Research Institute (SIPRI).

At the same time, arms imports by European countries increased by 94% between 2014-18 and 2019-23, the report said, which comes against the backdrop of the war in Ukraine.

"Although Russia remained India's main arms supplier [accounting for 36% of its arms imports], this was the first five-year period since 1960-64 when deliveries from Russia [or the Soviet Union prior to 1991] made up less than half of India's arms imports," as per new data on international arms transfers from SIPRI released on Monday. "Nine of the 10 biggest arms importers in 2019-23, including the top three of India, Saudi Arabia and Qatar, were in Asia and Oceania or the West Asia. Ukraine became the fourth biggest arms importer after it received transfers of major arms in 2022-23."

In the interim Budget presented in February for financial year 2024-25, the total allocation for the Defence Ministry was ₹6.2 lakh crore, of which the capital allocation for new procurements was ₹1.72 lakh crore, 5.78% higher than the Budget Estimates of last year. India seems to have come back to the top slot in arms imports after briefly ceding space to Saudi Arabia in the past.

Imports of Pakistan, the fifth largest arms importer in 2019-23, went up by 43%, with China supplying as much as 82% of all its arms imports.

Arms exports by the world's largest supplier, the U.S., grew by 17% between 2014-18 and 2019-23, while those by Russia fell by more than half. France emerged as the world's second largest arms supplier as its exports grew by 47%.

Europe's capacity

Over half of arms imports by European countries, 55%, in 2019-23 were from the U.S., up from 35% in 2014-18. "Europe is responsible for about a third of global arms exports, including large volumes going outside the region, reflecting Europe's strong military-industrial capacity," said SIPRI Director Dan Smith.

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In this regard, Mathew George, Director of the SIPRI arms transfers programme, said the U.S. had increased its global role as an arms supplier — an important aspect of its foreign policy — exporting more arms to more countries than it has ever done in the past.

On France, which is now the second largest arms supplier, the report said 42% of its arms went to states in Asia and Oceania, and 34% to West Asia. "The largest single recipient of French arms exports was India, which accounted for nearly 30%. The increase in French arms exports was largely due to deliveries of combat aircraft to India, Qatar and Egypt," the report stated.

"With many high-value arms on order — including nearly 800 combat aircraft and combat helicopters — European arms imports are likely to remain at a high level," said Pieter Wezeman, senior researcher with the SIPRI arms transfers programme.

In the last 15 years, India has significantly reduced its dependence on its biggest arms supplier, Russia. About 76% of arms imported by India during the 2009-13 period was from Russia. In contrast, in the 2019-23 period, Russia's share reduced to 36%.

While Russia still remains India's largest supplier, arms imports have increased substantially from France and the U.S. in recent years. France's share in India's arms imports was just 0.9% in the 2009-13 period. However, in the 2019-23 period, its share climbed to 33%, making it the second largest supplier. The U.S.'s share increased from 8% in 2009-13 to 13% in 2019-23. The chart shows the volume of arms transfers from the five major arms exporters to India in terms of trend-indicator value. This is calculated based on the known unit production cost of a core set of weapons and is intended to represent the transfer of military resources rather than the financial value of the transfer. India's arms imports increased by 4.7% during 2019-23 compared to the previous five-year period.

ON JUDGES AND BUREAUCRATS JOINING POLITICS

The story so far:

Recently a Calcutta High Court judge and a senior IPS officer in West Bengal resigned from their posts and joined political parties. This has once again raised questions of propriety about independent constitutional authorities and other senior government officials joining political parties after demitting office.

What are constitutional restrictions?

The Constitution works on the principle of checks and balance between various organs. The executive is accountable to the legislature. An independent judiciary keeps a check on both these branches of the State. There are also other independent bodies like the Election Commission, Public Service Commission, Comptroller and Auditor General (CAG) who are required to perform their constitutional duties without any interference from the government. The independence of these institutions is ensured through guaranteeing fixed tenure, financial independence, stringent removal procedure and restrictions after demitting office. A judge of a Supreme Court after ceasing to hold office cannot appear as a lawyer before any court or authority in India. A judge of a High Court has similar restrictions except for appearance before the Supreme Court or other High Courts. The CAG and the chairman/members of the Public Service Commission cannot take up any other employment with Central or State governments after demitting office. These restrictions are laid down to avoid favouritism, during the period of holding such positions, towards the government in power with an intent of securing any post-retirement benefit.

What about political posts?

There are no restrictions when it comes to joining political parties, contesting elections or being nominated to certain posts. There are notable instances of persons who held independent constitutional posts and later went on to join politics or were nominated to various posts. There have been two Supreme Court judges in 1967 and 1983, who resigned from their posts to contest the presidential and parliamentary elections from Assam, respectively. Another Supreme Court judge joined a political party in Tamil Nadu and contested elections five years after his retirement in 1999. A former Chief Election Commissioner became a Rajya Sabha member and Minister in 2004, three years after his retirement. Recently, a retired Chief Justice of India was nominated to the Rajya Sabha in 2020 within four months of his retirement. There have also been occasions where retired CAG and judges have been appointed as Governors of States. Numerous bureaucrats have also joined political parties and contested elections after resigning from service or soon after their retirement.

What are the recommendations?

The Election Commission had in 2012 recommended to the Union government to provide for a cooling-off period for top bureaucrats after their retirement before they could join political parties and contest elections. However, the Government had rejected this recommendation based on the opinion of the Attorney General that this may not be in line with constitutional provisions and democratic values. The Supreme Court had dismissed a writ petition in May 2022 that sought a direction from the top court to the legislature to frame a law imposing a cooling-off period for retired bureaucrats before joining politics. The court observed that it is for the legislature to determine whether a cooling-off period is required for bureaucrats before they join politics after retirement.

Is a cooling-off period desirable?

One of the essential features of a democracy is every citizen's right to contest elections. The Attorney General while providing his opinion against the 2012 recommendation of Election Commission had said that maintenance of independence and neutrality will be relevant during the period a person is in service. There are rules at present which restrict a senior bureaucrat from joining a private job for at least one year after he or she retires from government service. The Attorney General had opined that such restriction for commercial employment is based on intelligible differentia to avoid conflicts of interest. However, such a restriction against officials contesting polls may not be a valid classification and would not be in harmony with democratic principles in the Constitution.

While the opinion of Attorney General is based on sound legal principle, it is equally imperative to remember the famous judicial quote that 'justice should not only be done but should also be seen to be done'. This applies equally to judges, independent constitutional authorities and senior bureaucrats. It is an indispensable trait while discharging their official functions. Extending this principle even after they demit office will have a salutary effect. This may be achieved by prescribing a cooling-off period of say at least two years for joining political parties or being nominated to political posts by the government. This will instil confidence in the public at large and negate any allegation of quid pro quo.

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EXPRESS VIEW ON SC'S DIRECTION TO EDUCATE POLICE ON FREEDOM OF SPEECH: LET THE PEOPLE SPEAK

That the right to dissent is the first principle of a vibrant democracy is a truth frequently undermined in recent years. But the Supreme Court's (SC) reminder that every criticism of the state, especially when within legitimate bounds, does not amount to offence, reinforces constitutional values at a time when debate and dissent are routinely stifled, citing hurt sentiments, national security or impediments to communal harmony.

The Court's direction to "enlighten and educate our police machinery on the concept of freedom of speech and expression guaranteed by Article 19 (1) (a) of the Constitution" underscores another crucial point: The enforcement agency's conflation of lawful exercise of dissent with incitement cannot infringe on individual liberty.

The bench was hearing a case against a professor in Kolhapur booked for his WhatsApp status criticising the abrogation of Article 370 and for wishing Pakistan on its independence day.

The apex court's observation is of a piece with its earlier deliberations on the limits of free speech. Last year, in Kaushal Kishore v State Of Uttar Pradesh, while advising public officials to exercise restraint in their speech, a five-judge Constitution Bench had held that freedom of speech cannot be curtailed for any reason except those specified under Article 19(2) of the Constitution.

In a separate judgment in the same case, Justice BV Nagarathna had held, "It is only when there is dissent that different ideas would emerge which may… assist the government to improve or innovate upon its policies…" In the present judgment, quashing the charges against the professor, the Court observed that the "test to be applied" is "not the effect of the words on some individuals with weak minds or those who see a danger in every hostile point of view. The test is of the general impact of the utterances on reasonable people who are significant in numbers."

While the SC's observation pertains to the police in particular, the need for sensitisation is felt across stakeholders, including in lower courts and among civil society.

The bogey of hurt sentiments seems to hold sway everywhere, from cricket stadiums over support for rival teams, amid protests against screening of particular films in colleges or universities, to complaints against azan over loudspeakers. They threaten to shrink the formal inclusivity and equality of diverse viewpoints enshrined in the Constitution to a majoritarian understanding of freedom of expression. While exposure to landmark judgments and discussions with legal experts will certainly aid the police, a resurrection of the argumentative Indian — with faith in rational debate and in both sides being heard — will also help.

WHY DID THE TOP COURT REJECT SBI'S PLEA?

The story so far:

On March 11, the Supreme Court dismissed a plea by the State Bank of India (SBI) to extend the deadline for providing details of electoral bonds purchased anonymously and their encashment by political parties to June 30, 2024. A five-judge Bench headed by the Chief Justice of India D.Y. Chandrachud gave the bank 24 hours, that is, by the close of business hours on March 12, to provide the details to the Election Commission of India (ECI). It was also hearing a contempt plea filed by NGOs — Association for Democratic Reforms (ADR) and Common Cause — against the

SBI Chairman Dinesh Kumar Khera that contended that the bank was deliberately trying to ensure that details of donors and the amounts contributed to political parties anonymously were not disclosed to the public before the Lok Sabha elections due in April-May. Analysis reveals that the BJP was the scheme's greatest beneficiary.

Why was the contempt petition filed?

The petition was filed in the aftermath of the Supreme Court's verdict on February 15 striking down the electoral bonds scheme, where the Court had directed the SBI to furnish details of the bonds to the ECI by March 6, 2024. These details were to include the date of purchase of each bond, the name of the purchaser of the bond and the denomination of the bond purchased. The ECI was subsequently ordered to publish all such information shared by the SBI on its official website by March 13, 2024.

Why did the SBI seek more time to comply?

On March 4, the SBI filed a nine-page application before the Court seeking time till June 30 to provide the ECI with the required details regarding the purchased electoral bonds. The bank said that the information and documents were scattered across its various branches and decoding them was a "time-consuming exercise."

According to the public sector bank, not only were the details not maintained centrally at one place, but the data related to the issuance of the bond and data related to the redemption of the bond were recorded "in two different silos." This was done to ensure that donors' anonymity was protected, it said. The Court was also apprised that donor details were kept in a sealed cover at the designated branches and all such sealed covers were then deposited in its main branch located in Mumbai. "It can thus be noted that both sets of information were being stored independently of each other. Thus, to re-match them would be a task requiring a significant amount of effort... the retrieval of information from each silo and the procedure of matching the information of one silo to that of the other would be a time-consuming exercise," its plea said.

The SBI added that while some details such as the number of bonds issued are stored digitally, others such as the names of the purchasers and Know Your Customer documentation are stored physically in its various branches to "achieve the object of the scheme."

The bank further submitted that it needs to decode 22,217 electoral bonds issued between April 12, 2019, to February 15, 2024. This would involve compiling and comparing 44,434 information sets (equal to twice the number of bonds issued) as the details relating to buyers and recipients of bonds were kept in two different information silos, the bank said.

Why was the extension plea challenged?

The contempt plea alleged that the bank was deliberately trying to ensure that the amounts contributed anonymously to political parties were not disclosed to the public before the Lok Sabha elections.

It was also pointed out that the bank's stand was directly contradictory to an affidavit filed by the Union government on March 15, 2019, which said that information about the bonds was completely traceable and quickly available.

The petitioners further claimed that the SBI maintains a secret number-based record of donors who buy bonds and the political parties to which they donate. Additionally, each electoral bond

also possessed a unique number making it easier to trace it, they contended. "A simple query on the database can generate a report in a particular format which does not require any manual verification," the plea said.

Highlighting that the SBI had enough manpower to retrieve the information within the stipulated deadline, the petitioners pointed out, "The SBI has 2,60,000 employees, 22,500 worldwide branches administered by a headquarters, 17 local head offices, 101 zonal offices and 208 foreign offices in 36 countries. It is hard to believe that the SBI is not able to gather information which the SBI has itself recorded." Referring to Section (4) of Clause 7 of thescheme that makes it mandatory to disclose information furnished by a buyer when demanded by a competent court, the petitioners claimed that "it is inconceivable that the SBI does not have the recorded information readily available within its database."

The petitioners also relied on a Right to Information response given by the bank to retired Commodore Lokesh Batra in 2018, saying that it had spent ₹60.43 lakh on IT system development, ₹89.72 lakh on operational costs and that the net cost for floating of electoral bonds was ₹1.5 crore. "This implies that a well-functioning IT system is already in place with respect to management of sale and redemption of electoral bonds," the plea asserted. Pointing out that only 19 out of the 29 the SBI authorised branches sold electoral bonds and only 14 branches encashed them, the plea said that "data available as of January 2024 further shows that only 25 political parties had opened their account and are eligible for encashing electoral bonds" and "therefore, compiling of this information should not be difficult as the system is already in place."

Such a "defiant approach" of the SBI attempts to stifle a citizen's right to audit actions of the political class and is therefore contemptous, the petitioners concluded.

What did the top court say?

At the outset of the proceedings, senior advocate Harish Salve appearing for the bank submitted that matching the bonds purchased and names of donors with the parties which redeemed the bonds was a "time-consuming and complex" exercise. He explained that the details were kept in two separate silos and not stored in a digital format.

But the CJI pointed out that the judgment had not asked the bank to "match" information to ascertain who contributed to which parties and only wanted a "plain disclosure". He asserted that the SBI in its own application said that such information was "readily available".

Pointing out how the bank had not even bothered to mention what it had been doing for the past 26 days since the February 15 judgment, the Chief Justice remarked, "You are the SBI... There should be some candour from your part. What have you been doing for the past 26 days? There is not a word about that in your application". Indicating the seriousness of the directives, Justice Sanjiv Khanna asked whether the bank wanted a specific judicial order to open the sealed covers containing the bonds' details right there in the courtroom.

Although the Bench said that it did not want to initiate contempt proceedings against the SBI, it underscored that it was putting the bank on notice and that it would take action if the SBI failed to ensure compliance.

Why are the SBI's claims contested by experts?

Professor Jagdeep Chhokar, founder-member and trustee of the ADR, termed the SBI move "not surprising but unfortunate." He earlier told The Hindu that the "data is obviously in digital format

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and collecting data from different States and locations and taking four months for that is impossible in this day and age."

Concurring with this, former Finance Secretary Subhash Chandra Garg told The Wire that such information was "available at the click of a button" and that the bank had either deliberately misconstrued or failed to understand the "simple nature of the six bits of information" that they are required to give to the ECI.

According to areportpublished inThe Reporter's Collective, the SBI has previously provided similar data to the Union government as well as the Finance Ministry within 48 hours. It pointed out that all electoral bond-related work was overseen by a specific team of the SBI called the Transaction Banking Unit (TBU) to ensure that the government can access crucial information on a short notice.

In 2019, a Huffington Post investigation divulged that in a January 2018 meeting, the SBI had asked the Union Ministry of Finance to include a serial number on the bonds to have an audit trail. The bank believed that without such a number, it would fail to submit information on donors and redeemers of bonds if a competent court or law enforcement agency asked for it.

MANY TOP ELECTORAL BOND DONORS WERE UNDER SCANNER OF ED, I-T DEPARTMENT

Of bonds worth ₹1,368 crore purchased by Future Gaming and Hotel Services PR, 50% were purchased before ED searches and 50% after searches; other firms which followed a similar pattern are Keventer Food Park Infra Ltd., MKJ Enterprises Ltd., and Madanlal Ltd., all registered in Kolkata

An analysis of firms which feature among the top purchasers of electoral bonds throws up many curious patterns. One of the common links is that a significant number of companies in the top donor list were under the scanner of the Enforcement Directorate or the Income Tax (I-T) Department at some point of time in the past five years. In some cases, these companies bought a chunk of the bonds in the days following such searches.

Future Gaming and Hotel Services PR was the largest donor to political parties through the electoral bond route, with a cumulative sum of ₹1,368 crore. In May 2023, the ED carried out searches at the residence of Santiago Martin, a well-known lottery magnate and managing director of the company, in Chennai.

The ED also conducted searches at the business premises of the company in Coimbatore under the provisions of the Prevention of Money Laundering Act (PMLA). A year earlier, on April 2, 2022, the ED attached movable assets worth ₹410 crore under the PMLA in a case of lottery scam against the company and its subsidiaries. Interestingly, five days later, on April 7, 2022, the company made a significant purchase of electoral bonds worth ₹100 crore, marking one of their largest transactions on a single date. Of the bonds worth ₹1,368 crore purchased by the company, 50% were purchased before the ED searches and 50% after the searches.

Same address

The other set of companies which followed a similar pattern are Keventer Food Park Infra Ltd., MKJ Enterprises Ltd., and Madanlal Ltd.

All the three firms are registered with the same address in Kolkata, West Bengal, and have at least one common director.

The common director is Siddharth Gupta, but the three companies were incorporated in different years. MKJ Enterprises was incorporated in 1982, Madanlal in 1983, and Keventer Food Park in 2010. The three companies together donated about ₹573 crore — the third highest — if purchases are considered cumulatively. Of the ₹573 crore, bonds worth ₹195 crore were purchased by Keventer Food Park Infra Ltd. in three batches between April and May 2019. Bonds worth about ₹185 crore were purchased by Madanlal Ltd. between May 8 and 10, 2019.

Stake sale

Keventer Agro, a company which shares its email domain with Madanlal and MKJ Enterprises, ran into controversy following a public interest litigation (PIL) petition filed by West Bengal Congress unit chief Adhir Ranjan Chowdhury after the State government's sale of its stake in Metro Dairy to Keventer Agro in 2017. The West Bengal government divested its 47% shares in Metro Dairy to Keventer Agro Ltd. for ₹85 crore in 2017.

In the same year, a Singapore-based private equity fund picked up 15% shares of Keventer Agro for ₹170 crore. Currently, Mayank Jalan is the managing director of Keventer Agro and also a director of Metro Dairy.

The ED started an investigation into the divestment of the West Bengal government's stake in Metro Dairy in 2019. Summons were issued to several officials of the State government, including H.K. Dwivedi, who was the State's Finance Secretary in 2017, when the shares of Metro Dairy were divested. Summons were issued to State officials, including Mr. Dwivedi, in June 2020 and March 2021. In February 2021, searches were conducted by the ED officials at the office of Keventer Agro Ltd. in Kolkata in connection with the probe.

The investigation lost steam after the Calcutta High Court in June 2022 dismissed the PIL plea filed by Mr. Chowdhury alleging lack of transparency in the divestment. The Supreme Court in September 2022 upheld the Calcutta High Court order.

The Yashoda Super Speciality Hospital Group in Hyderabad, whose premises were searched by the Income Tax Department in December 2020, donated ₹162 crore in multiple tranches beginning October 2021 and ending in October 2023.

Aurobindo Pharma's director Sarath Reddy was arrested by the ED on November 10, 2022 for his alleged involvement in irregularities in the scrapped liquor policy of the Delhi government. Five days after the arrest on November 15, the company purchased bonds worth ₹5 crore. A year later, in November 2023, it purchased bonds worth ₹25 crore. In total, the company purchased electoral bonds worth ₹52 crore in multiple tranches between April 2021 and November 2023, of which ₹30 crore were done after Mr. Reddy's arrest.

On December 18, 2023, I-T searches were conducted on the factory premises of Shirdi Sai Electricals Ltd. at the Industrial Development Area on the outskirts of Kadapa.

Searches were also conducted simultaneously at the Hyderabad office and at residences of its top officials. The company purchased electoral bonds worth ₹40 crore on January 11, 2024. I-T searches were conducted on the premises of real estate development firm Kalpataru Projects International and the residences of some of its directors and executives in August 2023. The company bought electoral bonds worth ₹25.5 crore between April 2023 and October 2023.

EXPRESS VIEW ON ONE NATION ONE ELECTION: NO LAST WORD

The High Level Committee on Simultaneous Elections, headed by former President Ram Nath Kovind, has unanimously recommended that polls to the Lok Sabha, state legislative assemblies, municipalities and panchayats be held at the same time. This is no surprise. With Congress Leader Adhir Ranjan Chowdhury refusing to participate, the eight-member panel comprised those mostly seen to agree with the government's views on the proposal. Its terms of reference also carried the presumption that simultaneous polls are in "national interest". The question, then, is whether the Kovind Committee report has merely rubber-stamped the government's proposal or if its conclusions are a product of considered deliberations. The report says that the panel invited suggestions and comments from political parties, legal experts, former election commissioners, economists, representatives of business organisations and members of the Bar Council. It says that "the committee carefully considered all the constitutional and legal objections" and its members "studied the relevant legal literature on elections, both in India and abroad". Unfortunately, in its substance, tone and tenor, the document does not seem informed by "in-depth research and analysis" and "participatory processes".

Simultaneous elections will impose an artificial unitary character on a federal system of multiple diversities. The report, at best, engages cursorily with this concern. Instead, its 320-odd pages belabour "that separate elections cause a waste of resources, result in policy paralysis and inflict huge socio-economic costs, besides leading to voter fatigue". This is only a harkening back to the raison d'etre cited by the government in September last year when it mooted One Nation One Election (ONOE). The document notes that 15 political parties have opposed the move, but there is little by way of engaging with, or addressing, their criticism or that of dissenters like Tamil Nadu Election Commissioner, V Palanikumar, who told the panel that "ONOE could potentially dilute the focus on region-specific challenges and diminish the efficacy of local governance". The suggestion of former Chief Justice of the Madras High Court, Sanjib Banerjee — "state funding of elections is a more effective reform to tackle inefficiency" — finds a mention. So do the concerns of former Chief Justice of the Delhi High Court, AP Shah, "that simultaneous elections hinder political accountability as fixed terms offer representatives unwarranted stability without performance scrutiny." These compelling arguments have been crunched into a few sentences in the report. Unfortunately, the report does nothing more than dismiss these apprehensions as "misplaced".

Undoubtedly, the Indian electorate is, as the report says, "sagacious enough to differentiate between national and regional issues, as also between national and regional parties". But ONOE could flatten the political diversity that has marked India's electoral calendar since the Sixties when the synchronicity of the election calendar was first broken. Much has changed in the Indian polity since then, including the ascendance of regional parties in large parts of the country. The Samajwadi Party's response underlined the fear that "State-level parties will not be able to compete with national parties in electoral strategy and expenditure", which too does not seem to adequately draw the attention of the committee. The panel's report cannot be the last word on a proposal with far-reaching consequences that go beyond political-ideological lines. In days to come, the legitimate concerns of those who disagree must be heard respectfully, and heeded.

RATIFICATION BY STATES: WHAT IT WILL TAKE TO MAKE ONE NATION ONE ELECTION PANEL'S VIEW LEGALLY TENABLE

A total of 15 Constitution Amendments which include changes in three provisions and new insertions in 12 provisions; amendments to three statutes that govern Delhi, Jammu and Kashmir,

and all other Union Territories; and a Presidential notification of an "appointed date" to tie all elections — these are the key changes in the legal framework recommended by the the High Level Committee on One Nation, One Election, headed by former President Ram Nath Kovind, in its report on Thursday (March 14).

According to the report, the framework for simultaneous polls could be kicked off as early as June this year, with the President issuing a notification to declare an "appointed date" as the "date of the first sitting of the House of the People after a general election".

However, amendments to the Constitution are required for the President to draw her powers to issue such a notification. Essentially, the bundle of constitutional amendments and the notification by the President are likely to follow one another.

For the constitutional amendments that would sync Assembly elections with Lok Sabha elections, the Kovind panel has recommended that ratification by states is not needed. However, the panel said that ratification by states will be required for constitutional amendments for the preparation of a common electoral roll, and syncing municipal and panchayat elections with the general (simultaneous Lok Sabha and Assembly) elections.

Article 368 of the Constitution deals with the power and procedure to amend the Constitution. While several provisions can be amended by a simple majority like in passing any ordinary legislation, a special majority of not less than two-thirds of the members present and voting is required for other provisions.

For a third category of "entrenched provisions" that impact the federal structure of the Constitution or the powers of the state Assemblies, an amendment requires to be ratified by legislatures of at least half of the states. Specifically, Article 368(2)(d) lists the representation of states in Parliament as one of the issues that would require ratification.

While a textual reading of the provisions may not indicate that representation of states in Parliament would not be altered through simultaneous polls, the move has a huge impact on the states, impinging on their legislatures.

The Kovind panel has stated that states under Article 328 of the Constitution only have residual powers on conducting Assembly elections; the power is mainly entrusted to Parliament through Article 327.

Article 328 ("Power of Legislature of a State to make provision with respect to elections to such Legislature") states: "Subject to the provisions of this Constitution and in so far as provision in that behalf is not made by Parliament, the Legislature of a State may from time to time by law make provision with respect to all matters relating to, or in connection with, the elections to the House or either House of the Legislature of the State including the preparation of electoral rolls and all other matters necessary for securing the due constitution of such House or Houses."

The report of the Kovind panel says: "The elections to the House of the People and the State Legislative Assemblies are held by the Election Commission of India under the Constitution of India, The Representation of People Act, 1950, The Representation of People Act, 1951, and the rules and orders made thereunder. Therefore, the amendments required for simultaneous elections to the House of the People and the State Legislative Assemblies do not fall under the purview of the proviso to Article 368(2) and hence, do not warrant a ratification by the States."

The question of ratification can also be judicially reviewed. In Kihoto Hollohan v Zachillhu (February 18, 1992), the Supreme Court struck down a part of the law dealing with disqualification of lawmakers on the ground that it was not ratified by the states.

The Constitution (Fifty-second Amendment) Act, 1985, among other things, sought to bar the jurisdiction of courts in any matter connected with the disqualification process. This tinkered with one of the six aspects that require ratification by half the states — jurisdiction of the Supreme Court and the High Courts. The Supreme Court struck down this part of the amendment while upholding the validity of the Tenth Schedule.

ARUN GOEL QUITS AS EC AHEAD OF LOK SABHA POLL

Days ahead of the announcement of the schedule for the upcoming Lok Sabha poll, Election Commissioner Arun Goel resigned on Saturday. His tenure was till 2027.

According to a notification by the Law Ministry, his resignation has been accepted by President Droupadi Murmu with effect from March 9.

With the resignation, the Election Commission has been reduced to just one member — Chief Election Commissioner Rajiv Kumar. Election Commissioner Anup Chandra Pandey retired in February.

Mr. Goel, a 1985-batch IAS officer of the Punjab cadre, joined the EC on November 21, 2022.

His resignation comes two days before a crucial hearing of the Supreme Court on the electoral bonds issue.

Earlier, the Association for Democratic Reforms (ADR), an NGO, had filed a public interest litigation petition in the Supreme Court challenging Mr. Goel's appointment claiming that due procedure had not been followed. The top court had refused to interfere with the appointment stating that a Constitution Bench had already examined the process and refrained from passing any adverse orders.

On Saturday, ADR chairman Trilochan Shastry told The Hindu: "We are happy that he has resigned."

The current vacancies in the EC would have to be filled in accordance with the new Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023, which was brought in by the government in December last year.

The Act provisions that a selection committee headed by the Prime Minister, which comprises the Leader of the Opposition in the Lok Sabha and a PM-nominated Union Minister, will select the members of the commission.

The last Election Commissioner to resign in the recent past was Ashok Lavasa who quit in 2020 to join the Philippines-based Asian Development Bank (ADB).

SC STOPS ASSAM GOVT. MOVE TO DE-NOTIFY RHINO HABITAT

The Supreme Court on Wednesday froze the Assam government's move to withdraw an almost 26-year-old notification constituting the Pobitora wildlife sanctuary, which hosts one of the largest rhino populations in the country.

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

"The State government was not right in resolving to withdraw the notification dated March 17, 1998 notifying Pobitora wildlife sanctuary…. We direct that no further steps be taken with respect to the withdrawal of the notification dated March 17, 1998 by the State," a Bench of Justices B.R. Gavai and Sandeep Mehta ordered.

The Assam Cabinet had on March 10 withdrawn the notification issued by the State Forest Department in 1998. The Cabinet decision of March 10 said the notification was issued unilaterally by the Forest department without consulting the Revenue Department or even the Chief Minister.

The government reasoned that declaration of the sanctuary was made without settling the rights of the people living in villages in the area, including Thengabhanga, Murkata and Mayong. These villagers belonged to the marginalised communities and had been residing in the area even before Independence.

Panel set up

The government, having withdrawn the 1998 notification declaring the wildlife sanctuary, had also constituted a committee to look into both the rights and claims of the forest dwellers in the area as well as taking a considered decision, this time, to declare the Pobitora region as a wildlife sanctuary.

"We will not permit any de-notification. Withdrawing a notification declaring a wildlife sanctuary is not your answer. Such withdrawals cannot be done without the permission of the National Board of Wildlife. Besides, the Supreme Court has also passed an order against de-reservation of national parks, sanctuaries and forests," Justice Gavai clarified to the Assam counsel, senior advocate Nalin Kohli.

Amicus curiae, advocate K. Parameswar, said the withdrawal was "ex facie illegal".

"The notification was done unilaterally by the Forest department in 1998. The Revenue Department or the Cabinet was not involved," Mr. Kohli said.

But Justice Mehta said the declaration of the sanctuary in 1998 was an "act of government". "Then how can you now disown it?" Justice Mehta asked.

Mr. Kohli said the idea behind the withdrawal was not to close the Pobitora wildlife sanctuary, but to correct an error regarding the demarcation of lands.

"Fresh notification will be issued. It was not done properly in 1998. Our intention is to do the right thing. It only came to our attention now. Pobitora is our pride," Mr. Kohli submitted.

"The fact that the Forest Department did it without consultation came to light only 25 years later?" Justice Gavai asked Mr. Kohli.

The court, however, clarified that its order staying the withdrawal of the 1998 notification would not stand in the way of the State "doing something to protect the rights of the forest dwellers".

The court asked the State to file a detailed counter-affidavit by the next hearing.

CAA AND STATUS OF JUDICIAL PROCEEDINGS

The story so far:

Four years after Parliament passed the Citizenship Amendment Act (CAA), 2019, the Ministry of Home Affairs (MHA) notified the rules to implement the law on March 11. It fast-tracks citizenship for undocumented immigrants from six non-Muslim communities — Hindu, Sikh, Buddhist, Parsi, Christian and Jain — from Pakistan, Afghanistan and Bangladesh. The CAA is also under challenge before the Supreme Court, with several petitioners moving fresh pleas seeking a stay on the implementation of the rules.

What are the implications of CAA?

In December 2019, Parliament passed an amendment to The Citizenship Act, 1955 (1955 Act) introducing a new proviso to Section 2(1)(b) which defines "illegal migrants." Accordingly, undocumented immigrants who entered India on or before December 31, 2014, and whom the Central government has exempted under the Passport (Entry into India) Act, 1920, or the Foreigners Act, 1946, would be eligible for citizenship under the 1955 Act.

However, certain tribal areas in Assam, Meghalaya, Mizoram, and Tripura were exempted from the legislation's ambit. To access these protected areas, an Inner Line Permit (ILP) is needed from the concerned State governments.

A key concern is that when viewed in combination with the proposed all-India National Register of Indian Citizens (NRIC), the CAA has the potential to disproportionately impact Muslims residing in India. In the event of people being excluded from NRIC, non-Muslims may have an opportunity to get included through the CAA, while it may be denied to Muslims. A Supreme Court-monitored National Register of Citizens that took place in Assam in 2021 left out over 19 lakh people from the citizenship register.

On May 28, 2021, the Union government issued an order under Section 16 of the 1955 Act, granting District Collectors in five States with high migrant populations the power to grant citizenship to groups identified in the 2019 amendment. In its 2021-22 Annual Report, the MHA stated that in 2021, 1,414 citizenship certificates were granted under CAA provisions. However, after petitions were filed alleging that this order was a "ruse" to implement CAA, the MHA contended before the court that its order had "no relation whatsoever" with the CAA and that it merely delegated "the power (of granting citizenship by registration and naturalisation) to the local authorities in particular cases."

With the newly notified rules, the Centre has eased the process of granting Indian citizenship to members of the specified communities by excluding the requirement of a "valid passport" of their origin countries or a valid visa from India. Instead, "any document" that shows one of the parents, grandparents or even great-grandparents of the applicant was from one of these countries is sufficient to prove their nationality. Additionally, a certificate issued by an elected member of a local body can be a replacement for a visa.

After the legislation's enactment in 2019, the Indian Union Muslim League (IUML) filed a petition challenging its constitutionality, which was joined by close to 200 petitions. These petitions challenge the law for violating Article 14 of the Constitution by making religion a qualifier for citizenship.

The CAA has also been dubbed as a move to subvert the Assam Accord of 1985 that deems any person who cannot prove his ancestry beyond March 24, 1971, as an alien and does not differentiate on grounds of religion. The petitions contend that the law will further multiply the "uncontrolled influx of illegal migrants from Bangladesh to Assam."

How has the Supreme Court responded?

Calling the CAA a "benign piece of legislation," the Centre in its affidavit before the Supreme Court said that it seeks to provide amnesty to specific communities from specified countries with a clear cut-off date. It highlighted that the law does not in any manner affect the legal, democratic or secular rights of any Indian citizen.

The affidavit further stated that the "narrowly tailored legislation" was passed to "tackle a specific problem, i.e., the persecution on the ground of religion in the light of the undisputable theocratic constitutional position in these specified countries, the systematic functioning of these States and the perception of fear that may be prevalent amongst minorities as per the de facto situation in these countries."

On December 18, 2019, a Bench comprising former Chief Justice of India (CJI) S.A. Bobde refused to stay the operation of the law and instead suggested that the government publicise the actual intent of the Act. The court rejected a similar plea for stay on January 22, 2020, by underscoring that it needs to hear the government first.

On October 6, 2022, a Bench comprising former CJI U.U. Lalit passed an order stating that final hearings in the case would begin on December 6, 2022. However, the case has not been listed since then. As per the Supreme Court's website, the petitions are currently listed before a Bench headed by Justice Pankaj Mithal.

Why are petitioners seeking a stay on the rules?

The IUML and others have moved the top court seeking a stay on the rules notified on March 11.

They have pointed out how the Centre had earlier averted a push for a stay of the CAA in the Supreme Court nearly five years ago by arguing that the rules had not been framed. It has also been highlighted that the rules have done away with the tiered scrutiny of applications for citizenship by District Collectors on the ground, and recommendations of State governments as to the wisdom of granting citizenship.

They said that the government ought to have waited for a final decision from the Supreme Court before implementing the rules.

What is the significance of the challenge to Section 6A?

The proceedings against the CAA are also dependent on the outcome of the challenge to Section 6A of the 1955 Act which was introduced in furtherance of a Memorandum of Settlement called the "Assam Accord" signed on August 15, 1985.

In December last year, a five-judge Constitution Bench led by CJI D.Y. Chandrachud reserved its verdict on the validity of Section 6A after orally observing that the provision was enacted as a humanitarian measure in the wake of the 1971 Bangladesh Liberation War and was deeply interwoven in the country's history.

Section 6A determines who is a foreigner in Assam by establishing March 24, 1971, as the cut-off date for entry — those who came to the State on or after January 1, 1966, but before March 25, 1971, were to be declared as "foreigners" and would have all the rights and obligations of Indian citizens except that they would not be able to vote for 10 years.

If March 24, 1971, is upheld as a valid cut-off date for entry into the State, then CAA can be held to be violative of the Assam Accord since it establishes a different timeline.

WRONG MESSAGING

The government's decision to implement the Citizenship (Amendment) Act (CAA), 2019, just days before the dates for the general election are expected to be announced seems to be a precursor to the ruling Bharatiya Janata Party (BJP) exploiting a polarising issue in the poll campaign. A law strongly opposed by many, especially by the Muslim community, for introducing a religion-based test for grant of citizenship to immigrants from three chosen countries, the CAA is under legal challenge before the Supreme Court of India. Enacted in 2019, it was not implemented until now as the government did not notify the rules to operationalise its provisions. The timing of the rules being notified raises a legitimate doubt if it is an attempt to divert attention away from the electoral bonds controversy. The rules were unveiled at a time when the nation was questioning the delay in the submission of details about the purchasers of anonymous electoral bonds and the parties that redeemed them. The circumstances make one question the urgent need to implement a law that has not been acted upon for five years. The new rules also appear carefully crafted, designed as they are to introduce processes that will leave no scope for States to impede its implementation. It is possible that the rules were ready for a long time, and the CAA issue is being revived for electoral gains.

The essence of the CAA, in reality, may not affect the interests of minority citizens: after all, it is only a fast-tracking mechanism for minorities — Hindus, Sikhs, Buddhists, Jains, Parsis and Christians — from Afghanistan, Bangladesh and Pakistan to gain citizenship. Instead of the usual 11 years (out of the preceding 14 years), the waiting period for this class of immigrants will only be five years, provided they had arrived before December 31, 2014. Further, there is nothing in it that removes anyone's citizenship. The problem with the CAA is two-fold: first, in its discriminatory norm that specifies some religious communities as eligible for citizenship. All those from these six religions in these three countries are presumed to have fled persecution. Others who do not fall into this category, either due to their entering the country after the cut-off date, or because of their religion, will continue to be treated as illegal migrants. The second aspect is the unfortunate political propaganda that sought to link the CAA with the National Register of Citizens. This rhetoric accentuated the fears of Muslims that the CAA may lead to loss of citizenship without adequate documentary proof. More than its content, the CAA is causing harm through its use for the Narendra Modi regime's political messaging to the effect that all its policies will have an underpinning of religion.

DECODE POLITICS: WHY ARE ANTI-CAA PROTESTS CONFINED TO ASSAM, TRIPURA IN NORTHEAST

With the recent notification of rules for the implementation of the Citizenship (Amendment) Act or CAA — the passage of which had rocked the Northeast in 2019 — there are loud voices of dissent against it, but this time only in Assam and Tripura.

This is because nearly all areas of the Northeast, barring large swathes of these two states, have effectively been exempted from the provisions of the CAA, which enables easing of citizenship to Hindu, Sikh, Buddhist, Jain, Parsi or Christian migrants from Pakistan, Bangladesh and Afghanistan, who entered India before December 31, 2014.

The Act states that this provision shall not apply to "tribal areas of Assam, Meghalaya, Mizoram or Tripura, as included in the Sixth Schedule of the Constitution, and the area covered under 'The Inner Line' notified under the Bengal Eastern Frontier Regulation, 1873".

What is the Inner Line system?

An Inner Line Permit (ILP) regime is operational in the four Northeastern states of Arunachal Pradesh, Nagaland, Mizoram and Manipur. The ILP is a special permit that residents of other parts of India need to apply for and receive, in order to enter and spend any duration of time in these states. Initially introduced by the British via the Bengal Eastern Frontier Regulation 1873 for the tribal hill areas of the region, the system continued into the post-Independence period with the stated aim "to prevent settlement of other Indian nationals, in order to protect the indigenous/tribal population".

Significantly, this system was in place in only three states — Arunachal Pradesh, Nagaland and Mizoram — with Manipur brought under its ambit only in January 2020, following protests in the state after the CAA was enacted.

What is the Sixth Schedule?

In the Northeast, the Sixth Schedule of the Indian Constitution provides special powers to autonomous district councils (ADCs) in Assam, Meghalaya, Tripura and Mizoram, which have jurisdiction over specific tribal-majority areas, with the objective of ensuring development and boosting self-governance by tribal communities in those pockets.

Of the seven sisters in the Northeast, Mizoram is already outside the CAA ambit as the ILP is operational there. All of Meghalaya, barring a small part around Shillong, comes under three different ADCs — one each for the Khasi, Garo and Jaintia hills. Assam has three ADCs under the Sixth Schedule — the Bodoland Territorial Council that covers five districts; the North Cachar Hills Autonomous Council that covers one district; and the Karbi-Anglong Autonomous District Council that covers two districts. Similarly, Tripura has the Tripura Tribal Areas Autonomous District Council.

Despite most of Meghalaya coming under the Sixth Schedule, there still is some discontent among groups like the opposition Voice of the People's Party, which is against the implementation of the CAA in areas not under the Sixth Schedule. Already, the Meghalaya government is pushing for the implementation of an ILP regime across the state, which would make the CAA redundant.

Why are Assam, Tripura against CAA?

Most of Assam (which shares a 263-km border with Bangladesh) and Tripura (which has a 856-km border with Bangladesh) does not come under either the Sixth Schedule or the ILP regime. And that is why there's unrest in these areas against the CAA.

Anti-immigrant sentiment is strong in both states, which share long, porous borders with Bangladesh, and have had streams of refugees coming in from the neighbouring country from before the time when it was known as East Pakistan. There is no record of these migrations;

neither of the large-scale ones around the times of great upheavals — India's Independence and Partition in 1947, the creation of Bangladesh in 1971; nor of the steady trickle that has continued since then. Although some of these refugees/migrants are Muslim, a majority are believed to be Bengali-speaking Hindus.

Not only does the CAA conspicuously omit Muslim refugees/migrants from its ambit, it also promises to legitimise Hindu refugees/migrants. Thus, it falls foul of Assamese ethno-nationalists, and increasingly, Tripuri tribals, who feel threatened by the rising number of Bengali speakers.

With the Centre now professing to delink the CAA from the National Register of Citizens (NRC) — to weed out illegal immigrants, which was originally conceived for, and only implemented in Assam, but remains stalled — many in Assam feel the CAA undermines their main ideological and electoral plank. It is somewhat similar in Tripura.

Hence, the protests in both states.

CENTRE SIGNS PACT WITH TRIPURA GOVT, TIPRA MOTHA: THE DEMANDS, SIGNIFICANCE OF THE AGREEMENT

The Centre recently signed a tripartite agreement with the Tripura government and the state's main opposition party, the TIPRA Motha, for a time-bound "honorable resolution" of the long-pending demands of the state's tribal population, including economic, political, land, linguistic and cultural rights.

Signed on March 2, the agreement comes just ahead of the Lok Sabha elections, and has put an end to the indefinite fast-unto-death started by TIPRA Motha founder and royal scion Pradyot Kishore Manikya Debbarma on February 27. It has also facilitated the TIPRA Motha's joining the BJP in the state government, with two of its members sworn in as ministers.

The rest of the Opposition camp has slammed TIPRA Motha for joining hands with the BJP.

What are the demands?

The Tipra Motha's demands include a "Greater Tipraland" — a separate state for Tripura's tribals which seeks to include those living outside the Tripura Tribal Areas Autonomous District Council (TTAADC) area as well. The party has sought more powers for the TTAADC, including direct funding from the Centre, its own police force, and share of revenue from gas exploration in the state. It also wants the Roman script to be declared as the official script for the indigenous Kokborok language.

Pradyot Debbarma has described the agreement as "60 per cent of the battle being won", and has said the remaining 40 per cent would be achieved by staying united and fighting for their demands.

The tripartite accord comes a year after Home Minister Amit Shah met Pradyot at Agartala. BJP Northeast coordinator Sambit Patra, who joined the discussion, later told the media that Shah had asked for an interlocutor to be appointed who would discuss the demands of the Motha, involving other stakeholders such as tribal leaders from different parties, tribal community leaders, etc.

DECODE POLITICS: WHY BHOJSHALA ROW HAS RETURNED TO ROIL MADHYA PRADESH POLITICS AGAIN

The Madhya Pradesh High Court has ordered the Archeological Survey of India (ASI) to conduct a survey of the Bhojshala temple-cum-Kamal Maula mosque complex in Dhar district, observing that its nature and character need to be "demystified and freed from the shackles of confusion".

Since the early 2000s various right wing groups in the state have been seeking the closure of the mosque, a ban on Friday namaz in it and the installation of a Saraswati idol in the Bhojshala complex.

In April 2003, the ASI had made an arrangement to find a solution under which Hindus would perform puja in the premises on Tuesdays while Muslims would offer namaz there on Fridays.

On May 2, 2022, a PIL was filed by the Hindu Front for Justice challenging the ASI order which restricted daily worship at the Bhojshala for Hindus. The plea cited that the former rulers of Dhar had installed the statue of Saraswati there in 1034 AD and it was taken to London in 1857 by the British.

Origin of dispute at the site

At the centre of Dhar city, over 250 kms away from Bhopal, is the tomb of Kamal al-Din, a Chishti saint and follower of Farid-al Din Ganj-i-Shakar and Nizam al-Din Auliya.

His tomb was built adjacent to a spacious hypostyle mosque "built primarily of reused temple parts". This led to demands by the right wing groups that the complex is a temple dedicated to the Goddess Vagdevi (Saraswati). The Hindu Front for Justice argued that the mosque was constructed during the reign of Alauddin Khilji between the 13th and 14th centuries after "destroying and dismantling ancient structures of previously constructed Hindu temples".

According to a 2012 research paper by Micheal Willis published in the Royal Asiatic Society, the Bhojshala or 'Hall of Bhoja' is a term used to describe the centre for Sanskrit studies associated with King Bhoja, the most celebrated ruler of the Paramara dynasty. According to the Dhar district website, Raja Bhoj founded a college at Dhar, which subsequently came to be known as Bhojshala.

How did the row flare up?

The "liberation" of Bhojshala was one of the major issues in the run-up to the 2003 Assembly elections which saw the ouster of the Digvijaya Singh-led Congress government. The BJP had also accused the Digvijaya government of "creating a communal problem".

Multiple attempts have been made by the right-wing groups to enter the complex and hoist a saffron flag there. The local police have also imposed curfew several times, most notably in 1997 after the Vishwa Hindu Parishad (VHP) threatened to hoist a flag atop the ancient structure leading to the arrest of 40 people. The Chouhan-led BJP government in 2022 promised to bring back the Saraswati idol from the British Museum.

GOVERNOR STALLS MOVE TO RE-INDUCT PONMUDY

In yet another stand-off with the Tamil Nadu government, Governor R.N. Ravi has put on hold the proposed swearing-in of senior DMK leader and former Minister K. Ponmudy to re-induct him into

the Cabinet. The former Higher Education Minister was disqualified as MLA after the Madras High Court sentenced him to three years in jail in a disproportionate assets case in December.

After the Supreme Court stayed his conviction and sentence, Chief Minister M.K. Stalin had sought time from the Governor on Wednesday or Thursday for Mr. Ponmudy's swearing-in, official sources said. Sources in the Raj Bhavan said Mr. Ravi would travel to Delhi on Thursday on a three-day visit. As regards the swearing-in, the Raj Bhavan has sought legal opinion from experts.

The Governor has sought a clarification whether inducting Mr. Ponmudy into the Council of Ministers would be legally correct when his conviction and sentence has only been stayed in the interim, and not set aside by the top court. Parrying questions, a Raj Bhavan official said the "matter was under consideration of the Governor."

Following his conviction and sentencing in the assets case, the higher education portfolio held by Mr. Ponmudy was reallocated to his Cabinet colleague, R.S. Rajakannappan. However, after the Supreme Court order, Assembly Speaker M. Appavu on Wednesday rescinded his earlier notification declaring the Thirukkoyilur Assembly constituency (held earlier by Mr. Ponmudy) vacant.

LIBERAL DEMOCRACY HAS DECLINED SIGNIFICANTLY IN INDIA: REPORT

India, which was downgraded to the status of an "electoral autocracy" in 2018, has declined even further on multiple metrics to emerge as "one of the worst autocratisers", according to the "Democracy Report 2024" released by the Gothenburg-based V-Dem Institute.

The report categorises countries into four regime types based on their score in the Liberal Democratic Index (LDI): Liberal Democracy, Electoral Democracy, Electoral Autocracy, and Closed Autocracy. "India, with 18% of the world's population, accounts for about half of the population living in autocratising countries," the report said.

Noting that almost all components of democracy were getting worse in more countries than they were getting better, the report singled out freedom of expression, clean elections, and freedom of association/civil society as the three worst affected components of democracy in autocratising countries.

South and Central Asia regressed significantly, with the level of "liberal democracy" enjoyed by the average Indian now "down to levels last seen in 1975…when Indira Gandhi declared a state of emergency in India". As per the V-Dem classification, a liberal democracy is one where, in addition to the requirements of electoral democracy such as regular free and fair elections, mechanisms for judicial independence and constraints on executive overreach are robust, alongside rigorous protection of civil liberties and equality before law. "The Modi-led government also continues to suppress the freedom of religion rights. Intimidation of political opponents and people protesting government policies, and silencing of dissent in academia are now prevalent," the report noted.

With regard to India, the report said that a third consecutive term for the BJP and Mr. Modi "could lead to further autocratisation given the already substantial democratic decline under Modi's leadership and the enduring crackdown on minority rights and civil society".

V-Dem's Democracy Report is a collaborative project involving 4,200 scholars from 180 countries, and is based on 31 million datasets that cover 202 countries from 1789 to 2023.

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INTRODUCING A NEW TOLL COLLECTION SYSTEM

The story so far:

Road Transport and Highways Minister Nitin Gadkari said in Parliament in February that the government plans to implement a new highway toll collection system based on the global navigation satellite system before the model code of conduct for the 2024 election kicks in.

What is the new proposed highway tolling system?

The global navigation satellite system is a term used to refer to any satellite-based navigation system, including the United States' Global Positioning System (GPS). It uses a large constellation of satellites to provide more accurate location and navigation information to users globally as compared to the GPS alone.

An official of the Ministry of Road Transport and Highways explained that its implementation will involve an On-Board Unit (OBU), or a tracking device, fitted inside a vehicle whose location can be mapped using GAGAN, the Indian satellite navigation system with an approximate accuracy of 10 metres. The co-ordinates of the entire length of the country's national highways will have to be logged with the help of digital image processing, and software will be used to assign the toll rate on a particular highway, calculate the toll amount for a vehicle as per the distance travelled by it and then deduct it from a wallet linked to the OBU. The system will additionally have gantries, or arches mounted with CCTV cameras, at various points on a highway for enforcement purposes. These will capture an image of the vehicle's high security registration plate and cross verify if a road user is trying to trick the system by either removing the tracking device or travelling without an OBU onboard.

The Ministry official further explained that the aim of the technology is to provide users the benefit of paying toll only for the actual distance travelled on a highway, or pay-as-you-use. The government also hopes that it will eventually allow barrier-free movement.

What are some of the challenges?

One of the major challenges posed by this technology is that of recovering the toll amount if a road user fails to clear his payment after completing a journey on a highway, for instance, if the digital wallet linked with the OBU is empty.

Because there are no barriers involved that can stop a non-compliant vehicle, there are other issues such as when a vehicle travels on a highway without an OBU device linked or the OBU device is deliberately switched off to avoid payment or if a car's OBU is installed on a truck to pay less toll. Gantry-mounted Automatic Number-Plate Recognition (ANPR)-based systems for capturing violations have to be set up on highways across India. However, no such infrastructure exists in the country today.

Further, the success of an ANPR system depends on the quality of the licence plates, which are currently limited to a few cities and States. The government will also have to amend the National Highways Fee (Determination of Rates and Collection) Rules in order to provide for the recovery of unpaid toll, define offences as well as require the necessity of an OBU in vehicles.

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How does it safeguard privacy?

In response to a question on how the government plans to safeguard privacy of vehicle users, the Ministry official said that firstly, it had decided to use the GAGAN satellite system and not GPS, which is owned by the U.S., to ensure data security within the country. The official added that although the concept was still a work in progress, the Digital Personal Data Protection Act, 2023 passed in Parliament last year will address privacy concerns. The law had received flak from civil society for the widening of exemptions granted to government agencies that may facilitate increased state surveillance.

Will FASTags be discontinued?

The new tolling system will co-exist with the FASTag-based toll collection as the government has not yet taken a decision on whether OBUs will be made mandatory for all vehicles or only for new vehicles. Minister Gadkari has been speaking about implementing satellite-based toll collection since 2020, even though radio frequency identification based FASTags for toll collection was rolled out from 2016 and made mandatory only from February 16, 2021. Over the years a robust compliance has been achieved. By December 2023, 98.9% of vehicles passing through toll fee plazas at national highways were FASTag compliant. Toll collection increased 1.5 times from ₹17,942 crore in 2016-2017 to ₹27,744 crore in 2020-2021 at National Highway fee plazas due to a multitude of factors, which included rising number of vehicles as well as revision in tolls and adoption of FASTags. However, officials say that the global navigation satellite system involves lower operational cost as compared to FASTags due to absence of toll plazas and less number of entities in the toll collection process.

EXPLAINED: INDIA'S FIRST INDIGENOUS FAST BREEDER REACTOR BEGINS 'CORE LOADING', WHY IT MATTERS

The vital second stage of India's three-stage nuclear programme got a boost with the commencement of 'core loading' at the country's first indigenous Fast Breeder Reactor (FBR) at Kalpakkam, Tamil Nadu, earlier this month.

Core loading is the process of placing nuclear fuel assemblies inside the core of a nuclear reactor. The initiation of the process was witnessed by Prime Minister Narendra Modi on March 4. The completion of core loading will effectively mark the first approach to 'criticality' — the initiation of a self-sustaining nuclear fission reaction that will eventually lead to the generation of power by the 500 megawatt electric (MWe) FBR.

India's FBR programme

Efforts to build an FBR were initiated two decades ago, and successive governments have nurtured the project as a step towards India developing comprehensive capabilities that span the entire nuclear fuel cycle, by which electricity is produced from uranium in nuclear power reactors.

In 2003, when Atal Bihari Vajpayee was Prime Minister, the Bharatiya Nabhikiya Vidyut Nigam Ltd or BHAVINI was incorporated to build and operate India's most advanced nuclear reactor, the Prototype Fast Breeder Reactor (PFBR).

The project was expected to be completed by September 2010, but was delayed due to technological challenges. The last set of approvals had revised the completion target to October 2022.

Once commissioned, India will be the second country after Russia to have a commercial operating FBR. China has a small programme on fast breeders; programmes in countries such as Japan, France, and the United States were shut down amid safety concerns.

From 'fertile' to 'fissile'

The Department of Atomic Energy's (DAE's) three-stage power programme envisages a pathway to utilising India's abundant thorium reserves — found in coastal and inland placer sands on the beaches of Kerala, Tamil Nadu, Odisha, Andhra Pradesh, Maharashtra, and Gujarat, and in the inland riverine sands of Jharkhand and West Bengal — to generate electricity.

(A placer deposit is a natural concentration of heavier minerals created by the action of gravity on moving particles. These concentrations are typically found along streams, rivers, beaches, and stretches of residual gravel where they are washed up. Besides thorium (from monazite ore), gold, platinum, titanium, uranium, and rare earth elements are commercially mined from placer deposits.)

India owes the vision of the three-phase programme of nuclear power to ensure energy security to Dr Homi J Bhabha, the father of India's nuclear programme, and Dr Vikram Sarabhai, who recognised the need for developing FBRs, as these reactors generate more nuclear fuel than they consume due to the gainful conversion of fertile isotopes into fissile material.

The three stages involve the conversion of 'fertile material' (which is not fissionable by thermal neutrons but can be converted into fissile material) into fissile material. For example, U238, the dominant isotope of uranium, is a fertile material that cannot by itself make the reactor achieve criticality, and has to be converted to fissile plutonium (Pu239) in a nuclear reactor. The spent fuel from thermal reactors contains Pu239, which is most efficiently burnt in a fast reactor.

Thorium-bearing monazite too, is a fertile material that has to be converted to fissile material U233.

India has adopted a "closed fuel cycle" approach, which involves the reprocessing of spent fuel to separate the useful Pu239 and U233 isotopes from U238 and Th232. To multiply the fissile inventory and to gradually work towards establishing a higher power base, it is key to ultimately use thorium in the third stage of the programme.

The FBR is an important milestone for getting to the third stage, paving the way for the eventual full utilisation of the country's thorium.

Three stages and FBR

The first stage — the setting up of Pressurised Heavy Water Reactors (PHWRs) and associated fuel cycle facilities — is in progress. PHWRs are reactors that use natural uranium as fuel and heavy water (deuterium oxide) as coolant and moderator.

The Nuclear Power Corporation of India Limited (NPCIL) operates 22 commercial nuclear power reactors with an installed capacity of 6,780 MWe. The programme has been supplemented by the construction of imported Light Water Reactors (LWRs) — the first of two units built with Russian collaboration is already generating power.

The second stage involves the setting up of FBRs backed by reprocessing plants and plutonium fabrication plants, primarily to multiply the inventory of fissile material. Multiplication of fissile

inventory is also needed to establish a higher power base for using thorium in the third stage of the programme.

The third stage will be based on the ThU233 cycle. For producing U233, obtained by irradiation of thorium in PHWRs and FBRs, an Advanced Heavy Water Reactor (AHWR) is proposed.

The combination of power reactors from all the three stages is expected to ensure long-term energy security for the country. But the commercial utilisation of thorium on a significant scale can begin only when abundant supplies of either U233 or Pu239 are available. The progress on the FBR has made the passage to the third phase visible.

Way forward hereafter

As core loading commences, the FBR will initially use Uranium-Plutonium Mixed Oxide (MOX) fuel, officials said. The U238 'blanket' around the fuel core will undergo nuclear transmutation to produce more fuel — thus the name 'Breeder'. Nuclear transmutation involves the conversion of a chemical element or isotope into another chemical element, with the numbers of protons or neutrons in the nucleus of the atom undergoing a change.

The use of Th232, which is not a fissile material, as a blanket is also envisaged in this stage. Through transmutation, thorium will create fissile U233, which will be used as fuel in the third stage.

The DAE maintains that despite the use of this advanced technology, both the capital cost and per-unit electricity cost are "comparable" to other nuclear and conventional power plants.

While the first of the three stages is already underway with the PHWR programme, the India-US civil nuclear deal has opened the doors for India to buy uranium for its domestic reactors, thus increasing the pace of its nuclear programme.

The DAE aims to increase the share of nuclear power in the energy mix by 2032 by producing 22,400 MWe from its nuclear power plants. It has approved the construction of 10 new PHWRs in 'fleet mode', in which a plant is expected to be built in five years from the first pouring of concrete.

What is nuclear waste?

In a fission reactor, neutrons bombard the nuclei of atoms of certain elements. When one such nucleus absorbs a neutron, it destabilises and breaks up, yielding some energy and the nuclei of different elements. For example, when the uranium-235 (U-235) nucleus absorbs a neutron, it can fission to barium-144, krypton-89, and three neutrons. If the 'debris' (barium-144 and krypton-89) constitute elements that can't undergo fission, they become nuclear waste.

Nuclear waste is highly radioactive and needs to be stored in facilities reinforced to prevent leakage and/or contamination of the local environment.

How do we handle nuclear waste?

Handling the spent fuel is the main challenge — it is hot and radioactive, and needs to be kept underwater for up to a few decades. Once it has cooled, it can be transferred to dry casks for longer-term storage. All countries with long-standing nuclear power programmes have accumulated a considerable inventory of spent fuel. For example, the U.S. had 69,682 tonnes (as of 2015), Canada 54,000 tonnes (2016), and Russia 21,362 tonnes (2014). Depending on

radioactivity levels, the storage period can run up to many millennia, meaning "they have to be isolated from human contact for periods of time that are longer than anatomically modern Homo sapiens have been around on the planet," Dr. Ramana wrote.

How is nuclear waste dealt with?

Once spent fuel has been cooled in the spent-fuel pool for at least a year, it can be moved to dry-cask storage. It is placed inside large steel cylinders and surrounded by an inert gas. The cylinders are sealed shut and placed inside larger steel or concrete chambers.

Some experts have also rooted for geological disposal: the waste is sealed in "special containers", to quote Dr. Ramana's paper, and buried underground in granite or clay. The upside here is long-term storage away from human activity, although some studies have pointed to the risk of radioactive material becoming exposed to humans if the containers are disturbed, such as by nearby digging activity.

Reprocessing — the name for technologies that separate fissile from non-fissile material in spent fuel — is another way to deal with the spent fuel. Here, the material is chemically treated to separate fissile material left behind from the non-fissile material. Because spent fuel is so hazardous, reprocessing facilities need specialised protections and personnel of their own. Such facilities present the advantage of higher fuel efficiency but are also expensive.

Importantly, reprocessing also yields weapons-usable (different from weapons-grade) plutonium. The IAEA has specified eight kilograms of plutonium in which plutonium-239 accounts for more than 95% to be the threshold for "safeguards significance". It tightly regulates the setting up and operation of these facilities as a result.

How does India handle nuclear waste?

According to a 2015 report of the International Panel on Fissile Materials (IPFM), India has reprocessing plants in Trombay, Tarapur, and Kalpakkam. The Trombay facility reprocesses 50 tonnes of heavy metal per year (tHM/y) as spent fuel from two research reactors to produce plutonium for stage II reactors as well as nuclear weapons. Of the two in Tarapur, one is used to reprocess 100 tHM/y of fuel from some pressurised heavy water reactors (stage I) and the other, commissioned in 2011, has a capacity of 100 tHM/y. The third facility in Kalpakkam processes 100 tHM/y.

Dr. Ramana also said in his email, "If and when the PFBR starts functioning and spent fuel from it is discharged, that will bring its own complications because it will have a different distribution of fission products and transuranic elements."

ONE MISSILE, MANY WEAPONS: WHAT MAKES THE LATEST AGNI-5 SPECIAL

India on Monday (March 11) announced that it had successfully tested a new Agni-5 missile capable of carrying multiple warheads and striking multiple targets. The most important thing about this new missile is its integration with what is known as the MIRV technology.

MIRV (Multiple Independently Targetable Re-entry Vehicle) technology is the capability that allows multiple warheads to be loaded on a single missile delivery system and programmed to hit different targets, thus greatly enhancing the missile's destructive potential.

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The development of MIRV capability marks a significant upgrade for India's missile systems, and expands its nuclear options.

What is MIRV technology?

Traditional missiles carry a single warhead, or weapon, that goes and hits the intended target. MIRV-equipped missiles can accommodate multiple warheads, each of which can be programmed to strike a separate target. They can all be made to hit the same location too, one after the other, thus ensuring complete annihilation of the target.

While simultaneous strikes at multiple locations can have a debilitating impact on the enemy, the use of nuclear warheads can bring the opposition to its knees.

The technology is not new. It was developed in the 1960s and first deployed in the 1970s by the United States and the then Soviet Union. But it is a complicated technology. The warheads have to be miniaturised, be equipped with independent guidance and navigation controls, and released sequentially from the delivery system.

Over the years, France, the United Kingdom, and eventually China have developed this technology. Pakistan too has claimed to have tested an MIRV-equipped missile called Ababeel, first in 2017 and then in 2023.

The number of warheads that a missile can carry depends on its design, weight, size, range and other parameters. The one that India tested on Monday can carry three to four warheads, V K Saraswat, the former head of Defence Research and Development Organisation (DRDO), said. There are other systems that can carry as many as 15 warheads, or even more.

However, an MIRV-equipped missile has never been used so far in any conflict situation. Arms control advocates argue that MIRV technology incentivises the urge to strike first, thus increasing the risk from nuclear weapons.

Advantages oF MIRV technology

Apart from the obvious advantage of inflicting multiple damages with a single strike, MIRV is a sought-after military technology for several other reasons. One of them is its ability to penetrate missile defence systems.

A missile defence system is a network of technologies aimed at detecting, tracking, intercepting and destroying an incoming missile. It involves the deployment of sophisticated radars, communication systems, and interceptor missiles. It's considered a good safeguard against traditional missiles, and several countries are in the process of developing or strengthening their missile defence systems.

MIRV-equipped missiles, however, can render the system useless. Multiple warheads, each with an independent trajectory, can make the job of tracking and intercepting extremely complicated. In addition, MIRV-equipped missiles can be made to carry decoy warheads to confuse the defence system. It is thus very likely that one or more warheads penetrate the shield created by the defence system, and inflict damage.

Another key strategic benefit, especially for countries like India which has a no-first use policy for nuclear weapons, is the capability to cause crippling damage in a response strike. The response strike could be disproportionate, and can thus serve as a deterrence to the enemy.

Agni upgrade

The integration of MIRV technology is a long-awaited upgrade for the Agni family of short, medium and intercontinental range ballistic missiles indigenously developed by the DRDO. Agni missiles are the main land-based delivery systems for India's nuclear weapons.

Developed in the 1990s, the first-generation Agni missiles were deployed in the armed forces in the mid-2000s. Agni-1 to Agni-IV missiles have ranges between 700 to 3,500 km and can carry single payloads weighing between 12 and 40 kilotons. Agni-5, the version that has been equipped with MIRV technology, can travel more than 5,000 km, and can potentially enter the intercontinental range as well, considered to be 5,500 km and above.

Agni-5 has been tested several times since 2012, with new features and capabilities. Its previous flight happened in December 2022, when its night-time capabilities were tested, among other things.

Meanwhile, DRDO has also been developing Agni-P missiles, which are modernised versions of the short-range Agni-1 and Agni-2 variety. This missile was tested twice in 2021, and on both occasions there was the expectation that it would be integrated with MIRV technology.

The acquisition of MIRV technology by India was keenly awaited after China developed it in the last decade. With Pakistan also claiming to have tested a missile with this technology, integrating this in Agni missiles had become an imperative. The next generation Agni-6 missile, currently under development, is also expected to be equipped with MIRV.

The development was significant enough for Prime Minister Narendra Modi to himself tell the nation about it, much like he had done five years earlier when DRDO had successfully carried out an anti-satellite test, an equally notable technological achievement that put India among a handful of nations with the capability to strike at an enemy's space-based assets, such as satellites.

Monday's test was carried out from Dr APJ Abdul Kalam Island, off the coast of Odisha, which hosts India's integrated missile test range. "Various telemetry and radar stations tracked and monitored multiple re-entry vehicles. The mission accomplished the designed parameters," DRDO said in a statement.

ALL ABOUT INDIA'S INDIGENOUS FIFTH-GEN FIGHTER JET ADVANCED MEDIUM COMBAT AIRCRAFT (AMCA), AND WHY IT IS IMPORTANT

The Cabinet Committee on Security (CCS) this week cleared a Rs 15,000 crore project to design and develop the Advanced Medium Combat Aircraft (AMCA), India's fifth-generation fighter multirole fighter jet.

The Aeronautical Development Agency (ADA) under the Defence Research and Development Organisation (DRDO) will be the nodal agency for executing the programme and designing the aircraft. It will be manufactured by state-owned Hindustan Aeronautics Limited (HAL). The aircraft will put India in a select group of nations that have their own fifth-generation fighter aircraft.

Features of AMCA

STEALTH: The 25-tonne twin-engine aircraft, which will be bigger than other fighters in the Indian Air Force inventory, will have advanced stealth features to avoid detection by enemy radar. Dr

Krishna Rajendra Neeli, project director of AMCA at ADA, said the aircraft would be on par or even superior to other fifth-generation stealth fighter aircraft in use globally.

"Having seen the development of the LCA (Light Combat Aircraft Tejas) project, which is a contemporary fighter aircraft, this aircraft (AMCA) would be able to compete with other stealth fighters in the world," Dr Neeli told The Indian Express.

FUEL & WEAPONS: The aircraft will have a large, concealed internal fuel tank of 6.5-tonne capacity, and an internal weapons bay for a range of weapons, including indigenous weapons, to be buried in its belly.

ENGINE: The AMCA Mk1 variant will have the US-built GE414 engine of the 90 kilonewton (kN) class, while the more advanced AMCA Mk2 will fly on the more powerful 110kN engine, which will be developed indigenously by DRDO's Gas Turbine Research Establishment (GTRE) in collaboration with a foreign defence major. India has been talking with Safran SA of France, one of the world's largest manufacturers of aircraft engines and related equipment, in order to finalise the roadmap for the development of the combat aircraft engine.

Other features such as a diverterless supersonic inlet for controlling air flow into the engines, and a serpentine air intake duct to shield the engines from radar emissions, are likely to be part of the AMCA.

Why AMCA is special

Discussions for developing the AMCA started in 2007. The initial plan was to jointly develop the aircraft with Russia under a Fifth Generation Fighter Aircraft (FGFA) programme. However, India withdrew from the FGFA project in 2018.

The AMCA will be India's indigenous fifth-generation fighter aircraft. The indigenous Light Combat Aircraft (LCA) Tejas is a 4.5-generation single-engine multirole aircraft.

What will set the fifth-generation combat aircraft apart from the existing fourth-generation is primarily its stealth features. The aircraft will have a low electro-magnetic signature, which will make it difficult for enemy radar to detected it. At the same time, it will have powerful sensors and new weapons, so it is able to register the signature of enemy aircraft and take them out.

"A fourth-generation aircraft is typically not designed or configured to have these stealth features, even though some features may be added later. But even that will not make it a fully fifth-generation aircraft," former AMCA project director at ADA Dr A K Ghosh said.

Stealth features such as an internal weapons bay and a bigger internal fuel tank are part of fifth-generation aircraft like AMCA. Up to four long-range air-to-air missiles and multiple precision-guided munitions can be carried in the internal weapons bay, with a payload of 1,500 kg.

External fuel tanks and externally attached weapons leave a huge signature and are easy to detect for radar. The special material that will be used on the aircraft surface will divert the radar signature instead of reflecting it back.

Another important aspect would be to ensure a higher utilisation time and smaller serviceability or maintenance periods for the aircraft. This will be aided by the inclusion of a comprehensive Integrated Vehicle Health Management (IVHM) system to keep track of multiple structural components, and to assess the condition of the aircraft in real-time.

Development timeline

Following the CCS approval, which had been pending for more than a year and a half, the ADA hopes to have the first flight of the aircraft in four and a half to five years. The full development of the aircraft is expected to take around 10 years from now. Five prototypes will be built before HAL begins manufacturing the aircraft. The private industry is also expected to be involved in the manufacturing of the aircraft.

Other fifth-generation fighters

Only a few countries have built a fifth-generation stealth fighter aircraft. The list of the aircraft currently in service includes the F-22 Raptor and F-35A Lightning II of the US, the Chinese J-20 Mighty Dragon, and the Russian Sukhoi Su-57.

IAF's dwindling numbers

The IAF currently has around 30 fighter squadrons against the sanctioned strength of 42. This number is expected to go down further as squadrons of MiG-21s, MiG-29s, Jaguars, and Mirage 2000s are scheduled to be phased out by the middle of the next decade.

The IAF has indicated that it requires seven squadrons of the AMCA to begin with. Considering the IAF's requirements, the planned inductions of additional squadrons of LCAs and AMCA will not add up to the sanctioned squadron strength in a decade.

MNRE TO DISCUSS SPECIALISED CYLINDERS FOR HYDROGEN STORAGE WITH STAKEHOLDERS

The Ministry of New and Renewable Energy (MNRE) plans to convene a meeting with relevant stakeholders to discuss the development of specialised cylinders for green hydrogen storage. The decision was made after manufacturers of commercial vehicles, including heavy duty and long haul trucks, flagged challenges related to high-pressure storage cylinders in the adoption of green hydrogen as a sustainable fuel in the transport sector.

Commercial vehicle manufacturers identified the higher cost of green hydrogen fuel cells as another challenge in a meeting with MNRE on January 25. The proposed meeting is likely to include manufacturers of specialised cylinders for compressed and liquified natural gas, some of whom have already commenced research and development on cylinders for hydrogen, which is stored at a much higher pressure.

Gas cylinders are typically categorised into four types, depending upon the materials used. Type 1 and Type 2 are suitable for storage, while Type 3 is preferred for storage and transportation, and Type 4 is recommended for on-board storage. Unlike compressed natural gas (CNG), which is stored at a pressure of around 3,600 psi, the pressure at which hydrogen is stored ranges between 5,000-10,000 psi. The MNRE has indicated a meeting with industry stakeholders for the development of Type 3 and Type 4 cylinders to address challenges related to high-pressure hydrogen cylinders, according to the minutes of the meeting on January 25 obtained by The Indian Express through Right to Information (RTI).

A vehicle can be powered by hydrogen in two ways– burning it in an internal combustion engine or using a fuel cell to convert it into electricity to charge on-board batteries. While both Type 3 and Type 4 cylinders are reinforced with carbon fibre, which makes them light and ideal for use

in vehicles, Type 4 cylinders are even lighter as they are lined with a polymer as opposed to the aluminium lining in Type 3 cylinders.

Currently, most cylinders manufactured in the country are designed to carry CNG, and because hydrogen is stored at a much higher pressure, CNG cylinders cannot carry hydrogen without technical modifications. Even then, hydrogen will have to be blended with CNG in specific proportions. For cylinders to carry a high mass of hydrogen, the carbon fibre needs to be stronger than that used in CNG cylinders and involves a slightly more complex manufacturing process.

At present, these factors add to the overall cost of producing high-pressure Type 4 hydrogen cylinders, a key barrier to the adoption of hydrogen as a transport fuel as identified by stakeholders. However, with fiscal incentives and a rise in demand for hydrogen-powered vehicles, the cost of producing hydrogen cylinders may come down in future. Domestic companies involved in the manufacturing of CNG cylinders have also set their eyes on the hydrogen market.

CENTRE SCRAPS REQUIREMENT TO SEEK ITS NOD BEFORE LAUNCHING 'UNTESTED' AI

After facing intense backlash on its first advisory on election integrity for artificial intelligence (AI) platforms, the IT Ministry has amended it and prepared a fresh advisory where it has scrapped a controversial provision to require government permission before rolling out "untested/unreliable" AI systems in India, The Indian Express has learnt.

"Under-tested/unreliable Artificial Intelligence foundational models)/ LLM/Generative Al, software(s) or algorithm(s) or further development on such models should be made available to users in India only after appropriately labelling the possible inherent fallibility or unreliability of the output generated," the new advisory, dated March 15, is learnt to say.

In its initial advisory issued to online intermediaries like Meta and Google earlier this month, the government had said that companies will have to seek its "explicit permission" before launching untested AI systems in India.

While the government had earlier clarified that the advisory would not apply to AI start-ups but to "large" platforms, the requirement to seek its nod now has been dropped altogether.

The first advisory was criticised by some startups in the generative AI space, including those invested in the ecosystem abroad, over fears of regulatory overreach of the yet nascent industry by the Indian government. Aravind Srinivas, founder of Perplexity AI, called the advisory a "bad move by India", while Martin Casado, general partner at the US-based investment firm Andreessen Horowitz, had termed the move a "travesty", which was "anti-innovation" and "anti-public".

The advisory was issued keeping the upcoming Lok Sabha elections in mind as the government had asked companies that their AI services should not generate responses with biases and are illegal under Indian laws or "threaten the integrity of the electoral process".

However, even as the government now has gone back on its position, the advisory did have an effect. Days after it was issued, Google said that it will restrict the types of election-related questions users can ask its AI chatbot Gemini in India.

"Out of an abundance of caution…we have begun to roll out restrictions on the types of election-related queries for which Gemini will return responses. We take our responsibility for providing

high-quality information for these types of queries seriously…," the company said in a blog post recently.

At the heart of the disagreement is a tussle between lawmakers and tech companies over the future of safe harbour protections to generative AI platforms like Gemini and ChatGPT. It is also as much about the government's view of outputs generated by some of these platforms and if it disagrees with them, even if they may or not be entirely unlawful.

However, even with the new advisory, the area of concern with respect to government overreach that remains is that even the new one — similar to the earlier advisory — has been sent as "due diligence" measures that online intermediaries need to follow under the current Information Technology Rules, 2021.

Though the advisories are not legally binding, questions were raised on the legal basis – under which law the government can issue guidelines to generative AI companies since India's current technology laws do not directly cover large language models.

HOW AI CAN ACCELERATE PRODUCTION AND DISSEMINATION OF ELECTION DISINFORMATION

The shadow of large language models looms over elections around the world, and stakeholders are aware that even one relatively successful deployment of an artificial intelligence (AI)-generated disinformation tool could impact both campaign narratives and election results very significantly.

Three-way trouble

AI can accelerate the production and diffusion of disinformation in broadly three ways, contributing to organised attempts to persuade people to vote in a certain way.

First, AI can magnify the scale of disinformation by thousands of times. Second, hyper-realistic deep fakes of pictures, audio, or video could influence voters powerfully before they can be possibly fact-checked. Third, and perhaps most importantly, by microtargeting.

AI can be used to inundate voters with highly personalised propaganda on a scale that could make the Cambridge Analytica scandal appear microscopic, as the persuasive ability of AI models would be far superior to the bots and automated social media accounts that are now baseline tools for spreading disinformation.

The risks are compounded by social media companies such as Facebook and Twitter significantly cutting their fact-checking and election integrity teams. While YouTube, TikTok and Facebook do require labelling of election-related advertisements generated with AI, that may not be a foolproof deterrent.

Imminent danger

A new study published in PNAS Nexus predicts that disinformation campaigns will increasingly use generative AI to propagate election falsehoods. The research, which used "prior studies of cyber and automated algorithm attacks" to analyse, model, and format the proliferation of bad-actor AI activities online, predicts that AI will help spread toxic content across social media platforms on an almost-daily basis in 2024. ('Controlling bad-actor-artificial intelligence activity at scale across online battlefields': Neil F Johnson and others)

The fallout could potentially affect election results in more than 50 countries. The experience of last year's elections in Slovakia and Argentina is instructive in this regard.

Potential displayed

Generative AI companies with the most popular visual tools prohibit users from creating "misleading" images. However, researchers with the British nonprofit Centre for Countering Digital Hate (CCDH), who tested four of the largest AI platforms — Midjourney, OpenAI's ChatGPT Plus, Stability.ai's DreamStudio, and Microsoft's Image Creator — succeeded in making deceptive election-related images more than 40% of the time.

The researchers were able to create fake images of Donald Trump being led away by police in handcuffs and Joe Biden in a hospital bed. According to a report by the BBC quoting a public database, users of Midjourney have created fake photos of Biden handing wads of cash to Israeli Prime Minister Benjamin Netanyahu, and Trump playing golf with Russian President Vladimir Putin.

NO PORTING ALLOWED WITHIN SEVEN DAYS OF SIM CARD SWAP: TRAI

The Telecom Regulatory Authority of India (TRAI) on Friday updated regulations to disallow telecom subscribers to port out of their current network provider if they have "swapped" their SIM card, after the loss or damage of a previous card, within the past seven days. The regulations prohibit telecom operators from issuing a "unique porting code" (UPC) which is the first step of changing providers using mobile number portability. This amendment would "result in preventing [the] porting of mobile connections soon after SIM swapping/ replacement, by fraudsters in the name of new subscribers," the TRAI said in an explanatory memorandum.

The move is part of the anti-spam measures the TRAI has taken. Previous steps include creating a do-not-disturb registry for subscribers to opt out of spam, releasing a now-defunct app to enforce that registry by allowing users to file complaints against errant telemarketers, and requiring all transactional SMS messages by businesses to be as per a format registered with telecom operators, barring which they get filtered out.

The TRAI has also recommended to the Department of Telecommunications (DoT) a feature that would display the legally registered name of every caller on recipients' handsets, a feature that drew some criticism on privacy grounds. The DoT has launched Chakshu, its own portal for reporting "suspected fraud communication".

The DoT had asked the TRAI to examine a suggestion that telecom firms be required to match the identity of subscribers when they port out from one operator to another. The TRAI said that this suggestion will be "examined separately".

WHY HAS INDIA DEVELOPED AN ATMOSPHERIC TESTBED NEAR BHOPAL?

On March 12, the first phase of India's Atmospheric Research Testbed in Central India (ART-CI) was inaugurated at Silkheda in Sehore district, located about 50 km northwest of Bhopal in Madhya Pradesh.

Funded by the Ministry of Earth Sciences (MoES), the facility will house 25 high-end meteorological instruments for studying vital cloud processes associated with the monsoons over

central India's Monsoon Core Zone (MCZ). How is this likely to help the study of the Indian monsoon, and why was it needed? We explain.

What is the Atmospheric Research Testbed (ART)?

The ART is an open-field, focused observational and analytical research programme at Silkheda.

The facility aims to conduct ground-based observations of weather parameters like temperature, wind speeds, etc. and in-situ (on-site) observations of the transient synoptic systems – like low-pressure areas and depressions that form in the Bay of Bengal – during the southwest monsoon season from June to September.

Studying these systems and their associated cloud parameters will be used to generate high volumes of data over a long period. It can then be compared with the existing weather models so that improvements can be made to obtain accurate rainfall predictions.

The setup at ART will also be used for calibrating and validating various satellite-based observations, part of weather predictions and forecasting.

Spread over 100 acres, the ART has been developed by the Ministry of Earth Sciences for Rs 125 crore. The Indian Institute of Tropical Meteorology (IITM), Pune, is in charge of the operations.

Under the first phase, remote sensing-based and in-situ measurements using 25 meteorological instruments have commenced. In the second phase, ART will deploy instruments such as a radar wind profiler and balloon-bound radiosonde, and soil moisture and temperature measuring equipment.

Why is having an Atmospheric Research Testbed important?

At present, 45% of India's labour force is employed in the agriculture sector. Much of Indian agriculture is rain-fed, as is cultivation along the Monsoon Core Zone (MCZ), which spans the central India region from Gujarat to West Bengal.

The southwest monsoon season accounts for 70 per cent of the country's annual average rainfall (880mm). Throughout India, the majority of Kharif cultivation is undertaken between July and August, which see an average monthly rainfall of 280.4mm and 254.9mm (1971–2020 average), respectively.

During this four-month-long season, several rain-bearing synoptic systems, namely the low pressures or depressions, develop in the Bay of Bengal. Inherently, these systems move westwards/northwestwards over to the Indian mainland and pass through the MCZ, causing bountiful rainfall.

Why is it important to have data about monsoons over central India?

Studies have correlated the all-India rainfall performance to the rainfall received over the central India region, highlighting its importance.

The India Meteorological Department (IMD) issues rainfall forecasts for the country's four homogeneous regions – north, west, east and south peninsular India. In addition, it issues a special rainfall forecast for the MCZ, which is considered India's food bowl.

However, there is still limited understanding about the role of these synoptic systems, their associated cloud physics, cloud properties and their overall role in enhancing the monsoon rainfall.

Central India, therefore, acts as a natural laboratory for scientists and meteorologists to perform a hands-on study of the Indian monsoons. They can record data and make observations about the allied systems, clouds, and other associated physical and atmospheric parameters.

Additionally, climate change is driving erratic rainfall patterns in the tropical regions, like India. It has also strengthened the low-pressure systems, which are aided by high temperatures. This results in very heavy rainfall recorded along their trajectory during the monsoons.

Now, with ART, scientists will be able to generate and obtain long-term observations on cloud microphysics, precipitation, convection, and land-surface properties, among a host of other parameters.

This information will be assimilated and fed into the numerical weather models to enhance forecast output, especially the rainfall forecasts. More accurate forecasts will ultimately help the farming community plan their activities better.

Why Madhya Pradesh?

The ART has been established at Silkheda, a location that falls directly in line with the path of major rain-bearing synoptic systems. This will facilitate direct monitoring and tracking. Besides, the locality is pristine and free of anthropogenic and other pollutants, making it the best site in central India for setting up sensitive, high-end meteorological instruments and observatories for recording data.

What instruments are ART equipped with?

To obtain continuous observations of convection, clouds, and precipitation, and monitor the major modes of variabilities, the ART is equipped with over two dozen high-end instruments, radars and more. At 72 metres, ART will house India's tallest meteorological tower.

Some of the instruments deployed are an aethalometer for performing aerosol studies, a cloud condensation nuclei counter, a laser ceilometer to measure cloud sizes, a micro rain radar to calculate raindrop size and its distribution, and a Ka-band cloud radar and a C-band doppler weather radar to help track the movement of rain-bearing systems over this zone.

WHY INDIA URGENTLY NEEDS A LEGAL FRAMEWORK FOR GENOMICS

The last two decades have seen unprecedented advances in genomics. These advancements have come in the background of our ability to sequence, analyse and interpret genomes at an unprecedented scale, along with an emerging and expanding corpus of evidence to act upon the genomic information for healthcare decision making. As the costs of sequencing continue to plummet, the next decade is expected to see widespread use of genome sequencing in clinical settings. The population-scale genome programmes currently under way in many large and small countries encompassing millions of genomes would form the foundation and fuel this paradigm shift. This throws open unprecedented new opportunities, as well as significant new challenges.

India has not been too far behind in human genomics, with the announcement of the first genome sequencing in 2009, 1,000 genomes in 2019 and recently concluded 10,000 genomes last week.

These efforts undoubtedly have contributed to significant insights into diseases in the population, estimates of the prevalence of many conditions, and more importantly serving as baseline data for decision making, apart from its utility in accelerating research. However, given the large, diverse and stratified population encompassing over 1.4 billion people, it would mean we need to be ambitious, while at the same time pragmatic, to ensure that the benefits of genomics are not lost out to our people. Apart from significant impetus in sequencing individuals at scale, to match similar efforts across the world, a well-thought-through legal and policy framework and wider and integral participation of industry is essential to accelerate this in India. Many countries have been proactive in formulating legal and policy frameworks to ensure the benefits of the technology are widely accessible while also accelerating research and development.

Equity and diversity

Data protection is one of the important components that urgently require a legal framework.

While the Health Ministry Steering committee clearances are required for research collaborations, the Director General of Foreign Trade notification enables samples to cross borders for commercial purposes. This has been widely exploited by large pharma and research organisations abroad to perform research on Indian samples. Despite significant established capacity and expertise in India, a significant number of samples from India are sequenced and/or analysed by companies abroad with little oversight and regulation.

Another issue is the fragmentation of genetic data,with a number of organisations providing genetic testing services, the data remain in silos. Well, aggregated summary data of these tests and results could provide key evidence for public health decision making. For example, summary data of variants and prevalence of variants reported from labs, without personal/ identifiable information could enable rough estimates of population-level prevalence of diseases and enable the development of cheaper genetic tests. Without a framework for collecting summary information, the data remains inaccessible for public health decision-making.

Discrimination based on genetic information is indeed a real concern due to the lack of laws preventing it. For example, a positive genetic test could potentially prevent one from accessing insurance or reimbursement, if the insurance claims it as a pre-existing condition. In fact, family members or even communities could also be discriminated against, given shared genetic variants and prevalence.

The U.S. formulated the Genetic Information Nondiscrimination Act in 2008 which prevents discrimination based on genetic information.

Equity and diversity in genetic data also is a concern that needs to be addressed especially in a diverse country like India, as unregulated market forces could widen the already acute barriers to access to better healthcare, especially for the poor and ethnic minorities. Lack of equity could result in less research, less insights/ evidence for clinical decision making and eventually exclusion of such groups from access to the benefits of genomic technologies.

Ensuring ethical use of the technology is paramount to both advance it and ensure that people benefit from the use, while also being protected from misuse. Evidence-based use of genomics and mechanisms to ensure the quality and validity of genomic tests is therefore key. In many countries, professional bodies have come forward to be the vanguards, putting together guidelines, policies and frameworks for fair use. Similar efforts supported by legal provisions are needed in India.

For a better future

The value of the right guidance and policies in advancing human genomics cannot be overstated. Effective regulations ensure a fair playing field. Clear policies foster trust among stakeholders, encouraging collaboration and innovation in this rapidly evolving field.

By emphasising ethical principles and aligning policies with societal needs, human genomics research can realise its full potential in advancing healthcare, improving outcomes, and enhancing the quality of life. With proper oversight, genomic research can revolutionise healthcare, offering personalised treatments, disease prevention strategies, and diagnostic tools.

India has the potential to be a leader by enabling genomics for the masses, at an unprecedented scale opening up unprecedented opportunities and heralding a better and healthier future for its people, but only if it puts the best foot forward.

GIG WORKERS SUFFER FROM LACK OF SOCIAL SECURITY, REGULATIONS: STUDY

Almost a third of app-based cab drivers work for over 14 hours a day, while more than 83% work more than 10 hours and 60% work over 12 hours, according to a study of more than 10,000 Indian cab drivers, gig and platform workers. It noted that social disparities make the situation worse, with over 60% of the drivers from the Scheduled Castes and the Scheduled Tribes working for over 14 hours a day, while only 16% from the unreserved category work such long hours.

The study was conducted by the People's Association in Grassroots Action and Movements, and the Indian Federation of App-based Transport Workers, with technical support from the University of Pennsylvania and Friedrich-Ebert-Stiftung India, a German foundation.

Authors of the study, which will be released on Monday, recommended stronger social security for app-based workers, and called on the government to exercise oversight on the fairness of algorithms and mechanisms used by platforms to monitor such workers. The report said that over 43% of participants in the study earn less than ₹500 a day, or ₹15,000 a month, after deducting all costs. It found that 34% of the app-based delivery persons earn less than ₹10,000 a month, while 78% spend over 10 hours daily at work.
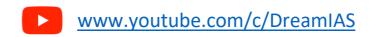
Noting the differences among workers from different castes, the report said that "these income disparities further exacerbate the already existing social inequalities and perpetuate cycles of poverty and distress within these communities".

Overall, 5,302 cab drivers and 5,028 delivery persons across eight cities — Delhi, Hyderabad, Bengaluru, Mumbai, Lucknow, Kolkata, Jaipur, and Indore — participated in a 50-question survey; 78% of the respondents were in the age group of 21 to 40 years.

Due to the demanding work hours, the study found that drivers are physically exhausted, and exposed to an increased risk of road traffic accidents, especially due to the '10-minute delivery at the doorstep' policy of certain e-commerce platforms. The lack of social and job security creates additional stress and leads to potential health issues. "It was found that 76% of the delivery persons are struggling to make their ends meet and over 80% of app-based cab drivers were not satisfied with the fares offered by the companies," the report said.

Another major complaint of the workers is the issue of customer misbehaviour.

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CRISIS OF TIME

The Karnataka water crisis has affected more than 7,000 villages, 1,100 wards, and 220 talukas thus far. The problem encompasses Mandya and Mysuru districts, where a major Cauvery river watershed and the Krishnaraja Sagar dam are located, and both important sources of water to Bengaluru. While the capital has hogged the headlines, the effects of the crisis are wider. Reports have suggested that the distal cause is the 'insufficient' rainfall last year, following the surplus in 2022, and the resulting under-'replenishment' of the Cauvery. Erratic rainfall is not new to Karnataka. A Coffee Agro-forestry Network (CAFNET) project, a decade ago, assessed 60 years of data and found the rainy season over Kodagu had shrunk by two weeks in three decades while annual rainfall seemed to undulate in a 12-14-year cycle. Yet, the crisis now has come as a surprise thanks to Bengaluru's lack of preparation, a travesty for being one of India's wealthiest urban municipalities and home to many research institutions. Bengaluru consumes roughly 1,400 million litres a day each from the Cauvery and groundwater reserves. The groundwater recharge rate is much lower while the Cauvery's was compromised by last year's 'deficient' rain. These are deficits only relative to Bengaluru's demand. The situation is worse further away from the city's centre. This is ironic because these areas do not receive piped water from the Cauvery and depend on groundwater and water tankers, whereas the city was engineered for centuries until the 19th to move away from water from distant sources and towards its surfeit of lakes. Seasonal lakes have since dwindled, while perennial lakes have been strangled by concretisation and sewage.

Climate change is a crisis of time. It precipitates non-linear changes that lead to disproportionate, and sometimes irreversible, outcomes, forcing underprepared governments to mount rapid responses to forces that have been festering for decades. Even if the erratic rainfall is unrelated to climate change, the phenomenon only promises more unpredictability. In this regard, Bengaluru, and most Indian cities, will achieve little when they mount stopgap measures in the event of a crisis and drop the long-term view once the crisis has ended. Rapid growth, such as Bengaluru has had this century, and short-termism cannot coexist. There is a need for bipartisan solutions that transcend the change in government every five years; a circular water economy that maximises the utility of every litre, reducing the city's dependence on external sources; and, not to forget, a clean and healthy Cauvery.

KOZHIKODE TO GET INDIA'S FIRST COOPERATIVES MUSEUM

Amul, Indian Coffee House, Indian Farmers Fertiliser Cooperative (IFFCO), Kerala Dinesh Beedi: these are brands from diverse sectors with one uniting factor — they are all cooperatives. These and many others will be showcased at the almost-ready 14-storey International Cooperative Museum (ICM) in the heart of Kozhikode, Kerala. It will be a destination to learn about India's cooperative movement that has a history of more than a century.

A ₹150-crore project of Karassery Service Co-operative Bank that began operations in 1994, the museum will be the second of its kind in the world (the first is in Toad Lane, the U.K., set up in 1844). There are more than 8 lakh cooperatives in India today, with a collective membership of 29 crore. Maharashtra has the maximum number of cooperative societies, at 2.3 lakh, with 5 crore members. The museum will showcase the success and achievements of cooperative movements in India, especially Kerala. The building will also house a wax museum and an art gallery.

The ICM is the brainchild of N.K. Abdurahiman, the chairperson of Karassery Bank. The initial work for the project began in 2016. The construction is being carried out by Uralungal Labour Contract Co-operative Society, another giant in Kerala's cooperative sector.

The initial plan was to complete the work in five years, but COVID-19 played spoilsport. With the change in technology over the last eight years, plans changed too. "We are planning to incorporate the latest technology, including artificial intelligence and virtual reality for the displays," said Mubasheer Ali Tahir, director (IT and Infrastructure) of Karassery Bank, who is in-charge of the work.

Meanwhile, the bank has approached the National Bank for Agriculture and Rural Development (NABARD) and the International Cooperative Alliance for support to make the project even bigger. "We have already contacted cooperatives in some countries in Europe and Japan for information and display materials," he said.

With its opening in less than six months, the ICM is expected to be a major tourist attraction in Kozhikode. "Our aim is to make the museum a great learning experience for people, especially students and researchers. We hope to do this with the support of experts and research scholars in the field," Mr. Abdurahiman said.

SIMPLICITY AND MODERNISATION: WHAT THE REDEVELOPED SABARMATI ASHRAM SEEKS TO ACHIEVE

On March 12, marking the 94th anniversary of the Dandi March that began from the Sabarmati Ashram, Prime Minister Narendra Modi performed the 'Ashram Bhoomi Vandana', a symbolic laying of the foundation stone, and unveiled the masterplan of the Rs 1,200 crore Gandhi Ashram Memorial and Precinct Development Project. The Prime Minister also inaugurated the redeveloped Kocharab ashram from Ahmedabad.

What's in the proposed masterplan for the Sabarmati Ashram?

Prepared by Ahmedabad-based HCP Design, Planning and Management Pvt Ltd (HCPDPM) led by Bimal Patel, the masterplan proposes to restore, conserve, and rebuild about half of the 63 structures that existed in the original ashram that was spread over 120 acres of land on the banks of the Sabarmati River on the outskirts of Ahmedabad. In all, 36 buildings will be restored.

The place that is popularly known as Sabarmati Ashram currently, and is open to the public, covers only 5 acres of this original space. It is managed by the Sabarmati Ashram Preservation and Memorial Trust (SAPMT).

The new memorial will be spread over 55 acres, and the entire precincts will sprawl over 322 acres. An official said that if an hour is needed for a quick tour of the current Gandhi Ashram, it will take at least 6-7 hours for a visitor to tour the entire expanded premises when the project is completed.

According to the masterplan, 20 buildings will be conserved — this list includes Hriday Kunj, the residence of Mahatma Gandhi and Kasturba; the Gandhi Memorial Museum designed by the late Charles Correa which opened in 1963; Nandini Niwas, which served as the guest house; Manav Sadhna, run by Jayesh Patel, son of its Gandhian founder Ishwarbhai Patel, and the son-in-law of Uttar Pradesh Governor Anandi Patel; Vinoba-Mira Kutir, where Vinoba Bhave stayed; the Jay Jagat Amphitheatre; and the Junu Rasodu (Old Kitchen).

Thirteen buildings — which include two gaushalas, Sardar Vallabhbhai Patel's office, and Dus Ordi (Ten Rooms) — will be restored.

And three buildings — the Dehla Puni Kendra (place for storing cotton bales), Saat Ordi (Seven Rooms), and Anand Bhawan Sanghralaya — are proposed to be rebuilt.

What is the historical importance of the Gandhi Ashram at Sabarmati?

Gandhi set up five settlements during his lifetime — two in South Africa (Phoenix Settlement in Natal, and Tolstoy Farm outside Johannesburg), where he lived from 1893 to 1914, and three in India, where he arrived in January 1915.

The settlements were "places of continuous experiment and search", Neelkanth Chhaya, a former professor at CEPT University, wrote in the recently released book, 'Gandhi's Places: An Architectural Documentation', co-authored by Ahmedabad architect Riyaz Tayyibji and Gandhian scholar Tridip Suhrud.

Gandhi set up the first ashram in Ahmedabad in Kocharab in 1915. It was an "already built space, rented for use by the ashram and was therefore not according to Gandhi's own ideas of how such a place should be designed and built", Chhaya wrote.

Thus, in 1917, Gandhi founded the ashram at Sabarmati — his fourth ashram — on the western bank of the Sabarmati River. The location was to the north of the village of Juna Vadaj, beyond the Chandrabhaga rivulet, a tributary of the Sabarmati. On the opposite bank of the river from the ashram "stood the skyline of the city, marked by the many chimneys of textile mills", Chhaya wrote.

The ashram at Sabarmati is seen to be the most important in Gandhi's life and work. It was a space that Gandhi designed himself, and was built using local material. He spent the most time here, and it was the cradle of eight major movements related to India's struggle for independence.

Apart from the Dandi March that Gandhi began from here on March 12, 1930, he also launched the Champaran Satyagraha (1917), the Ahmedabad mills strike and Kheda Satyagraha (1918), the Khadi movement (1918), the Rowlatt Act and Khilafat Movements (1919), and the Non-Cooperation movement (1920) while living in Sabarmati.

What will be added to the existing ashram as part of the redevelopment project?

According to the masterplan, the redeveloped memorial and precincts will have an orientation centre, a scholars' residency, a parking area, a water harvesting pond, souvenir shops, two exhibition areas, a cafeteria, a workshop area, and a grand entrance plaza.

The redevelopment and restoration plan is based on an aerial image from 1949 of the ashram, and a 200-page concept note prepared by the SAPMT based on the ashram's documented accounts, brochures, and "a study of the visitors' books of last ten years to understand what people want from this space", a source closely associated with the project said.

The plan for the orientation centre is based on such feedback, especially from educational institutions that brought students to visit the ashram. The ashram has been maintaining a visitors' book since 1963 — eminent visitors include Queen Elizabeth (1961), the Dalai Lama (1984-85), former Irish President Mary Robinson (1993), South Africa's former President Nelson Mandela (1995), and former US President Bill Clinton (2001).

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The concept note also has a brief on what each of the buildings in the ashram premises "should be like". After distilling the opinions of visitors over the last 10 years in the designated book, the SAPMT has proposed that the redeveloped ashram should maintain its simplicity and "ethos".

How will the existing buildings be used once the redevelopment is done?

The existing buildings will tell the story of the ashram, host exhibitions and galleries on Gandhi's works in India and abroad, describe his movements and yatras, and have information about his daily routine, important events of his life, and his engagement with children and the youth. There will be information on his key associates and important visitors to the ashram before 1930, when Gandhi and Kasturba lived there.

There will also be a feature on the "principal Ashramites" from 1917 to 1951, and a gallery of women leaders. One of the buildings will house charkhas and khadi production centres. A section on "Gandhiji's Legacy" will contain manuscripts and honours he got, exchanges with the postal department, journals, and texts.

At least 261 of the 263 residents of the ashram premises, called Ashramwasis, have been evacuated and compensated to make way for the project. The total compensation for relocation has been Rs 375 crore.

And what will be new in the redeveloped Ashram?

To begin with, Ashram Road, one of Ahmedabad's oldest commercial arteries, will be closed from where the Gandhi Ashram begins in order to consolidate the areas that are now on the two sides of the road into one contiguous space. This is likely to happen in phases beginning March 12, and an alternative road will be opened to commuters.

The new buildings will largely house administrative offices, meeting rooms, a space for interactive workshops for paper-making, leather-making, Gandhian history, lectures and seminars, an "experience centre" and public conveniences.

The new spaces will "enable the visitors to recreate and live a glimpse of Gandhiji's daily routine", the Gujarat government has said in a note. "Hands-on workshops on activities such as spinning-wheel, producing hand-made textile and paper, will also be incorporated at the Ashram. These will allow the visitors to immerse themselves in Gandhiji's principles of sustainability and self-sufficiency," the note says.

What will the declared efforts to retain the ethos, and the simplicity of the Ashram entail?

When the project was announced in 2021, concerns were raised that it would turn the Ashram into a "Gandhi theme park". The Gujarat government had assured the Ashram trustees at the time that there would be no "sarkarikaran" (governmentalisation) of the Ashram.

The 200-page concept note that SAPMT prepared in consultation with other Gandhian institutions across the country emphasised that simplicity, one of the values that Gandhi practised and cherished, should be maintained, and that no fees should be charged either from visitors, or from resident research scholars. The note also said that "no red carpet" should be laid out for VVIP visitors to the Ashram, a source in the know said.

"None of the existing structures dating back to that time will be touched," a source connected with the projects said. The source also said that the development project would use "zero" steel,

cement, and concrete, and would instead use local materials such as lime plaster, terracotta roof tiles, and Valsadi teak.

The Gujarat government has said that "utmost care will be taken to retain [the Ashram's] timeless essence while refashioning it with a new outlook, keeping in mind the sacrosanct goal of abiding by the Ashram's original architectural simplicity and essence." The aim is to "furbish the Ashram in a manner that it exudes greenery, serenity and lush tranquillity to all the visitors", it has said.

According to the statement, the rejuvenation project would be taken forward with "utmost sensitivity and respect to the fact that the Ashram's existence goes beyond the idea of mere physical space". The sacred Ashram, it says, "stands as a symbol of sacrifice and perseverance of freedom fighters, a haven for introspection, and a crucible of moral values", where "Gandhiji's legacy of simplicity and profound ideology resonates through every corner".

IN GUJARAT, HARNESSING THE VALUE OF DUNG TO BOOST FARMERS' INCOME

From a distance, it looks like any CNG (compressed natural gas) outlet. But the one on the Deesa-Tharad highway in Gujarat's Banaskantha district, catering to 90-100 vehicles daily, is India's first and only gas-filling station based on dung from cattle and buffaloes. The 'BioCNG' outlet in Dama village of Deesa taluka, belonging to the Banaskantha District Co-operative Milk Producers' Union, sells 550-600 kg of gas per day generated from 40 tonnes of dung at an adjoining four-acre plant.

Dung facts

An average adult bovine animal discharges 15-20 kg of fresh dung daily, while calves give out 5-10 kg. Fresh dung contains 80-85% water; one kg weighs hardly 200 grams on drying.

A biogas plant requires fresh dung, which contains methane along with water. The methane is produced by bovines inside their rumen (first of four stomach compartments), where the plant material they eat gets fermented or broken down by microorganisms before further digestion. Carbohydrate fermentation leads to production of carbon-dioxide (CO_2) and hydrogen. These are used by archaea (bacteria-like microbes in the rumen) to produce methane, which the animal expels either as gas or in the dung.

The dung left to dry in the open releases both water and methane. To realise its fuel value, the dung has to, therefore, be collected and delivered in fresh form at the biogas plant. "We purchase about 40,000 kg daily from 2,700-2,800 animals of 140-150 farmers. The farmers are from five villages within 10 km of our plant," said Priyank Mehta, Senior Executive (BioCNG) at the Banaskantha Union.

The union — India's largest dairy concern, which procured an average 72.03 lakh kg per day (LKPD) of milk in 2022-23, including 5.74 LKPD from outside Gujarat — is paying farmers Rs 1/kg and bearing the cost of transporting the dung by five tractor-trolleys doing two trips a day.

Fuel plus fertiliser

The raw dung unloaded at the BioCNG plant is mixed with an equal quantity of water. The resultant slurry is then pumped into an anaerobic digester.

Anaerobic digestion is a process by which the complex organic matter in dung is broken down in the absence of oxygen to produce biogas. The digestion, taking place in a 3,000 cubic-meter sealed vessel reactor, involves four successive stages: hydrolysis (break-down of organic matter into

simple molecules), acidogenesis (their conversion into volatile fatty acids), acetogenesis (production of acetic acid, CO2 and hydrogen) and methanogenesis (biogas generation).

"The slurry, formed by mixing the dung with water for 2-3 hours, ensures proper hydrolysis in the digester over 35 days. From 40 tonnes of dung, we get 2,000 cubic meters of raw biogas containing 55-60% methane, 35-45% CO2, and 1-2% hydrogen sulphide (H2S) and moisture," explained Mehta.

The raw gas is purified for removing CO2 (through vacuum pressure swing adsorption or VPSA process), H2S (using activated carbon filter) and moisture (with air dryer separator). The end-product, purified (to 96-97% methane, 2-3% CO2 and below 0.1% H2S and moisture) and compressed, is stored in cascades. This compressed biogas (CBG), conveyed through pipelines to the dispensers at the fuel station, is what's being sold as BioCNG at Rs 72/kg.

But it isn't just fuel

The slurry, from mixing 40,000 litres of water with 40,000 kg of dung, is a source of bio-fertiliser. This residue of 75,000-78,000 kg, coming out after anaerobic digestion and biogas production, undergoes dewatering in a solid-liquid separator.

The separated solid (6,000-8,000 kg) is decomposed in aerobic condition (presence of oxygen) for sale as PROM (phosphate-rich organic manure, incorporating rock phosphate and phosphate solubilising bacteria) or compost (after adding neem and castor cake, sugarcane press mud and microbial consortia). Out of the liquid part, 30,000-35,000 litres is re-used for mixing in the digester and the balance sold as liquid fermented organic manure.

The Banaskantha Union is currently marketing 8,000-10,000 kg of bio-fertiliser daily, with PROM (also called BioDAP, as a substitute for di-ammonium phosphate) fetching Rs 15-16/kg and compost Rs 8-10/kg. At an average realisation of Rs 12/kg, the Union's revenues from bio-fertiliser sales are actually higher than from the 550-600 kg of BioCNG at Rs 72/kg.

7,396 GOLDEN LANGURS IN INDIA, REVEALS SURVEY

There are an estimated 7,396 golden langurs in India, the latest survey of the primate has revealed. The comprehensive population estimation of the endangered primate was carried out in two phases by the Primate Research Centre NE India (PRCNE), Assam Forest Department, Bodoland Territorial Council, Salim Ali Centre for Ornithology and Natural History (SACON), and Conservation Himalayas.

The entire distribution range of the golden langur (Trachypithecus geei) covers the Manas Biosphere Reserve and all fragmented forests in the western part of Assam.

In the first phase during March-April 2020, the survey covered the western part of the Manas Biosphere Reserve, including Ripu Reserved Forest — a major part of it was recently upgraded to Raimona National Park – Chirang Reserve Forest, Manas Reserve Forest, and Manas National Park up to the western bank of the Manas River.

"The population of golden langurs is divided into two major sub-populations. The northern extended population, which encompasses the western part of the Manas Biosphere Reserve, extending from the Sankosh River to the Manas river up to the India-Bhutan border along the northern side of National Highway 27 and State Highway 2," Dr. Biswas explained.

The northern population of the primate with the golden sheen was estimated at 5,566 in 534 groups and 23 lone males. The population of the southern fragments was estimated at 1,830 langurs in 173 groups and eight lone males.

MEANT TO REDUCE STRESS ON BIG CATS, WHY SAFARI PARKS MAY BE A DOUBLE-EDGED SWORD

On March 6, the Supreme Court said it was "inclined to approve the establishment of the Tiger Safari at Pakhrau" in the buffer area of Corbett tiger reserve. However, safari parks are meant only for "injured, conflicted, or orphaned" local tigers, and not those sourced from zoos, the court said, and constituted a committee to frame guidelines for such facilities within three months.

The court also gave CBI three months to complete its investigation into alleged irregularities inside the Corbett tiger reserve, as directed by the Uttarakhand High Court.

What does a "tiger safari" really mean?

Tiger safari is not defined under The Wildlife (Protection) Act, 1972 which says "no construction of commercial tourist lodges, hotels, zoos and safari parks shall be undertaken inside a sanctuary except with the prior approval of the National Board" [for Wild Life] constituted under the Act.

The concept of a tiger safari in the wild was first envisaged in the Guidelines for Tourism issued by the National Tiger Conservation Authority (NTCA) in 2012, which provided for such establishments in the buffer areas of tiger reserves "which experience immense tourist influx in the core/ critical tiger habitat for viewing tigers".

Four years later, the NTCA issued guidelines to establish "Tiger Safaris" in the buffer and fringe areas of tiger reserves for injured, conflicted, or orphaned tigers, while underlining that no tiger shall be obtained from a zoo.

In 2019, however, the NTCA allowed animals to be brought from zoos for tiger safari parks, and gave the Central Zoo Authority (CZA) the power to select such animals.

Housing zoo tigers or other captive animals in a tiger habitat is obviously a bad idea, which would put wild tigers and other wildlife at risk of disease. Fittingly, the top court held that the NTCA's understanding that tiger safaris are merely zoos built inside tiger reserves, "would be totally contrary to the purpose of the Tiger Conservation".

But why build a tiger safari in a forest?

The 2012 NTCA guidelines justified safari parks as a means to lessen the tourism load inside tiger reserves that causes stress on wildlife.

Second, many are against packing off animals that are unfit for the wild — they may be injured, orphaned, or given to conflict — to faraway zoos. Safari parks, they argue, help hold such animals captive in their natural surroundings.

Third, some stakeholders argue that buffer areas were designated to allow activities that support the livelihood and development needs of local communities — and safari parks generate money and, in turn, local goodwill for the tiger.

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And what is the counter-argument?

Records show that efforts to distribute demand seldom work in tiger reserves. Instead of bringing down the number of vehicles crowding around the tiger, opening new safari routes have ended up inviting more tourists.

Also, the very idea of displaying "rescued" tigers in safari parks is a departure from the practice of keeping such distressed animals in non-display facilities. Even the 2016 guidelines were hesitant to make this policy shift, and made it mandatory for NTCA to assess every "recovered/ treated animal" before putting them on display in safari parks.

Third, housing local "rescued" wildlife in their natural environment is an idea driven by concerns for animal welfare. But conservationists say a captive animal will be captive anywhere. They argue that building safari parks for "rescued" tigers inside tiger reserves prioritises the welfare of individual tigers over the interest of the species, since such establishments are bound to cause disturbance in wild habitats.

What is the ground reality in Corbett and elsewhere?

The site selected for the Pakhrau Safari Park is on the southwestern fringe of Corbett Tiger Reserve, bordering farmlands in Uttar Pradesh. Uttarakhand forest department officers argue that the dispersal of tigers and other wildlife to the west towards Rajaji tiger reserve happens mostly to the north of the proposed safari park, which can be accessed by an existing forest road, and will not require the cutting of trees.

Some local stakeholders say that the Ramnagar area on the eastern side of the reserve has hogged all the benefits of Corbett's tiger tourism so far — and the Pakhrau Safari Park carries the promise of livelihood and development on the other side.

However, introducing animals in permanent facilities built in the wild invariably creates stress for territorial species — and the resident leopards in Nahargarh often reacted aggressively to the captive ones housed in the safari park.

So what is the road ahead for safari parks in tiger reserves?

The guidelines for tiger safari parks are awaited from the SC-appointed expert committee. However, a one-size-fits-all formula is unlikely to be helpful, senior state forest officials cautioned. The more prudent approach would be to lay down guiding principles for local authorities to find site-specific solutions, they said.

It is also important to avoid the temptation of making tiger safari parks a routine feature of tiger reserves, experts said. The 2016 guidelines had said that a tiger safari can be proposed only by tiger reserves that have already utilised 100% of their tourist carrying capacity.

WHAT IS CUTTACK'S FAMED SILVER FILIGREE WORK, WHICH RECENTLY RECEIVED GI TAG

The famous Rupa Tarakasi, or silver filigree work of Odisha's Cuttack, has received the geographical indication (GI) tag.

The Odisha State Cooperative Handicrafts Corporation Limited (Utkalika) had applied for the tag.

A GI tag is conferred upon products originating from a specific geographical region, signifying unique characteristics and qualities. Essentially, it serves as a trademark in the international market.

Rupa Tarakasi

Odisha's Cuttack is known for its silver filigree work, of intricate design and fine craftsmanship. In Odia, "tara" means wire and "kasi" means to design. Thus, as part of Rupa Tarakasi, silver bricks are transformed into thin fine wires or foils and used to create jewellery or showpieces.

Origin

While the exact origin of the filigree art in Cuttack is not clear, it is known to have existed as far back as the 12th century. The art form received considerable patronage under the Mughals. Over the years, as Cuttack transitioned through the hands of different rulers, the silver filigree took on a new form with each.

History

Document submitted by the Odisha government before the GI registry said: "The silver filigree work in which the people of Cuttack have attained such surprising skill and delicacy is identical in character with that of Arabia, Malta, Genoa, Norway, Sweden and Denmark, and with the filigree work of ancient Greece, Byzantium, and Etruria, and was probably carried into the West by the Phoenicians and Arabs, and into Scandinavia by the Normans and in the course also of the medieval trade between Turkestan and Russia.

In Cuttack the work is generally done by boys, whose sensitive fingers, and keener sight enable them to put the fine silver threads together with the necessary rapidity and accuracy. The filigree work is quite distinct in character from the indigenous silver jewellery of the country."

Popular product categories

The popular product categories now found in Cuttack are jewellery, decorative artifacts, accessories, home décor and religious/cultural pieces. The iconic items found only in Cuttack are the Durga Puja Medha (silver decorations for the Durga idol and pandal), Odissi jewellery, religious/cultural pieces linked directly to the customs of Odisha, and the Dama chain.

Evolution and growth

While silver filigree as a craft has transitioned over time, its core process has stayed the same over the centuries, with only a few changes in tools and components. The majority of the change has come on the design and product fronts.

While different grades of silver are used in the main metal alloy, the craftsmen also use other metals like copper, zinc, cadmium and tin.

GI TAG FOR MAJULI MASKS OF ASSAM: HISTORY, CULTURAL SIGNIFICANCE OF THE CENTURIES-OLD ART FORM

Adding to their growing national and international recognition, the traditional Majuli masks in Assam were given a Geographical Indication (GI) tag by the Centre on Monday (March 4). Majuli manuscript painting also got the GI label.

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A GI tag is conferred upon products originating from a specific geographical region, signifying unique characteristics and qualities. Essentially, it serves as a trademark in the international market.

Majuli, the largest river island in the world and the seat of Assam's neo-Vaishnavite tradition, has been home to the art of mask-making since the 16th century. Today, many of its traditional practitioners are working to take the art out of their traditional place in sattras, or monasteries, and give them a new, contemporary life.

What are Majuli masks?

The handmade masks are traditionally used to depict characters in bhaonas, or theatrical performances with devotional messages under the neo-Vaishnavite tradition, introduced by the 15th-16th century reformer saint Srimanta Sankardeva. The masks can depict gods, goddesses, demons, animals and birds — Ravana, Garuda, Narasimha, Hanuman, Varaha Surpanakha all feature among the masks.

They can range in size from those covering just the face (mukh mukha), which take around five days to make, to those covering the whole head and body of the performer (cho mukha), which can take up to one-and-a-half months to make.

According to the application made for the patent, the masks are made of bamboo, clay, dung, cloth, cotton, wood and other materials available in the riverine surroundings of their makers.

Why is the art practised in monasteries?

Sattras are monastic institutions established by Srimanta Sankardev and his disciples as centres of religious, social and cultural reform. Today, they are also centres of traditional performing arts such as borgeet (songs), xattriya (dance) and bhaona (theatre), which are an integral part of the Sankardev tradition.

Majuli has 22 sattras, and the patent application states that the mask-making tradition is by and large concentrated in four of them — Samaguri Sattra, Natun Samaguri Sattra, Bihimpur Sattra and Alengi Narasimha Sattra.

The makers of the masks

Hemchandra Goswami is the sattradhikar or the administrative head of the Samaguri Sattra, and a well-known practitioner of the traditional mask-making art. According to him, masks had historically been made in all sattras, but the practice gradually died out in most over time.

"The arts of dance, song and musical instruments are closely tied to the sattras and the one who began this was Assam's guru Srimanta Sankardev. In the 16th century, he established this art of masks through a play called Chinha Jatra. The word means explaining through images. At that time, to attract ordinary people to Krishna bhakti, he had presented the play in his birthplace Batadrava. There, he presented two masks, which were worn to express what a person's face could not. One was the four-headed Brahma and the other was Garuda," Goswami said.

What is Majuli manuscript painting, which also received the GI tag?

It is a form of painting — also originating in the 16th century — done on sanchi pat, or manuscripts made of the bark of the sanchi or agar tree, using homemade ink.

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The earliest example of an illustrated manuscript is said to be a rendering of the Adya Dasama of the Bhagwat Purana in Assamese by Srimanta Sankardev. This art was patronised by the Ahom kings. It continues to be practised in every sattra in Majuli.

MEHRAULI, A PLACE OF RICH HISTORY

Mehrauli is one of the seven important cities that make up Delhi apart from Siri, Tughlaqabad, Jahanpanah and Shahjahanabad. Hidden in every nook and corner are architectural marvels. There are a number of tombs of prominent people from the Sultanate (1206 to 1506) and Mughal (1506 to 1857) era. These tombs are usually placed near the dargahs of saints. Hence, the tombs of the later Mughals are near the dargah of Khwaja Qutbuddin Bakhtiyar Kaki in Mehrauli or Humayun's tomb near Nizamuddin Auliya's dargah.

Home to 55 historic structures built by various rulers, including the Khaljis, Tughlaqs, Lodhis, Mughals, and the British, the Mehrauli Archaeological Park (MAP), spread over 200 acres, is a UNESCO World Heritage site and was revamped recently for the G-20 summit.There is a lot to see, from the Jamali Kamali Mosque, Metcalfe House, Rajon ki Baoli to the tombs of Mamluk king Ghiyas-ud-din Balban and Mughal governor, Shah Quli Khan.

Start from the 16th Century tomb of Adham Khan and his mother, Maham Anaga. It is a reminder of Akbar's wrath on Adham for murdering his favourite general and prime minister Atgah Khan. This Mughal-era tomb wasbuilt in an octagonal shape with low towers at corners. It consists of Lodhi-style domed octagonal chambers with verandahs on each side. Nicknamed Bhool-Bhulaiya (labyrinth) for its maze-like passages, it stands on the ramparts of Lal Kot, North of Qutub Minar. Converted into British officer Blake's residence, this also served as a police station and post office before being restored by Viceroy Lord Curzon.

BUSINESS & ECONOMICS

WHAT ARE THE FACTORS PUSHING BITCOIN TO A NEW ALL-TIME HIGH?

The story so far:

On March 5, Bitcoin, the largest cryptocurrency by market capitalisation, broke its previous price record to hit a new all-time high of $69,170.63, according to the CoinMarketCap live tracker. The last high was $68,789.63, which Bitcoin achieved in November 2021. After this event in 2021, the coin crashed to multi-year lows and the crypto market was battered by company collapses and regulatory hits.

What are the factors behind Bitcoin's rise in price?

Multiple factors could have contributed to Bitcoin's price gains this year.

The market is recovering from the shock of Russia's invasion of Ukraine that started in 2022, as well as the collapse of cryptocurrencies LUNA/UST and the subsequent fall of trading platforms such as FTX that same year.

In addition to a market recovery, the U.S. Securities and Exchange Commission (SEC), known for taking strong legal action against crypto companies, approved the first spot exchange traded funds (ETFs) for Bitcoin. This move told cautious investors as well as financial institutions that the regulatory landscape was perhaps beginning to open up, and it encouraged more traditional investors to explore the world of blockchain-based assets. According to CoinShares' Digital Asset Fund Flows weekly report released on Monday, Bitcoin alone saw $1.73 billion in inflows. The total inflows came to $1.84 billion across digital asset investment products in general, showing just how dominant Bitcoin is.

Furthermore, Bitcoin investors and traders are preparing for the Bitcoin halving event predicted for this April. Many investors and analysts believe this engineered scarcity mechanism will help drive up the price of the cryptocurrency. This sense of expectation and hype usually encourages investors to buy more Bitcoin, and can help push prices up.

What is the Bitcoin halving?

The Bitcoin halving takes place about every four years and sees the crypto mining reward cut in half. While this may sound like a loss rather than a cause for price rises, there is more to the process.

Bitcoin miners use advanced computer equipment and enter an energy-intensive race in order to digitally "mine" their coins. This means they get some Bitcoin as a reward for helping the blockchain grow by processing other users' transactions. While the mining reward is currently 6.25 BTC, this will be halved around April so that fewer coins are introduced into the crypto economy.

Bitcoin has a maximum supply of 21 million BTC, and more than 19 million coins are already in circulation. The halving tightens this process so that the coins will continue to be released at slower and slower rates, likely extending into the next century as well.

The Bitcoin halving is meant to automatically keep the asset scarce, based on mathematics principles. This is unlike paper money, which can be printed on the basis of human decisions.

What should new crypto investors know?

The dangers of volatility cannot be stressed enough.

New investors who are buying Bitcoin or other blockchain-based assets must know just how quickly they can lose their hard-earned money.

For instance, Bitcoin hit a daily high of $69,170.63 on March 5, while the 24-hour low was $59,323.91 — roughly a $10,000 difference. This means looking away from your device for even just a few minutes can drastically change your fortune. When Bitcoin reaches new high prices, many speculators usually sell their assets to exit the market with what they have, or they buy the assets at a profit again after prices fall.

What is the market like for the second largest cryptocurrency?

Bitcoin's market cap is more than $1 trillion this week, making it the leading crypto. Second in line is Ethereum, with a currency called Ether (or ETH for short). However, Ethereum's market cap was less than $500 billion this week.

While Bitcoin's origin and founder (or founders) are largely a mystery, Ethereum has a relatively more corporate structure, though developers worldwide are free to participate in its ecosystem that is known for enabling self-executing commands called smart contracts. People can also establish their own crypto tokens using Ethereum's underlying infrastructure, or build other blockchain services.

Ether used to be digitally mined like Bitcoin, but the platform has switched to the less energy-hungry 'proof-of-stake' model as it continues to grow.

Ether prices tend to echo those of Bitcoin, so ETH also enjoyed a lift this week as Bitcoin hit its all-time high. Ether crossed the $3,900 threshold, but it is yet to beat its all-time high price of $4,891.70 from November 16, 2021, as per CoinMarketCap.

FOOD FACTOR

The latest retail inflation data, yet again, underscores how volatile food prices continue to hold hostage not only broader inflation but also the lynchpin of economic growth, namely, personal consumption. While February's headline Consumer Price Index (CPI)-based reading remained virtually unchanged from the preceding month, at 5.09%, the pace of food price gains computed from the Consumer Food Price Index accelerated by 36 basis points to 8.66%. Vegetable prices continued to remain the biggest concern, with the third-heaviest food category in the food and beverages sub group of the CPI registering 30.3% inflation year-on-year, a disconcerting 315 basis points acceleration from January's reading. And inflation in cereals, the largest weight among foods in the CPI, also remained high at 7.6%, just marginally slower than the preceding month's 7.83% pace. Among vegetables, the potato-onion-tomato triumvirate, which is the most-widely consumed group nationwide and constitutes more than a third of the weight in the category, led the charge. Potato prices moved from an almost 2% year-on-year deflation in January to a 12.4% inflation, onion logged 22.1% inflation and tomato's price gains quickened by close to 400 basis points to a six-month high of 42%. A look at the Department of Consumer Affairs' daily price

monitoring dashboard shows little respite on this front, with average retail prices of potato, onion and tomato reigning 21.3%, 41.4% and 35.2% higher, respectively, as on March 14 from a year earlier.

Clearly, the government's supply side measures, including a three-month-old ban on export of onions, has had little impact on cooling prices of these politically sensitive food inputs. And the outlook too is far from reassuring. Onion output in the 2023-24 horticulture crop year is seen more than 15.6% lower than last year and production of potato is projected to log an almost 2% deficit as in the Ministry of Agriculture and Farmers Welfare's First Advance Estimates released on March 7. The water storage data from the Central Water Commission, showing live storage at 150 reservoirs across the country as on March 14 at 40% of capacity, and trailing both the 10-year average and the year-earlier levels, also does not portend well for summer-sown crops. This is particularly so in the southern region, where the storage deficit compared with the 10-year average is a most acute 29%. Reserve Bank of India Deputy Governor Michael Patra aptly summed up the risks to the economy from persistently high food inflation in his statement to the Monetary Policy Committee last month when he observed: "private consumption, which accounts for 57% of GDP, is languishing under the strain of still elevated food inflation. This is particularly telling in rural areas. Inflation has to be restrained to its target for growth to be inclusive and sustained." Policymakers have their task cut out if the economy is to avoid a summer of discontent as the country heads to the polls.

WHAT ARE THE HURDLES TO FAIR GLOBAL TRADE?

The story so far:

The World Trade Organization (WTO) held its 13th Ministerial Conference (MC13) at Abu Dhabi in the UAE between February 26 and March 2, which was attended by 166 member countries. At the conclusion of the meeting, a ministerial declaration was adopted that set out a forward-looking, reform agenda for the 30-year-old organisation, which is tasked with overseeing global trade regulations and facilitating smooth cross-border flow of goods, services, investment and people. The members resolved "to preserve and strengthen the ability of the multilateral trading system, with the WTO at its core, to provide meaningful impetus to respond to current trade challenges, take advantage of available opportunities, and ensure the WTO's proper functioning".

What are some key decisions?

The ministers took a number of decisions, including renewing the commitment to have a fully and well-functioning dispute settlement system by 2024 and to improve use of the special and differential treatment (S&DT) provisions for developing and least developed countries (LDCs).

Some of the biggest challenges to the multilateral trading order have come from an increasingly vocal movement across different countries, particularly in developed economies, that seeks to turn inwards and move away from a globalised and relatively harmonised-tariffs approach to world trade. This has come even as the ongoing conflicts in various parts of the world, combined with the sanctions that some states have applied on others over these conflicts, threaten supply chains and the smooth flow of goods and services worldwide. The relative levels of development among the richer nations and the LDCs have also focussed attention on the need to ensure norms do not adopt a 'one-size-fits-all' approach.

How did India approach the deliberations?

A central focus of the Indian delegation headed by Union Commerce Minister Piyush Goyal was to try and find resolution on a key concern for India and several other developing economies pertaining to the public stockholding (PSH) programme, which is at the heart of ensuring food security in their countries. The PSH is a vital policy tool for the Indian government to procure crops such as rice and wheat from farmers at minimum support price (MSP), and subsequently store and distribute the foodgrains to the poor. The MSP is normally higher than the prevailing market rates and the government supplies the cereals at a low price to ensure food security for the country's more than 800 million beneficiaries. However, under WTO norms, a member nation's food subsidy bill should not exceed 10% of the value of production based on the reference price of 1986-88. Developed nations contend that these kinds of programmes distort global trade in foodgrains, especially by either potentially pushing up or depressing global grain prices.

Some of the other key concerns are related to the fisheries sector and a moratorium on customs duties on e-commerce trade. India, as a low subsidiser of the fisheries sector, had mooted that developing countries be allowed to give subsidies to their poor fishermen to catch fish within the nation's exclusive economic zones (EEZs), or up to 200 nautical miles from the shore. It also proposed rich countries needed to stop providing any kind of subsidies for fishing that their nation's industrialised vessels may carry out in the high seas beyond the EEZs, at least for the next 25 years.

And on e-commerce, India along with several developing nations has been consistently seeking an end to the moratorium in place since 1998 on their ability to levy customs duties on cross-border e-commerce. India has argued that this undermines its ability to generate revenue from a rapidly burgeoning area of global trade.

What were the outcomes at MC13?

On the agriculture front, as the WTO's Director General Ngozi Okonjo-Iweala acknowledged in her closing speech, this was the first time that there has been a text. "This has been in the works for the past two decades plus. At MC12 we couldn't even agree on a text. Even though there are challenges, for the first time we have a text," she observed. Also, on the fisheries front, a consensus accord now appears close to reaching fruition by mid-year.

However, disappointingly for India, the exemption from customs duties for e-commerce will now carry on for at least two more years.

A FRESH STANCE

On Sunday, India signed a Trade and Economic Partnership Agreement (TEPA) with a bloc of four European countries — Iceland, Liechtenstein, Norway and Switzerland, formally known as the European Free Trade Association (EFTA). The pact has been in the works since 2008 but slipped off India's to-do list after the UPA government's exit. In market access terms, the deal offers more room for Indian services firms, with easier visa rules, so that they can also tap other European markets using these countries as a base. Professionals (architects, accountants and nurses), can also expect more opportunities. Most goods exports already get duty-free treatment in Switzerland, India's largest EFTA trade partner, so the lynchpin in this deal is the in-built goal to nudge $100 billion of fresh foreign direct investment into India and create a million jobs over 15 years. Indian consumers can expect cheaper wines and chocolates, while producers may access

cheaper machinery. India's tariff cuts are linked to investment inflows, but a full assessment of those outcomes will only happen after 20 years, so persistent hard work is needed on both sides to realise these goals.

For India, the speed with which the EFTA deal has been dusted off and sealed within months of resuming negotiations is creditable. It constitutes the second major trade pact in recent years since the deal with the United Arab Emirates, and the first such arrangement with a western nations' grouping. An interim deal with Australia that kicked in late 2022, is yet to be followed through to a comprehensive agreement. Parleys for a deal with the Gulf Cooperation Council, mooted since 2004, are yet to take off. A deal with Canada has been waylaid by political frictions. Talks are on with the European Union (EU) and the United Kingdom, with the latter likely in the last mile. The EFTA deal assumes greater symbolic significance than the size of trade flows involved. It signals that India's apparent aversion to such trade pacts since 2014, capped by its walkout from the Regional Comprehensive Economic Partnership in 2019, is likely a thing of the past. A country that has often been criticised for its high import tariffs and protectionist approach, now seems willing and able to walk the talk on free trade when many nations are turning protectionist. The EFTA pact, expected to be ratified by the end of 2024, also marks the first time that India has agreed to include non-trade issues such as labour, human rights, environment and gender in an economic agreement. Whether the inclusion of these issues in trade deals is necessary can be debated, but this is a positive augury for potential allies such as the EU that consider them critical.

CENTRAL TRANSFERS AND THE ISSUE OF SHARES OF SOME STATES

There are many issues that the Sixteenth Finance Commission will have to deal with. In this article, we focus on one issue which has been raised by many States, particularly those in the south of India. The issue (or the complaint) is that these States have been facing a decline in their share out of the resources transferred from the Centre to the States, from Finance Commission to Finance Commission.

In finding a solution to this issue, we need to look at: which States have been gaining and which are losing their share over time; the criteria of horizontal distribution which has led to some States steadily losing their share; and what can be done to reverse this trend.

In Table 1, the shares of groups of States and those for selected States are shown,. In the case of the southern States, there has been a steady fall in their share, from 19.785% to 15.800% from the Twelfth Finance Commission to the Fifteenth Finance Commission (final report). In a comparison of these two Commissions, the northern and eastern States have also lost. The 'gainer States' were the hilly, central, and western States including Maharashtra.

The distance criterion

The shares of individual States in tax devolution depend on the criteria and the weights used by different Commissions.

The distance criterion has been accorded the highest weight amongst these criteria. Its weight was reduced from 50% to 47.5% by the Thirteenth Finance Commission and further reduced to 45% by the Fifteenth Finance Commission. Earlier, the Eleventh Finance Commission had given this criterion a weight of 62.5%. The equalisation principle has always been regarded in India and elsewhere as a key principle governing distribution. Economic and social justice demand this.

The main reason for the loss of the southern States is the income distance criterion. Distance criterion means that the farther a State is from the highest income State, the higher its share. The main reason for the gain of the hilly States is area/forest criterion, although its impact is not separately shown. Between these two Finance Commissions, the loss to the southern States due to the distance criterion amounted to 8.055% points, although the overall loss was much less at 3.985% points, implying that there was a gain under other criteria.

Although on account of the distance criterion, low-income States such as Bihar and Uttar Pradesh have gained over time, they have lost on account of other criteria. Bihar and Uttar Pradesh show, in terms of their overall share, a loss of 0.970% points and 1.325% points.

On population

One other criterion that has caused some controversy is population. Until the Fourteenth Finance Commission, the data for the population in 1971 was used. For the Fifteenth Finance Commission, data for the population in 2011 was used. However, in order not to penalise States that showed better performance in reducing fertility rates, the demographic change criterion was introduced. The joint impact of these two changes has been marginal for all groups of States. For Tamil Nadu, the joint impact was marginally positive.

Steps to take

As mentioned, we cannot give up the income distance criterion. Some raise the question whether such a criterion can continue indefinitely. This is a legitimate question. But this question can be raised in relation to many other issues. Perhaps one step that the Sixteenth Finance Commission can consider is to reduce its weight while correspondingly raising the weights attached to other criteria.

Related to the question of share is also the quantum of the divisible pool. While accepting the recommendation of the Fourteenth Finance Commission to raise the share of all States to 42% from 32%, the Centre increased the cesses and surcharges, thereby reducing the size of the divisible pool. This is not desirable. One option is to limit the share of cesses and surcharges to 10% of the Centre's gross tax revenues. After the recommendation of the Fourteenth Finance Commission, the share of the States in the combined revenue receipts increased from 63.9% to 68.1% (Table 3). It increased further to 70.7% in 2020-21. Since then, it has fallen to 67.5% in 2022-23, although this level is still higher than 61.3% in the Twelfth Finance Commission period.

To sum up, there is a case to address the issue raised by some of the States regarding their declining shares. The major factor contributing to this situation is the adoption of income distance criterion and giving it a weight as high as 45%. But in any scheme of fair distribution, this criterion cannot be given up.

The Finance Commission can reduce the weight of this criterion by 5% to 10% points. Also, cesses and surcharges may be subjected to some upper limit by the Sixteenth Finance Commission.

WHAT ARE THE FINANCIAL IMPLICATIONS OF THE CONGRESS PARTY'S 5 NARI NYAY PROMISES?

The latest set of five promises by the Indian National Congress, aimed towards empowerment of women, appear to be a refreshed version of its 2019 election manifesto.

In the run-up to the 2019 general election, the Congress had promised to start a Minimum Income Support Programme (MISP) or Nyuntam Aay Yojana (NYAY) if voted to power. This included a cash transfer of Rs. 72,000 a year to the poorest 20 per cent of all Indian families (roughly 5 crore households). At that time, too, the party had stated that "as far as possible, the money will be transferred to the account of a woman of the family".

In 2019, economist Jean Dreze had pegged the total annual outgo on account of NYAY to be Rs 3,60,000 crore or around 2% of India's GDP.

The biggest, at least in terms of the financial implications, promise among the five announced on Wednesday (March 13) is called "Mahalakshmi" and it involves transferring Rs 1 lakh every year to a woman from a poor family. However, there is no mention of the exact number of poor families it aims to target.

As things stand, India's poverty estimates vary substantially based on different methodologies. For instance, Niti Aayog's Multidimensional Poverty Index, pegs poverty ratio at around 11% while its CEO has reportedly claimed that poverty could be as low as 5% if one takes into account the latest data from consumption expenditure survey released last month. The World Bank pegs India's poverty ratio at 11.3% in 2022-23 based on its international poverty line of people living at US$2.15 (or Rs 48.9 in purchasing parity terms) per day.

So how much is the Mahalakshmi promise likely to cost if Congress were to implement it in the current financial year?

Economist Santosh Mehrotra says that if, for the sake of simplicity one assumes a poverty ratio of 10%, then it implies the target beneficiaries will be 14 crore families (assuming a total population of 140 crore). If one woman from each poor family is targeted — that is, 2.8 crore women — then the total outgo would be Rs 2.8 lakh crore. That's 0.8% of India's GDP (Rs 328 lakh crore) in 2024-25 (according to the Union Budget presented in February). If the poverty ratio is 5%, as Niti Aayog claims, the outgo will be halved to 0.4% of GDP.

Another way to estimate the financial outgo is to target the poorest of the poor families — those who have the Antyodaya ration card — the total number of beneficiaries would be slightly less. At present 2.33 families under the Antyodyay Anna Yojana. If women from each of them get Rs 1 lakh, the total annual outgo would be Rs 2.33 lakh crore — or 0.7% of India's GDP.

The second promise — to reserve half of all government vacancies for women — will not have any additional financial burden since these are already existing vacancies.

The third promise — to double the central government's contribution to the monthly salaries of Asha, Anganwadi and women involved in preparing the mid-day meal — will have some, albeit small, financial impact according to economist Dipa Sinha, who focuses on social welfare issues. That's because the salary levels are fairly low.

As of March last year, there were 10.5 lakh Asha workers, 12.7 lakh Anganwadi workers and over 25 lakh mid-day meal cooks. Sinha says that these three groups get a monthly salary of around Rs 2,000, Rs 4,500 and Rs 1,000 respectively. For instance, in 2021-22, Centre spent Rs 8,908 crore on the salaries of all the Anganwadi workers — and they earn the highest salaries of the three. Doubling these amounts — say to a total of Rs 54,000 crore — is still a fairly insignificant percentage of India's GDP (Rs 328 lakh crore).

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It is difficult to estimate the exact financial burden of the fourth promise — appointing legal counsellors for women's rights (Adhikar Maitri) in every panchayat. That's because there is no clarity about the remuneration.

Lastly, it is also difficult to estimate the cost of building working women's hostels in each district. Mehrotra points out that these hostels are not "free". In other words, their operating costs could arguably be borne by the working women themselves. As far as the cost of building is concerned, it depends on how big these hostels are.

WHY DID THE EU IMPOSE A €1.8 BILLION FINE ON APPLE?

The story so far:

On March 5, the European Commission imposed its first anti-trust penalty against Apple for unfairly favouring Apple Music over its rivals. The €1.8 billion ($1.95 billion) anti-trust fine concludes the commission's nearly four-year long investigation following a complaint from Spotify accusing the company of purposely not disclosing to customers alternative options to pay for their streaming music subscriptions.

What did the commission find?

The EU's anti-trust regulator found that Apple unfairly favoured its own music streaming service by banning rivals like Spotify from telling users, and failing to include links, about cheaper subscription options available outside of the App Store. Apple charges up to 30% commission on purchases made through its App Store. It won't receive this fee if the user makes the payment directly on the app's website. The regulator noted that Apple muzzled music streaming apps from informing iOS users about alternative and cheaper music subscription services available on their websites.

What is the significance of the fine?

While having a dominant market position is not illegal in the EU, the penalty in this case highlights the bloc's seriousness in handling corporations that abuse their dominant market positions. This is also one of the biggest fines levied against a major tech company in the EU. Further, under the provisions of the EU's anti-trust laws, the fine exposes Apple against companies affected by anti-competitive behaviour. This means that anyone affected by Apple's anti-competitive behaviour in this case may bring the matter before the courts of the EU states and seek damages. This decision comes at a time when Apple is overhauling its app marketplace to comply with Europe's Digital Markets Act (DMA) to allow third-party apps on iOS devices.

Which law did Apple violate?

The regulator concluded that Apple's anti-steering provisions, that include Apple not allowing app developers to steer users towards alternative payment options, amounted to "unfair trading" conditions, in breach of provisions under the Treaty on the Functioning of the European Union (TFEU). The regulator found Apple to have violated Article 102 of the TFEU and Article 54 of the European Economic Area Agreement that prohibit the abuse of a dominant position. The fine comes months after the EU implemented the DMA to put an end to unfair practices by tech companies that act as "gatekeepers" in the online space. Apple will now be barred from applying anti-steering provisions on any iOS apps under the bloc's competition reforms, as it has been designated a gatekeeper. Companies in the EU risk fines of up to 10% of their global turnover for

anti-trust violations. In the event of repeated violations, the fine can be extended up to 20%. In a sharp response to the fine, Apple released a statement in which it attacked the EU, claiming enforcers failed to uncover "any credible evidence of consumer harm, and ignored the realities of the market that is thriving, competitive, and growing fast." Apple further said that there was "no evidence of anti-competitive behaviour", and that the investigations did not yield a viable theory explaining how it thwarted competition in a thriving market. The iPhone maker said that though it respects the Commission's decision, the facts do not support it [the ruling], and as such Apple will be appealing the decision.

Which other companies are facing anti-trust investigations?

In December last year, Apple offered to let rivals access its tap-and-go mobile payments system used for mobile wallets in a bid to settle EU anti-trust charges. The investigation charged Apple with curbing rival's access to its tap-and-go technology, Near-Field Communication (NFC), making it difficult for them to develop rival services on Apple devices. A long-running investigation into Google found that the company gave its own shopping recommendations an illegal advantage over rivals in search results. In December 2022, the European Commission informed Meta that they believe the company has breached EU anti-trust rules by distorting competition in the market for online classified ads.

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LIFE & SCIENCE

OLDEST 'DEAD GALAXY' YET IS SPOTTED BY JAMES WEBB TELESCOPE

The James Webb Space Telescope since becoming operational in 2022 has uncovered numerous surprises about what things were like in the universe's early stages. We now can add one more: observations of a galaxy that was already 'dead; when the universe was only 5% of its current age.

Scientists said on March 6 Webb had spotted a galaxy where star formation had already ceased by roughly 13.1 billion years ago, 700 million years after the Big Bang event that gave rise to the universe. Many dead galaxies have been detected over the years, but this is the earliest by about 500 million years.

This galaxy is relatively small, with perhaps 100 million to one billion stars.

After a galaxy stops forming new stars, it becomes a bit like a stellar graveyard.

"Once star formation ends, existing stars die and are not replaced. This happens in a hierarchical fashion, by order of stellar weight, because the most massive stars are the hottest and shine the brightest, and as a result have the shortest lives," Kavli Institute astrophysicist and study co-author Francesco D'Eugenio said.

"As the hottest stars die, the galaxy colour changes from blue – the colour of hot stars – to yellow to red – the colour of the least massive stars," Dr. D'Eugenio added. "Stars about the mass of the sun live about 10 billion years. If this galaxy stopped forming stars at the time we observed it, there would be no sun-like stars left in it today."

The researchers determined this galaxy experienced a burst of star formation spanning 30 to 90 million years, then it suddenly stopped. They are trying to figure out why.

NASA's Webb is able to look at greater distances and thus farther back in time, than the Hubble space telescope. Among other discoveries, Webb has enabled astronomers to see the earliest-known galaxies, which have turned out to be larger and more plentiful than expected.

In the new study, the researchers were able to observe the dead galaxy at one moment in time. It is possible, they said, it later resumed star formation.

OVERCOMING THEORETICAL LIMITS ON SOLAR CELL CAPACITY

The Sun is the primary source of light and energy on the earth. Photovoltaic devices like solar cells allow us to harness this energy. Photovoltaic cells are made of semiconducting materials like (doped) silicon. When sunlight interacts with a semiconductor, it excites electrons from the lower-energy valence band to the higher-energy conduction band.

This transition leaves behind a vacancy in the valence band called a hole. (To be more precise, a hole is a vacant site where an electron is supposed to be. Since it denotes the absence of an electron, a hole is also a place with positive charge.)

The process of an electron moving to the conduction band and leaving a hole behind in the valence band creates an electron-hole pair. These pairs are the fundamental charge carriers in semiconductors and play a crucial role in the operation of electronic devices.

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In short, electron-hole pairs create the photocurrent — an electric current created as a result of radiation — in the semiconductor.

We know that the efficiency with which a solar cell can produce an electric current when sunlight is incident on it can't be 100% because some light particles (photons) pass through the material without interacting with it (i.e. transparency loss, around 25%) and some energy simply heats up the material without exciting the electrons (thermalisation, around 30%). As a result, the maximum efficiency of a conventional solar cell is confined, and this range is called the Shockley-Queisser limit. It is named after the physicists William Shockley (of the U.S.) and Hans-Joachim Queisser (Germany).

These days, a solar cell can convert only a third of the incident solar energy into electric energy. The semiconductor can't make use of photons with less energy than that required by electrons to jump across the band gap. Similarly, photons carrying significantly more energy than the size of the band gap only heat the device.

Researchers have been trying to find ways to surpass the Shockley-Queisser limit and use more solar energy, and thus improve the cells' efficiency, but this has been easier said than done.

South Korean physicist Young Hee Lee has said carrier multiplication and hot carrier extraction are two promising pathways. In the former, a cell allows a photon to create multiple electron-hole pairs. The latter aims to quickly capture photons with 'too much' energy before they dissipate as heat.

UNDERSTANDING THE BASIC PRINCIPLES OF ARTIFICIAL INTELLIGENCE

The concept of artificial intelligence (AI) revolves around the idea of machines possessing the capacity to apply knowledge to solve problems, similar to how living beings do. Unlike humans, who naturally possess intelligence, AI is intelligence exhibited by machines, often through the use of software and hardware combinations.

One way to understand AI is through the process of thinking and problem-solving. For example, consider the task of classifying images of cats and dogs. A machine learning algorithm can be trained on a dataset containing images of both cats and dogs. Using various features such as shape, size, color, and texture, the algorithm learns to distinguish between the two types of animals.

AI algorithms can range from simple linear classifiers to more complex models that use neural networks. Linear classifiers, for instance, can draw a straight line through a graph to separate data points into different groups. In contrast, neural networks mimic the structure of the human brain, consisting of interconnected nodes that process and analyze data.

The process of learning in AI can be categorized into three main types: supervised learning, unsupervised learning, and reinforcement learning. In supervised learning, the algorithm is trained on labeled data, whereas in unsupervised learning, the algorithm must organize and understand unlabeled data. Reinforcement learning involves the machine learning from feedback provided by engineers based on its performance.

Artificial neural networks (ANNs) play a crucial role in AI, serving as the underlying framework for learning and decision-making. ANNs consist of nodes, which simulate neurons, and connections between nodes, which mimic synapses. Each node applies an activation function to its inputs and adjusts weights assigned to different inputs to make decisions.

Overall, AI encompasses a broad spectrum of technologies and approaches aimed at replicating human-like intelligence in machines, enabling them to perform tasks ranging from simple classification to complex problem-solving.

Nvidia's dominance

A graphic processing unit (GPU) is the physical processor that 'runs' the ANN. It was originally developed to render graphics for video games. It was better at this task than other processors at the time because it could run computing tasks in parallel. It has been widely adopted since as the basic computing unit for ANNs for the same feature.

The company Nvidia has emerged as a technology giant because of its production of GPUs. Its valuation was the fastest in history to go from $1 trillion to $2 trillion (in nine months). Every other company that has been building large AI models is using Nvidia's GPU-based chips to do so. In a 2023 analysis, financial services provider Seeking Alpha wrote Nvidia's overwhelming market share has stoked "resistance" in three ways: competitors are trying to develop to non-GPU hardware; researchers are building smaller ANNs that require less resources; and developers are building new software to sidestep dependency on specific hardware.

SIMA OR SCALABLE INSTRUCTABLE MULTIWORLD AGENT

Google DeepMind revealed its latest AI gaming agent called SIMA or Scalable Instructable Multiworld Agent, which can follow natural language instructions to perform tasks across video game environments. Simply, Google's new AI is all set to play video games with you.

Research lab Google Deepmind describes SIMA as an AI Agent, which is different from AI models such as OpenAI's ChatGPT or Google Gemini. AI models are trained on a vast data set and are limited when it comes to working on their own. On the other hand, an AI Agent can process data and take action themselves.

SIMA can be called a generalist AI Agent that is capable of doing different kinds of tasks. It is like a virtual buddy who can understand and follow instructions in all sorts of virtual environments – from exploring mysterious dungeons to building lavish castles. It can accomplish tasks or solve challenges assigned to it.

It is essentially a super-smart computer programme that can be thought of as a digital explorer, having the ability to understand what you want and help create it in the virtual world. SIMA "understands" your commands as it has been trained to process human language. So when you ask it to build a castle or find the treasure chest, it understands exactly what these commands mean.

One distinct feature of this AI Agent is that it is capable of learning and adapting. SIMA does this through the interactions it has with the user. The more you interact with SIMA, the smarter it gets by learning from its experiences and improves over time. This makes it better at understanding and fulfilling user requests.

Based on the current stage of AI development, it is a big feat for an AI system to be able to play even one game. However, SIMA goes beyond that and can follow instructions in a variety of game settings. This could potentially introduce more helpful AI agents for other environments.

MEET DEVIN AI, THE WORLD'S 'FIRST FULLY AUTONOMOUS' AI SOFTWARE ENGINEER

US-based applied AI lab, Cognition, has introduced what it claims is the world's first AI software engineer. The makers say that the AI agent, named Devin, has passed practical engineering interviews held by leading AI companies. Cognition claims it has also completed real jobs posted on Upwork, an US-based freelancing platform. "Devin is a tireless, skilled teammate, equally ready to build alongside you or independently complete tasks for you to review. With Devin, engineers can focus on more interesting problems, and engineering teams can strive for more ambitious goals," read the company's official blog post.

What can Devin do?

The AI agent comes with some advanced capabilities in software development, including coding, debugging, problem-solving, etc. Devin uses machine learning algorithms to constantly learn and improve its performance and adapt according to new challenges. In simple words, Devin can build and deploy apps end-to-end and can also train and fine-tune its own AI models.

Devin can plan and execute complex engineering tasks that would require thousands of decisions. This is possible owing to Cognition's advances in long-term reasoning and planning. According to the company, Devin can recall relevant context at each step, self-learn over time, and even fix mistakes.

Besides, the makers have also endowed the AI software engineer with the ability to proactively collaborate with the user. It reports progress in real-time, is capable of accepting feedback, and works along with the user through design choices as needed.

One of the most notable facets of Devin AI is that it is immune to human errors or inconsistencies. The AI agent is capable of guaranteeing precision and uniformity in coding practices which can lead to the development of superior-quality software products.
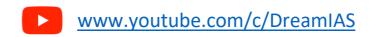
It needs to be noted that the company has not disclosed anything about the AI model that is powering Devin AI, nor has it revealed detailed technical specifications. Some of the other popular AI-powered tools that help with coding are OpenAI Codex, GitHub Copilot, Polycoder, CodeT5, Tabnine, etc.

What challenges, opportunities does it bring?

While the company has elaborated on the capabilities of Devin, some experts feel that the AI software engineer may struggle with complex requirements or instances that rely on human intuition and creativity. Besides, AI tools such as Devin seem to fan concerns about job losses. However, others believe that Devin can be an ally for thousands of software engineers, offering new avenues of collaboration between human ingenuity and AI.

Cognition, the firm behind Devin, is headed by Scott Wu. Cognition calls itself an applied AI lab that is focussed on reasoning. The company claims that it is building AI teammates with capabilities that surpass existing AI tools. "Building Devin is just the first step—our hardest challenges still lie ahead," read the website. The agent will be soon available to be hired for engineering works, but for now, companies need to join a waitlist.

ALPHAGEOMETRY AND THE THREAT OF AI'S TAKEOVER OF MATHEMATICS

A few weeks ago, an animated discussion unfolded in a WhatsApp group whose members are mathematicians interested in the Indian Mathematical Olympiad. The spark was a Nature paper that announced a Google DeepMind artificial intelligence (AI) named AlphaGeometry had achieved a milestone: it could solve geometry problems at the level of the International Mathematical Olympiad, nearly matching the prowess of gold medallists.

The news evoked a mix of awe, fear, and wonder among us, especially in light of how AI tools like ChatGPT have started to reshape education. Some mathematicians wondered if the advent of AlphaGeometry signals the start of AI's ascendancy in mathematics.

MEET PI, THE WORLD'S 'FRIENDLIEST' CHATBOT POWERED BY THE NEW INFLECTION-2.5 LLM

In less than a week, two Large Language Models (LLMs) have been launched that are closer to or even better at tasks than OpenAI's GPT-4. After Anthropic's Claude 3 captured the attention of the AI community, Inflection AI launched its latest LLM, Inflection 2.5, an upgrade to its model that powers its friendly chatbot Pi personal assistant.

Inflection AI, a California-based AI startup founded by former co-founders of DeepMind and LinkedIn, introduced Pi, their personal AI, in May 2023.

Pi has been designed to be "empathetic, helpful, and safe", according to Inflection AI. Following the success of the chatbot, the company introduced its new major foundation model, Inflection 2, in November 2023. At the time of the launch of Inflection 2, the company claimed it to be the best LLM in the world.

Now, the company is back with an upgraded version that is claimed to be as good as GPT-4. Launched on Thursday (March 7), Inflection 2.5 is available to all Pi's users at pi.ai, iOS, and Android.

What is Inflection 2.5?

According to the makers, Inflection-2.5 is an "upgraded in-house model that is competitive with all the world's leading LLMs like GPT-4 and Gemini."

The company claims that the newly upgraded LLM comes with its signature personality and uniquely empathetic fine-tuning. The company claims that its latest model achieved GPT-4's performance with only 40 per cent of the OpenAI model's computation power for training.

Besides, it seems Inflection 2.5 has made some stellar strides in areas of IQ such as coding and mathematics. This means that the model has made substantial improvements on key benchmarks. With the new upgrade, Pi has now been endowed with world-class real-time web search capabilities to ensure that users get access to high-quality and up-to-date information in real-time.

What is the Pi chatbot?

Pi is an AI chatbot with which one can have deep and meaningful conversations. To access the chatbot, one needs to log on to Inflection.AI, click on Meet Pi, and simply start talking to the chatbot right away.

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

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Pi was launched at a time when the world was marvelling at OpenAI's sensational ChatGPT. While ChatGPT offered human-like responses, Pi came with a radically different vigour. Pi is more humane and has been promoted as a chatbot that has a personality. In other words, Inflection AI dubbed it as a chatbot that is "supportive, smart, and there for you anytime".

While ChatGPT and Gemini were mostly personal assistants that were useful at work, Pi is more like a companion to humans and is free to use. The chatbot comes with a voice, in six distinct voices, to choose from adding life to conversations.

On the technical side, for training purposes, the chatbot has been shown billions of lines of text on the open web. This allows Pi to have conversations with users and answer a wide variety of questions, according to the company. Incidentally, the name Pi stands for personal intelligence and it offers infinite knowledge according to a user's need.

Upon its launch, Pi was powered by Inflection's proprietary LLM Inflection-1 which was trained on thousands of NVIDIA H100 GPUs on a very large data set.

Based on the evaluations, Inflection-1 was ranked the best model in its compute class outdoing the likes of GPT-3.5, LLaMA, and PaLM-540B on a wide range of benchmarks. In 2022, the company launched its new model Inflection-2, which was trained on 5,000 NVIDIA H100 GPUs.

Inflection-2 outclassed Google's flagship LLM PaLM 2 on various benchmarks including MMLU (massive multitask language understanding), TriviaQA (a realistic text-based question-answering dataset), HellaSwag & GSM8k.

BEHIND THE WORLD'S MOST FAMOUS MATHEMATICAL CONSTANT — PI

March 14, or 3/14 as per the American convention, is celebrated as Pi Day worldwide as an ode to the most well-known approximation (3.14) of the mathematical constant Pi.

The tradition was started by physicist Larry Shaw of the Exploratorium museum in San Francisco in 1988, and has since seen global popularity. On the day, mathematicians try to raise awareness on their subject among lay persons, through lectures, museum exhibitions and pie (sic) eating competitions.

In 2019, UNESCO's 40th General Conference designated Pi Day as the International Day of Mathematics.

What is Pi?

Pi, often represented by the Greek letter π, is the most famous of all mathematical constants. It represents the ratio of a circle's circumference (boundary) to its diameter (a straight line between two points on the circle's boundary, passing through its centre). Regardless of the circle's size, this

Pi is an irrational number — it is a decimal with no end and no repeating pattern — which is most often approximated to the 3.14, or the fraction 22/7.

How is Pi calculated?

The importance of Pi has been recognized for at least 4,000 years. Petr Beckman in his classic, A History of Pi (1970), wrote that "by 2,000 BC, men had grasped the significance of the constant that is today denoted by π, and that they had found a rough approximation of its value."

Both ancient Babylonians and ancient Egyptians came up with their own measurements, probably by drawing a circle of some diameter, and then measuring its circumference using a rope of said diameter in length. Babylonians settled at 25/8 (3.125) as the value of Pi, while ancient Egyptians settled at (16/9)^2 (approximately 3.16).

It was Greek polymath Archimedes (circa 287-212 BCE) who came up with the method to calculate Pi that remained in use till the 17th century. He realised that the perimeter of a regular polygon of 'n' sides inscribed in a circle is smaller than the circumference of the circle, whereas the perimeter of a similar polygon circumscribed around the circle is greater than its circumference. He used this to calculate the limits within which the value of Pi must lie.

Now, as one keeps adding more and more sides to this polygon, it gets closer and closer to the shape of a circle. Having reached 96-sided polygons, Archimedes proved that 223/71 < Pi < 22/7 (in decimal notation, this is 3.14084 < π < 3.142858).

Following Archimedes, mathematicians constantly increased the number of sides of the polygon to calculate Pi to ever greater decimal places. By 1630, Austrian astronomer Christoph Grienberger calculated 38 digits of Pi using polygons with 10^40 sides.

The problem with this method, however, is that it is extremely labour intensive. For instance, it took Dutch mathematician Ludolph van Ceulen (1540-1610) a staggering three decades to calculate Pi to 35 decimal points.

It would be Isaac Newton (1643-1727) who significantly simplified the process of calculating Pi. In 1666, he calculated Pi up to 16 decimal places using calculus, which he discovered along with mathematician Gottfried Wilhelm Leibniz (1646-1713). What had taken previous mathematicians years to calculate now could be done in a matter of days.

By 1719, French mathematician Thomas Fantet de Lagny (1660-1734) had already calculated Pi up to 112 correct decimal places. Today, with the help of modern computers, this method has calculated the value of Pi up to 31 trillion (1012) decimal places.

But why make all this effort?

Circles are everywhere in the world. So are three-dimensional shapes like cylinders, spheres, and cones, all of which carry the proportion of Pi. Knowing Pi's value, thus, has some crucial practical benefits in the fields of architecture, design, and engineering. From constructing water storage tanks to fashioning hi-tech equipment for satellites, the value of Pi is indispensable in all sorts of areas.

Moreover, Pi seems to be woven into descriptions of the very deepest workings of the universe — from calculating the vastness of space or understanding the spiral of DNA. "Pi is often a key ingredient in the solution of a great many problems inspired by real-world phenomena… [it] will only increase its relevance as we continue to further our understanding of the world we live in," Prof Dorina Mitrea, chair of the Department of Mathematics at Baylor University, Texas, told Newswise in 2023.

However, the calculation of Pi 31 trillion digits is less obviously "useful". While Archimedes' calculation was fairly adequate for all practical purposes that Pi was used for in his time, today, Pi needs to be calculated to about 39 decimal places in order to perform all calculations in the observable universe with virtually no error. Why then are mathematicians so fixated on the number?

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There is of course the somewhat esoteric argument that knowledge, in and of itself, is valuable, regardless of what practical dividends it pays. But Pi is also alluring for other reasons. As mathematician Steven Strogatz, author of the award-winning The Joy Of X: A Guided Tour of Math, from One to Infinity (2012) wrote for The New Yorker in 2015: "The beauty of Pi, in part, is that it puts infinity within reach. Even young children get this. The digits of Pi never end and never show a pattern. They go on forever, seemingly at random—except that they can't possibly be random, because they embody the order inherent in a perfect circle."

EXPRESS VIEW ON OSCARS 2024: A WINNING HAND

At the Academy Awards, in his acceptance speech for Best Director, his first win in eight nominations, Christopher Nolan said, "Movies are just a little bit over 100 years old and imagine being there 100 years into painting or theatre... We don't know where this incredible journey is going from here, but to know that you think that I'm a part of it means the world to me."

Nolan might be forgiven for his modesty, for if there's anything that this year's awards season and last year's stellar run at the box office have established, it is this: It's Christopher Nolan's world and we are all just living in it.

When a film with 13 nominations enters the fray, there is likely to be little surprise in the outcome of the awards ceremony, even if it has been a year of extraordinarily diverse movies. But in winning seven awards at the Academy Awards, including Best Director, Best Picture, Best Actor and Best Actor in a Supporting Role, what Nolan's Oppenheimer lost out in terms of drama, it made up in validation for an older way of filmmaking:

The big-studio, big-spectacle film, whose rise and rise had been stalled by the pandemic and the OTT-driven content generated in its aftermath. Of course, Nolan has done it before with his Batman trilogy, resurrecting the flagging fortunes of Warner Bros with his slick storytelling and his ability to tie together parallel timelines into an intellectually stimulating yarn, whose metaphysical undertone is apace with its ability to thrill and awe.

What the win for a film like Oppenheimer does is show that when it comes to entertainment, the appeal of the big screen is unlikely to wane. Like The Lord of the

Rings or Ben-Hur, both of which won multiple Oscars, Nolan's multiverses are not meant for the confines of the OTT screen but for the liberating conviviality of the big screen, where audiences of all kinds converge. In this season of niche, individualistic projects, that is, perhaps, the crux of Nolan's triumph.

CAUGHT SMUGGLING GREENHOUSE GASES: A FIRST-OF-ITS KIND PROSECUTION IN THE US

A California man is facing criminal charges in a San Diego court for smuggling, not illegal drugs or weapons, but greenhouse gases (GHGs). These gases, some of which are used in cooling appliances such as air conditioners and refrigerators, trap heat in the atmosphere and add to global warming.

Tara McGrath, the US Attorney for the Southern District of California, said: "This is the first time the Department of Justice is prosecuting someone for illegally importing greenhouse gases, and it will not be the last. We are using every means possible to protect our planet from the harm caused by toxic pollutants, including bringing criminal charges."

What is the man accused of doing?

Fifty-eight-year-old Michael Hart, who appeared in court on March 4, allegedly bought canisters of two types of banned refrigerants or coolants used in obsolete air conditioners and refrigerators in Mexico, and brought them to the US in his car, concealed under tarpaulin sheets and tools. He then sold the refrigerants online at marketplaces such as OfferUp and Facebook Marketplace.

According to his indictment, Hart smuggled or illegally sold dozens of canisters of the refrigerants in mid-to-late 2022, and claimed that he could import 15-20 "tanks" a week, Reuters reported.

What were these banned refrigerants?

The refrigerants in question are hydrofluorocarbons (HFCs) and a form of hydrochlorofluorocarbons (HCFCs), known as HCFC 22. HFCs and HCFCs became mainstream after emerging as an alternative to chlorofluorocarbons (CFCs) in the 1990s.

For long, CFCs were the go-to refrigerants for ACs and fridges. Research published in 1985, however, confirmed that increased levels of CFCs in the atmosphere were responsible for abnormally low ozone concentrations above Antarctica, resulting in the so-called ozone hole.

Refrigerants are released into the atmosphere by damaged appliances or car ACs. Ninety per cent of refrigerant emissions are estimated to occur when equipments reach their end of life and are improperly disposed of.

What action have countries taken to address the impact of these refrigerants?

In 1987, almost 200 countries signed the Montreal Protocol, agreeing to freeze the production and consumption of ozone-depleting substances, including CFCs, at then current rates.

Under the Montreal Protocol, countries were to phase out CFCs by 1996, and HCFCs by 2030. HCFCs were used only as an "interim" solution to CFCs because they were less harmful to the ozone layer.

As a result, HFCs which, unlike CFCs and HCFCs, have zero ozone-depleting potential (ODP), gradually became the most prominent refrigerant. But scientists soon realised that like CFCs and HCFCs, HFCs too are powerful greenhouse gases.

"Even in relatively small amounts they (HFCs) contribute significantly to near-term warming as greenhouse gases which are hundreds to thousands of times more potent than carbon dioxide (CO_2) per unit of mass," according to a report by Climate and Clean Air Coalition (CCAC), an international body working to reduce powerful but short-lived climate pollutants (SLCPs) including methane, black carbon, HFCs, and tropospheric ozone.

In 2016, more than 150 countries signed the Kigali Amendment to the Montreal Protocol, agreeing to reduce consumption of HFCs by 80% by 2047. If successful, the amendment could avoid more than 0.4 degree Celsius of global warming by 2100.

What does US law say about HCFCs and HFCs?

The Montreal Protocol was implemented in the US in 1990 by an addition to the Clean Air Act, a federal law that regulates air emissions from stationary and mobile sources. "That addition identified HCFC 22 (which Hart smuggled into the US) as a regulated ozone depleting substance", the US Immigration and Customs Enforcement (ICE) said in a statement.

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Since 2020, the US has banned the import of HCFC 22 for any purpose other than in a process which results in its transformation or destruction. The American Innovation and Manufacturing (AIM) Act, passed by Congress in December 2020, authorised the US Environmental Protection Agency (EPA) to phase down the production and consumption of numerous forms of HFCs.

Starting January 1, 2022, regulated HFCs cannot be imported into the US in bulk without the EPA's permission. "No person may sell or distribute, or offer for sale or distribution, any regulated HFC that was imported illegally," the ICE statement said.

What happens to Hart now?

The 13-count criminal indictment against Hart includes charges of conspiracy, illegally importing regulated goods, and selling illegally imported goods, according to a statement by the US Attorney's Office.

"The individual counts carry penalties as high as 20 years in prison and $250,000 in fines, as well as criminal forfeiture," the Reuters report said. The next hearing is on March 25.

DOUBLE-WHAMMY

New research finds around a quarter of Labrador retriever dogs face a double-whammy of feeling hungry all the time and burning fewer calories due to a genetic mutation. This obesity-driving combination means that dog owners must be particularly strict with feeding and exercising their Labradors to keep them slim. The mutation is in a gene (POMC), which plays a critical role in hunger and energy use. Around 25% of Labradors and 66% of flatcoated retriever dogs have this mutation, which researchers previously showed causes increased interest in food and risk of obesity. The study reveals how the mutation profoundly changes the way Labradors and flatcoated retrievers behave around food. It found that they are hungrier in between meals. The mutation was found to alter a pathway in the dogs' brains associated with body weight regulation. The mutation triggers a starvation signal that tells the body to increase food intake and conserve energy.

WHAT MAKES THE ONION A TEAR-JERKER?

Q: Why does cutting an onion produce tears?

A: Onions and garlic both contain derivatives of sulphur-containing amino acids.

When an onion is sliced, one of these compounds, S-1-propenyl-cysteine sulphoxide, is decomposed by an enzyme to form a volatile compound called propanethial-S-oxide. This is the irritant, or lacrimator (the name for any substance that causes tears to flow).

When the compound comes in contact with water – in this case in your eyes – it hydrolyses to propanal, sulphuric acid, and hydrogen sulphide. A hydrolysis is a chemical reaction in which a water molecule is used to break chemical bonds.

Tearfully, the eyes try to dilute the acid.

However, it is these same sulphur compounds that produce the nice aroma when onions are being cooked.

CONNECTOME: THE MAP OF THE BRAIN

WHAT IS IT?

Just like the saying 'many drops make an ocean', billions of neurons make up the human brain, which keeps us alive and kicking. These neurons interact with each other, and these connections allow us to perform complex activities and synthesise complicated ideas. Scientists have made sense of the way this neural network functions using the concept of the connectome.

The connectome is a comprehensive map of connections – or synapses – between neurons in the brain, sort of like a cartogram for the electrical and chemical signals the neurons send and receive. A neuron's dendrites receive chemical signals and convert them into electrical information, which is then sent through the axon, the neuron's tail. At the end, based on the electrical inputs, the cell releases new chemicals into synapses, relaying the message to the next neuron.

Mapping the connectome allows scientists to understand brain function and how attention deficit hyperactivity disorder or Alzheimer's disease affect it. By charting the cellular links, they gain insights into cognitive processes – and the disorders that arise when the processes go awry – with which they can identify potential new drugs to treat such conditions.

Despite challenges posed by the brain's complexity and the vast amount of data it processes, the connectome has simplified scientists' understanding of the brain and paved the way for a clearer picture of our neurological health.

SCIENTISTS GENETICALLY MODIFY 'SEXUAL' FRUIT FLY TO REPRODUCE ASEXUALLY

The fruit fly (Drosophila melanogaster) has been among the favourite organisms of genetics researchers for more than a hundred years. Many years of intense research with these diminutive creatures have led to many breakthroughs in our understanding of biology and evolution.

Recently, researchers from Cambridge University and the California Institute of Technology reported yet another such breakthrough. They were able to 'engineer' a sexually reproducing fruit-fly species to reproduce asexually, demonstrating the profound biological consequences of relatively minor genetic manipulation. The first study that reported this significant feat was published in July 2023; a follow-up study to it was published in the February 2024 issue of Heredity.

How was an organism that usually reproduces sexually turned into one that could reproduce asexually?

Fatherless reproduction is known as parthenogenesis. Earlier, other researchers had collected fruit-fly-like specimens from diverse geographies and compared them in different ways with the canonical specimen and with each other, to gauge the extent of their natural diversity. The collection represented more than 1,600 Drosophila species. Of these, one species, Drosophila mangebeirai, was found to consist only of females. The eggs produced by isolated females developed directly into female progeny without having to be fertilised by sperm from a male. Many species (about 76%) that ordinarily reproduce sexually were found to also hatch a small fraction of eggs laid by isolated virgin females into larvae, a smaller fraction of which went on to develop into adults. The name for such species – i.e. which are arbitrarily parthenogenetic a small fraction of the time – is facultatively parthenogenetic. One of them was Drosophila mercatorum.

The canonical species used in research, Drosophila melanogaster, is however strictly sexual.

The genes for parthenogenesis

The researchers set themselves two goals. First, to identify the genes that allow unfertilised Drosophila mercatorum eggs to complete parthenogenetic development. Second, to modify the Drosophila melanogaster genome to express the corresponding genes in a way that would trigger parthenogenesis. RNA sequencing is a technique that can quantitatively estimate the level to which a gene is expressed. Using this technique, the researchers identified 44 genes in D. mercatorum eggs that were expressed differently when they were parthenogenetic versus when they weren't. The DNA is a ladder-like molecule. Its two rails, or strands, are made of a long series of alternating units of phosphate molecules and the sugar deoxyribose molecules. Each sugar unit is attached to one of the four chemical bases: adenine (A), cytosine (C), guanine (G), and thymine (T). The As and Cs on one strand link with the Ts and Gs on the other to form the rungs, or base-pairs, that hold the strands together.

The Drosophila melanogaster genome has 200,000,000 base-pairs distributed across four DNA molecules. Each molecule is the core of a chromosome. The four chromosomes together make up the genome. In all, this genome encodes about 13,600 genes. On the other hand, the RNA molecule is comb-like. Its spine (strand) is made of alternating units of phosphate and sugar ribose molecules. Each sugar unit is attached to one of the four bases: A, C, G, and uridine (U), which make up the comb's tines.

A gene is a segment of a few thousand base-pairs of the DNA molecule. The sequence of bases on one of its strands tells every cell the sequence of amino acids it needs to string together to make a protein. To do this, the cell copies the sequence of As, Ts, Cs, and Gs in the DNA's protein-coding strand to a sequence of Us, As, Gs, and Cs, respectively, to form the RNA. The RNA is then sent to structures called ribosomes, which assemble the encoded protein.

Engineering asexual reproduction

The 44 genes whose expression differed between eggs of parthenogenetic and sexually-reproducing D. mercatorum strains had counterparts in the D. melanogaster genome. The researchers over- or under-expressed the counterparts to the levels in the D. mercatorum parthenogenetic eggs.

In particular, they found that if the genome of a D. melanogaster specimen was modified to have two extra copies of the pologene, an extra copy of the Myc gene, and a lower expression of the Desat2 gene, 1.4% of the specimen's eggs were parthenogenetic and whose offspring survived to adulthood.

The researchers also found that these parthenogenetically produced adult flies could also mate with male flies and produce progeny. So a strictly sexually reproducing fly was made facultatively parthenogenetic.

The polar bodies

A fly receives two sets of chromosomes, one from each parent. It transmits only one chromosome of each pair to its egg or sperm. Say a sperm has fertilised an egg. This egg will now have five sets of the genome: one in the egg's nucleus (maternal pronucleus), another in the nucleus from the sperm (paternal pronucleus), and three more nuclei called polar bodies that are sequestered in the egg's periphery.

The polar bodies are a by-product of the mechanism by which the fly transmits only one chromosome of each pair to the egg nucleus. Normally, the male and female pronuclei fuse to form the progeny nucleus, and the polar bodies are lost. If an egg is unfertilised, however, it lacks the male pronucleus and the female pronucleus is unable to initiate embryonic development on its own.

Altering the protein levels of polo, Myc and Desat2 likely rendered polar-body sequestration and disposal inefficient. This makes one or more polar bodies available to substitute for the missing male pronucleus and start embryonic development.

These findings have implications to approaches to control insect pests by releasing large numbers of males sterilised by irradiation or males bearing genomes edited to derail progeny development, and thus reduce progeny numbers. Unwittingly, this approach will also select for facultatively parthenogenetic individuals, thus limiting its long-term effectiveness.

CAN RESVERATROL-COPPER BE USED TO PREVENT METASTASIS?

A large body of work by researchers at the Tata Memorial Centre (TMC), Mumbai has found conclusive evidence in cell lines, animal studies and two phase-2 clinical trials that cell-free chromatin fragments that are released from dying cells have the ability to readily enter healthy cells in the body and integrate into their genomes and trigger DNA damage by breaking the DNA double-strand, cause apoptosis (programmed cell death) and inflammation. Based on these studies, a team led by Dr. Indraneel Mittra, Professor Emeritus, Department of Surgical Oncology at TMC had proposed that "repeated and lifelong assault on healthy cells by cell-free chromatin fragments may be the underlying cause of ageing and multiple age-related disorders including cancer". They also found that using a combination of two nutraceuticals — resveratrol and copper — minimises the damaging effects of cell-free chromatin fragments.

The researchers have collected sufficient evidence to prove that the toxic effects of chemotherapy are primarily caused by the cell-free chromatin fragments that emerge from dying cells and continue the vicious cycle of killing healthy cells and causing inflammation. This finding challenges the dogma that toxicity caused by chemotherapy is due to the direct damaging effect of drugs on healthy cells. Based on preclinical studies that showed promising results when the resveratrol-copper combination was used, Dr. Mittra and other researchers at TMC tested it on 25 patients undergoing autologous bone marrow transplantation for multiple myeloma and 30 patients with advanced gastric cancer. In both studies, the toxicity of chemotherapy was far less among patients who received the resveratrol-copper combination.

The researchers had earlier reported that cell-free chromatin particles released from dying cancer cells are potentially oncogenic. Studies in mice undertaken by the team showed that oncogenes contained in the cell-free chromatin fragments were carried by blood and had accumulated in the brain cells in mice. Though the oncogenes in the brain can lead to metastasis, the study did not investigate whether the dissemination of oncogenes to brain cells indeed led to the development of metastases.

A statement issued on March 1 by TMC categorically stated that the effectiveness of resveratrol-copper for reducing chemotherapy toxicity or increasing cures in cancer patients "remains to be established and is currently under investigation". The statement was released after Dr. Rajendra Badwe, a senior researcher at TMC told NDTV that the nutraceutical to reduce the toxicity of chemotherapy will be available by June this year after approval by the FSSAI. Several media

reports wrongly reported that the nutraceutical to be approved by FSSAI is for preventing cancer metastasis.

THE CURIOUS CASE OF A MAN WHO RECEIVED 217 COVID SHOTS

The COVID-19 pandemic has been a roller-coaster for vaccinology — from a rare show of truly global collaboration between governments, multilateral agencies, the scientific community, and industry to huge public demand for rapid vaccine development against the new virus that had brought the world to its knees to sudden concerns of "too rapid" development when many vaccines could be developed in record time. Some wanted "booster doses", and others worried about "too many doses".

So when the U.S. Food and Drug Administration announced in September 2021 that the third doses of the Pfizer and the Moderna COVID-19 vaccines would soon be available to Americans who were first in line to receive their initial two-shot vaccines, some experts questioned the need for it for most people — except the elderly or immunocompromised — and called it "over-vaccination" owing to a lack of data.

Later, the third dose became the norm worldwide, although India still called it a "precaution dose" and continues to do so, while many Western countries recommend repeated boosters, some with updated vaccines against the current Omicron variant. The debate over the best vaccination strategy continues.

The man who received 217 shots

In January 2022, an octogenarian from Madhepura district in Bihar claimed to have received more than 11 doses of the COVID-19 vaccine because it helped him with joint and back pain that had eluded other forms of treatment. At the time, some scientists worried about "over-vaccination". Since the subsequent doses beyond the first two may not have been reported, it faded from the headlines.

But on March 4, a study published in The Lancet reported a shocking case of "over-vaccination" by a 62-year-old German man who received over 217 COVID-19 shots over 29 months for "private reasons".

Researchers found out about his case from media reports and conducted a detailed study to investigate the immunological and other effects of over-vaccination on his body. Their investigation revealed much about immune function and the effects of over-vaccination. They compared their findings to a reference cohort of 29 healthy persons who received 'only' three COVID-19 vaccine doses.

Between November 2019 and October 2023, the man underwent routine examinations for various reasons, which indicated no vaccination-related anomalies on 62 parameters. No vaccine dose caused issues for the German individual. He never got a minor SARS-CoV2 infection either, according to rapid antigen/RT-PCR and nucleocapsid serology assays.

The antibody titres were much greater than the control group vaccinees, with serum neutralisation capability 5.4-fold and 11.5-fold higher for wild-type and Omicron B.1.1.529 spike proteins, respectively.

They also reported that he exhibited antibodies that were not found in the control group and that some antibodies were also detected in his saliva. Advanced "quality" tests of antibodies showed no significant difference from the control group. Strong "over-vaccination" did not increase or impair antibody quality either.

Finally, the researchers evaluated individual immune cells to discern the "exhaustion" of immune cells from repeated vaccination — and found none. Throughout the study, more antibody titres showed the individual's immune system's ability to respond to the antigen despite hyper-stimulation.

In sum, even after over-vaccination, the COVID-19 vaccinations were well-tolerated and effective.

Are too many doses bad for you?

The investigations did not harm the person, and raised many questions: Are too many random vaccine doses at random intervals safe for anyone? Can a single case study generalise safety? Do two to three years suffice to assess vaccine safety? How might such high vaccine doses affect an individual's immune system?

Many experts have discussed 'immune tolerance' and 'immune exhaustion' — especially of the T cells. Long COVID pathogenesis, when the SARS-CoV-2 virus persists in the body for a long time, has been carefully investigated in relation to this issue. Scientists have found no evidence that COVID-19 vaccinations do this. The vaccines merely briefly expose the immune system to antigens. Each shot injects a small quantity of antigen, triggering a momentary immunological response.

However, naturally sick people produce viruses and antibodies throughout the body for days or weeks. The human common-cold coronavirus and rhinoviruses infect people multiple times every year, often at short intervals, without harming their immune systems. Our immune system responds to environmental exposure on an hourly basis without getting tired. The recent vaccines are more sophisticated. They use only a portion of an organism or a few antigens, unlike smallpox and whole-cell pertussis vaccines, which include thousands.

In the new study, immunological profiling indicated repeated vaccinations or infections stimulated the immune system, making it more responsive. Interestingly, the immune system also developed faster, stronger, and broader, protecting against more new variants.

A probable downside

Cancer and HIV can cause immune-fatigue due to chronic foreign-object exposure. So the immune system might become 'exhausted' and stop responding after repeated encounters. Thankfully, COVID-19 has not shown this yet. Recent research has revealed that repeated vaccines and spontaneous infections in fact boost COVID-19 immunity.

Despite these promising results, over-vaccination should be avoided. The COVID-19 vaccines have been associated with autoimmune diseases like immune thrombotic thrombocytopaenia, autoimmune liver disorders, Guillain-Barré syndrome, IgA nephropathy, rheumatoid arthritis, and systemic lupus erythematosus.

One must stick to the laws of science and, in this case, the principles of vaccination. We must endorse the caution the authors advised to avoid attempting such over-vaccination without evidence on a sufficient number of subjects. In addition, the study is a good illustration of how we

can seize on the opportunities to advance science for the benefit of all. Conversely, the results will also reassure the vaccine-hesitant community about the safety of vaccines.

SPARING NO ONE: CARDIAC RISK FACTORS PRESENT EVEN AMONG THE VERY POOR

The conventional belief that cardiovascular disease (CVD) risk factors are low among those living in extreme poverty is being challenged by recent research findings. A global study, pooling data from 105 nationally representative household surveys across 78 countries, revealed that CVD risk factors such as hypertension, diabetes, smoking, obesity, and dyslipidemia are present among adults living in extreme poverty. Furthermore, many of these individuals are not receiving adequate treatment for these conditions, particularly hypertension.

The study showed that poverty level did not necessarily correlate with lower prevalence of CVD risk factors. In fact, the prevalence of hypertension was similar across different poverty level groups, and there was a positive income gradient in the prevalence of obesity. Additionally, the study found that access to medication and treatment for CVD-related conditions was low among those living in extreme poverty, highlighting disparities in healthcare access and delivery.

The implications of these findings are significant for health policy and care delivery. It is crucial to prioritize detection and treatment of CVD risk factors among poorer populations to address health inequities. Governments are recommended to implement programs targeted at detecting and managing these risk factors in socioeconomically deprived communities, ensuring accessibility to care and overcoming barriers such as geography and cost.

Some nations, like India, have initiated programs to address non-communicable diseases (NCDs) including CVDs, at the grassroots level. For instance, Tamil Nadu's 'Makkalai Thedi Maruthuvam' scheme delivers interventions for NCDs directly to patients' doorsteps. However, ongoing evaluation of such programs is essential to ensure their effectiveness in reaching and treating the target population.

In addition to treatment, public education and awareness campaigns are crucial, especially regarding lifestyle factors such as smoking which contribute to CVD risk. There is a need for vigorous public education efforts to raise awareness about the hazards of smoking, particularly among socioeconomically deprived communities.

Overall, addressing CVD risk factors among the very poor requires a comprehensive approach involving detection, treatment, and prevention strategies tailored to the specific needs and challenges of these populations. Ongoing research and evaluation are essential to inform and improve the effectiveness of such initiatives.

REVERSE HAIR LOSS: HOW A DROP OF YOUR OWN BLOOD CAN REGROW YOUR HAIR, WITHOUT THE PAIN

Platelet-rich plasma (PRP) therapy for hair loss involves using a patient's own blood to promote hair growth and combat hair loss. The procedure begins by drawing a small amount of blood from the patient, which is then processed in a centrifuge to isolate the plasma containing concentrated platelets. These platelets are rich in growth factors and proteins that stimulate cell regeneration and hair growth. The plasma is then injected into the scalp, where it provides nourishment to the hair follicles and promotes hair growth. PRP therapy is relatively painless and can be completed in a short amount of time, typically taking about 30 to 40 minutes. Results usually become visible

after three months, and maintenance sessions may be required to sustain the benefits. PRP therapy is considered safe and effective, with a success rate of around 70 to 80 percent. It is particularly beneficial for individuals experiencing early stages of hair loss and can be used as a supportive treatment alongside other interventions.

WHAT CAUSES HAIR FALL AMONG THE YOUNG

Inherited, or pattern baldness, affects more men than women, the former losing hair in a spherical manner on the crown, the latter from the central parting as it keeps widening. "However, I am getting more patients in their 20s because they have had an underlying condition or infection, nutritional deficiency (zinc, iron, vitamin D, and protein) and stress. They consume sugar and fatty foods as they eat out frequently. You need to have legumes, poultry, fish, good fat and leafy greens to feed your hair follicles. Stress means extra levels of the hormone cortisol, which can shorten the growth phase of the hair shaft prematurely," says Dr Sharma. Of course, youngsters these days are more into hair styling products and hair colour on a daily basis, which, she feels, is equivalent to a chemical attack.

CAN PRP WORK BETTER THAN HAIR TRANSPLANTS?

Where the hair follicle has been badly damaged, only hair transplantation works, which involves surgically implanting donor hair from healthy growth areas of the scalp to the leaner growth patches. "PRP guarantees best results for patients in the early stages of hair loss and can only be used as a supportive treatment for stubborn baldness. However, PRP is much better than minoxidil — a medication that can be administered both orally and topically and is only as effective as the dosage," adds Dr Sharma.

COST OF A CROWNING GLORY

PRP doesn't come cheap as you must get it done from a certified dermatologist only and is not covered by health insurance. Between Rs 4,000 to Rs 6,000 per session and a minimum of six sittings that's recommended, you have to set aside anything between Rs 25,000 to Rs 36,000 for a cycle that lasts a little over a year. But then, as Snehal says, she would save up to have her ponytail and confidence back.

EXPRESS VIEW: YOUR HEALTH TRACKER IS HARMING YOU

Unlike a watched pot, people under surveillance — even when it's self-imposed — do boil over. A comprehensive study by the think tank, Institute for the Future of Work, Warwick Business School and Imperial College, London, has found that new technologies driven by artificial intelligence and machine learning algorithms are making people less happy and healthy. The smart watch, the step counter, the constant monitoring of SP02 and heart rates — the "trackers" are doing more harm than good. Then, there's the increasing use of algorithms in the workplace — to set tasks, track and watch workers and even replace them. But the machine did not break in to disrupt lives and livelihoods. It was welcomed in.

It's a curious dichotomy. Prefix "smart" to even the most basic machine — fridge, TV, watch, cycle, screwdriver and even hammer — and the techies, yuppies and wannabes will take on an EMI for the "aspirational" good. Every moment is to be maximised, every task "game-ified" — from how much you eat (remember to log your micro and macronutrients, the app will tell you) to the amount you need to move (10,000 steps, but it keeps changing). People are even judged while they are sleeping (the watch will watch you, and tell you when the slumber wasn't up to the mark).

All these tricks and trinkets are meant, the ads tell us, for self-improvement. It would have been easier, cheaper and healthier to read 1984.

Big Brother, it turns out, isn't good for you — even when you are the one watching yourself. According to the study, not all tech is bad. Machines like laptops and services like email enhance quality of life and work. Perhaps it is only a matter of time. The slightly older technologies are now commonplace and are no longer seen as "disruptive". Or perhaps there's something to be said for going on a walk without counting the steps.

NANA JAGANNATH SHANKARSETH

The Maharashtra cabinet on Wednesday (March 13) decided to ask the Ministry of Railways to rename Mumbai Central station after Nana Jagannath Shankarseth. Mumbai Central, located in the heart of the city, is used by several important local and long-distance trains, including Rajdhani Expresses, daily.

Who was Nana Jagannath Shankarseth?

The social reformer, educationist, and philanthropist Nana Jagannath Shankarseth (February 10, 1803-July 31, 1865) is often described as the "architect" of Mumbai (then Bombay), who made extremely valuable contributions in terms of both ideas and money to multiple sectors, to lay a strong foundation for the city.

Born in a wealthy Brahmin family in Murbad in Thane district, Shankarseth took the responsibility of running the family business at an early age after his father passed away in 1822. Shankarseth was greatly inspired by the legendary merchant and philanthropist Sir Jamsetjee Jeejeebhoy.

As a social reformer and community leader, Shankarseth earned the goodwill of both Indians and the British. He became the first Indian to be nominated to the Legislative Council of Bombay.

What are some of Shankarseth's most significant contributions?

Shankarseth was deeply committed to the growth and spread of education in Bombay, and donated land owned by his family for educational institutions. Like many social reformers of his age, he believed that Indians could progress through education. He also worked for the education of girls and women.

Shankarseth founded the Native School of Bombay, which was renamed first as the Bombay Native Institution, and then as the Board of Education. Finally, this institution evolved into the prestigious Elphinstone College.

There is an interesting anecdote about Nana Shankarseth's role in laying the foundation of medical education in Bombay. The then Governor of Bombay, Sir Robert Grant, wanted a medical college in Bombay of the kind that existed in Calcutta (Kolkata) and Madras (Chennai); however, he passed away before the proposal was endorsed by the East India Company. At a public meeting held at Town Hall to pay tribute to the late Governor, Shankarseth suggested that the medical college should be named after him. Grant Medical College in Mumbai is one of the oldest medical institutions in South Asia.

What was Shankarseth's contribution to the railways?

The first train in India ran between Boribunder and Thane on April 16, 1853. The 34-km project undertaken by the Great Indian Peninsular Railway Company. The committee that gave the project impetus included Sir Jamsetjee Jeejeebhoy and Nana Shankarseth.

Why has the proposal to rename Mumbai Central station come now?

Ahead of the 2024 Lok Sabha elections, the Maha Yuti coalition of the Shiv Sena (Shinde), BJP, and NCP (Ajit Pawar), has proposed to rename some railway stations in Mumbai with the stated

objective of wiping out colonial names and identities, and replacing them with those of Indian heroes.

The idea is to promote cultural nationalism and pride in Indian heritage, which is one of the BJP's major political projects. Besides taking the decision on renaming Mumbai Central, the Cabinet also cleared proposals to rename Cotton Green station as Kalachowki, Charni Road as Girgaum, Dockyard Road as Mazgaon, King's Circle as Tirthankar Parshvanath, Currey Road as Lalbaug, Sandhurst Road as Dongri, and Marine Lines as Mumbadevi.

EINSTEIN'S BIRTH ANNIVERSARY

March 14 is the birth anniversary of Albert Einstein, who, almost 70 years after his death, remains the most famous scientist in the world. While Einstein was a genius with many scientific breakthroughs to his name, he was also a Jew, who could not escape the political and ideological currents of his time.

Einstein had to take US citizenship after the Nazis came to power in his country Germany, and raided his house while he was away on a visiting professorship at the California Institute of Technology.

Einstein favoured the creation of a **state of Israel for all persecuted Jews** — the philosophy of Zionism — although he also wanted "reasonable agreement with the Arabs". When the fate of Israel was to be decided at the UN in 1947, Zionist leaders were trying to secure support from across the world. To persuade the leader of India, Jawaharlal Nehru, they approached Einstein.

Einstein, thus, wrote to Nehru on June 13, 1947, underlining the reasons India should support Israel. Nehru wrote back on July 11, 1947, with a polite but firm no.

Why India did not support Israel's creation

As is clear from Nehru's letter, India, experiencing a bloody partition itself caused by colonial meddling, was not in favour of another nation being divided on religious lines.

Second, Indian Muslims were sympathetic to the cause of the displaced Palestinians, and the Indian government was conscious of this sympathy. With a certain conflict with Pakistan ahead, India also wanted the support of other Muslim countries.

Third, India's own experience of colonialism made it wary of supporting the carving up of a nation backed by the power and money of the West. India instead advocated a federal state, where both Jews and Arabs had autonomy.

TRIPURA TO SET UP INTEGRATED AQUA PARK

In an effort to boost its fish production figures and ramp up employment opportunities in the sector, the Tripura government on Friday said it is ready to set up the state's first Integrated Aqua Park at Unakoti district after the central government approved funds for the first phase of the project under the Pradhan Mantri Matsya Sampada Yojana (PMMSY).

The state government's fisheries department had earlier submitted a proposal to the central government for sanction of Rs 99.99 crore for setting up an integrated Aqua Park at Satero Miyan Haur of the Kailashahar sub-division under the Unakoti district.

In response, the Government of India has sanctioned Rs 42.39 crore in the first phase of implementing the project under the PMMSY, in which the central government would shoulder 90 percent of the project cost and the state would share 10 percent cost amounting to Rs 4.23 crore.

"The project would cover 115.83 acre of land in the Satero Miyan Haur Area, including government and private land which would be taken in lease or some acquisition process," the minister added.

The minister said 95 percent of Tripura's population is estimated to be fish consumers, requiring 1.15 lakh metric tonne of fish annually. While Tripura produces 85 thousand metric tonne of fish locally, the state still needs to import 30 thousand metric tonne fish from adjoining Bangladesh and other Indian states. The minister also said that a second project was submitted to the centre for funding for the distribution of 100 fish kiosks, 100 mobile fish kiosks named Matsya Vahini across the state and 100 Matsya e-rickshaws to provide employment to unemployed youths through the sector.

The project was granted Rs 3.4 crore funding in the first phase under the PMMSY as well, and is expected to foster atmanirbharta or self-reliance, the minister said.

The state government earlier formulated a 'Lease Policy for Government-owned water bodies of Tripura' in 2021 for sustainable use of a total 1,502 government-owned water bodies.

Tripura earlier set a 10-year target for food self-sufficiency in 2002-03. The target was not achieved at the time of evaluation in 2012-13 with barely 25 thousand MT of meat, 12.5 crore eggs and 1.05 MT of milk produced annually. Later, the erstwhile Left Front government set a new target for self-sufficiency in food production by 2020. But despite repeated attempts, it failed to cut down on its import dependency so far.

In 2020, the then Chief Minister Biplab Kumar Deb said his government is trying to double the income of farmers and poultry farmers by intensive cultivation and introduction of high yielding varieties. He stressed on developing production in primary sector activities to boost revenue and overcome the crises arising out of the pandemic induced lockdown.

AN ALL-WEATHER LINK TO TAWANG

The Sela Tunnel, which was "dedicated to the nation" by Prime Minister Narendra Modi on Saturday (March 9), is a key border infrastructure project as it connects Guwahati to the strategic Tawang sector round-the-year, thus aiding faster military movement to the Line of Actual Control (LAC).

Constructed by the Border Roads Organisation (BRO) at an altitude of around 13,000 feet and a cost of Rs 825 crore, the construction of the tunnel was aimed at providing all-weather connectivity to Tawang across Sela Pass on the Balipara-Chariduar-Tawang (BCT) Road, which connects Tezpur in Assam to Tawang in Arunachal Pradesh. Tezpur is the home of the Indian Army's IV Corps which looks after Assam and western Arunachal Pradesh.

The connectivity at present

At present, two separate routes connect Tezpur and Tawang: Balipara-Chariduar-Tawang (BCT) and Orang-Kalaktang-Shergaon-Rupa-Tenga (OKSRT), which meet at Sela Pass and merge into one route to Tawang.

The operational Tezpur to Tawang route has three major passes – Nechiphu, Bomdila and Sela. While the road passing through Bomdila was kept open throughout the year, there were foggy stretches at Nechiphu, and snow at Sela that would cut off Tawang.

The Sela Tunnel will thus be a major boost to India's operational preparedness along the LAC, aiding quick military mobilisation to the bordering Tawang sector, saving nearly 10 km of road distance, translating into nearly almost an hour of travel time for convoys. Heavy artillery guns can be transported through the tunnel.

Preceded by similar projects earlier

This comes months after the inauguration of the Nechiphu tunnel by **Defence Minister Rajnath Singh** last September.

Both the tunnels would provide all-weather connectivity to Tawang, bypassing the foggy stretches on Nechiphu and the snow on Sela passes, together cutting down distance by about 15 km, thus aiding faster military deployment to Tawang.

With China seeking to claim Tawang as part of larger Tibet, while calling Arunachal Pradesh southern Tibet, India has always kept the region militarily fortified.

During the 1962 India-China war, Beijing had captured Tawang within the first few days. Tawang's historical significance lies in it being the birthplace of the sixth Dalai Lama, making it an important seat of Tibetan Buddhism after Lhasa.

From the military and strategic point of view, Tawang provides geographical access up to the Brahmaputra plains and provides the shortest axis to Tezpur in Assam. The lines of communication from Tawang stretch to Guwahati and the extended Siliguri corridor, amplifying its military importance.

According to the Defence Ministry, the Sela Tunnel has been constructed using the new Austrian tunnelling method and incorporates safety features of the highest standards.

The foundation stone of the tunnel was laid by Modi on February 9, 2019, and construction began on April 1 of the same year.

INDIA, BRAZIL HOLD FIRST '2+2' DEFENCE AND FOREIGN MINISTERIAL DIALOGUE

India and Brazil on Thursday explored ways to expand cooperation in areas of energy, critical minerals, technology and counter-terrorism at their first '2+2' defence and foreign ministerial dialogue.

External affairs ministry spokesperson Randhir Jaiswal said the talks spanned various key areas of cooperation. "Discussions spanned defence, space, energy, critical minerals, tech, counter-terrorism and regional, multilateral & other issues of mutual interest," he said on 'X'.

The dialogue took place in Delhi.

It was co-chaired by additional secretary in the external affairs ministry G V Srinivas and joint secretary in the defence ministry Vishwesh Negi.

The Brazilian delegation was led by Director at Brazilian foreign ministry Marcelo Camara and Rear Admiral Fernando de Luca Marques de Oliviera.

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

Telegram: http://t.me/DreamIAS_Jamshedpur