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Centre hits back after Trump threatens more tariffs on India

▌ Tariffs 'paid by India' will be substantially raised as it keeps profiting from Russian oil, says U.S. President

▌ MEA says U.S. 'actively encouraged' Russian imports since war in Ukraine, points at EU's trade with Russia

T.C.A. Sharad Raghavan
NEW DELHI

Less than a week after he announced a 25% tariff on imports from India "plus a penalty", U.S. President Donald Trump on Monday once again raised the issue of India buying oil from Russia and profiting from it. He stated that he would be "substantially" raising the tariff "paid by India to the USA". It should be noted that such tariffs are paid by importers in the U.S., rather than the country on which the tariffs are levied.

The Indian government hit back at Mr. Trump's statements and also criticism from European countries on India's trade with Russia, saying that such "targeting of India" was "unjustified and unreasonable". In a statement, the government pointed out that not only did the U.S. encourage such trade previously, both the European Union and the U.S. continue to actively trade with Russia at levels significantly higher than India's."

"India is not only buying massive amounts of Russian Oil, they are then, for much of the Oil purchased, selling it on the Open Market for big profits," Mr. Trump posted on the social network Truth Social. "They don't care how many people in Ukraine are being killed by the Russian War Machine. Because of this, I will be substantially raising the Tariff paid by India to the USA. [sic]"

The Ministry of External Affairs responded to the statement, saying that the U.S. had previously "ac-

> They [India] don't care how many people in Ukraine are being killed by the Russian War Machine. Because of this, I will be substantially raising the Tariff paid by India to the USA
> **DONALD TRUMP, U.S. President**

> It is revealing that the very nations criticising India are themselves indulging in trade with Russia. Unlike our case, such trade is not even a vital national compulsion
> **MEA STATEMENT**

tively encouraged" the import of Russian oil.

"India has been targeted by the United States and the European Union for importing oil from Russia after the commencement of the Ukraine conflict," the official spokesperson of the Ministry of External Affairs said. "In fact, India began importing from Russia because traditional supplies were diverted to Europe after the outbreak of the conflict. The United States at that time actively encouraged such imports by India for strengthening global energy markets sta-

bility." The MEA's statement added that India's oil imports from Russia are meant to ensure "predictable and affordable energy costs" for the Indian consumer. "They are a necessity compelled by the global market situation," it added. "However, it is revealing that the very nations criticising India are themselves indulging in trade with Russia. Unlike our case, such trade is not even a vital national compulsion."

The MEA said that the European Union in 2024 had a bilateral trade of €67.5 billion in goods with Russia, in addition to a trade in services estimated at €17.2 billion in 2023.

Despite HC order, rural employment guarantee scheme remains stalled in Bengal

NEWS ANALYSIS

Shiv Sahay Singh
KOLKATA

While directing the resumption of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in West Bengal, a Division Bench of the Calcutta High Court, led by Justice T.S. Sivagnanam, spoke on June 18 about drawing a line between past actions and future steps to be taken to implement the scheme. The Division Bench, while resolving the three-year imbroglio, pointed out that the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) "does not envisage a situation where the scheme will be put into cold storage for eternity".

Workers at Tuima village in West Bengal's Purulia district standing near an unfinshed pond. The Centre had stopped the release of MGNREGS funds to the State from March 2022. FILE PHOTO

Despite the High Court order to resume the scheme from August 1, 100 days of guaranteed wage employment to rural households has yet to start, and it seems that neither the Centre nor the State is keen to resume it.

The funds have been stalled since March 2022 over allegations of corruption in the implementation of the scheme. The Centre invoked Section 27 of the MGNREGA, 2005, which allows for stoppage of funds for violation of rules in implementation of the scheme by the State.

The suspension of MGNREGS has dominated the politics of the State for the past three years.

Before the 2024 Lok Sabha poll, Trinamool Congress (TMC) leaders paraded MGNREGS beneficiaries in New Delhi and highlighted that the Centre was depriving the workers of the State of their rightful dues. However, after the High Court's June 18 direction, the response of the ruling party has been lukewarm.

In several public gatherings between June 18 and August 1, West Bengal Chief Minister Mamata Banerjee gave no hints on the resumption of the 100-day work. Instead, she spoke about Karmashree Prakalpa, a scheme aimed at providing at least 50 days of wage employment to each job card holder in every household in a financial year.

After the court's direction, the TMC can't use the "Centre's deprivation" card any more. However, it continues to highlight that the Centre owes ₹3,000 crore to the State under the scheme. The pending funds are related to past work and has nothing to do with the resumption of work under the scheme. Once work begins, payment receipts will be generated and the Centre will have to directly pay the workers. Several States have pending payments under MGNREGS, and pending wages is not a hindrance in starting new work under the Act.

The State government, however, is not accepting applications from individuals seeking work. In the past six weeks, thousands of people have approached the authorities expressing their willingness to work under the scheme but there seems to be no clarity on whether MGNREGS will resume or not.

The Centre, on the other hand, has not also shown any willingness to comply with the High Court order and continues to hide behind Section 27 of the MGNREGA, blocking the release of funds, and thereby systematically depriving workers of their legal right to employment. West Bengal Bharatiya Janata Party (BJP) leaders, who have publicly opposed the resumption of the scheme, do not want the State government to get any allocation under it before the Assembly poll.

Looming migrant crisis
Both the Central and State governments are unwilling to resume the scheme even when West Bengal is facing a huge migrant crisis, with millions leaving the State in search of work. While the fate of the scheme and workers hangs in balance, West Bengal is heading for Assembly poll in 2026. The resumption of the scheme could have provided succour to millions of workers in the State but may no longer serve the political interests of the TMC and the BJP.

It was the Paschim Banga Khet Majoor Samity (PBKMS), a union of agricultural workers that approached the High Court seeking resumption of MGNREGS. The union put up a legal fight for three years to ensure that work under the scheme can start again.

The PBKMS blames "wilful inaction by both the governments" for not resuming the work. Demanding immediate implementation of MGNREGS in West Bengal, the PBKMS says that non-resumption of work is a "blatant non-compliance of a High Court order, and is illegal, unjust, and unacceptable".

Bangladesh, a year after Sheikh Hasina's ouster

Bangladesh today is abysmally different from the trajectory promised to the people by Professor Muhammad Yunus when he was sworn in (August 8, 2024) as Chief Adviser of the Interim Government. Many myths have been shattered.

The first myth that has unravelled is that Sheikh Hasina's ouster was the result of a "spontaneous students' uprising". It is now accepted that the 'meticulously designed' regime change operation was the handiwork of the Jamaat-e-Islami (JeI), the radical Islamist political party that fought against the creation of Bangladesh in 1971. In 2024, as in 1971, the JeI was strongly supported by Pakistan, backed by key external powers including the United States and China. The JeI is the power behind the Chief Adviser, controlling every decision.

The second myth concerns the legitimacy and constitutional validity of the Yunus-led regime. On August 8, 2024 they took the oath of allegiance to the Constitution of Bangladesh. However, this Constitution has no provision for an interim government. Even though the Bangladesh High Court (on December 17, 2024) restored the system of caretaker government, the Yunus-led Interim Government cannot be considered a caretaker government. The Yunus regime has violated the mandated neutrality and non-party requirements of the caretaker government. Members of the Hizb-ut Tahrir, Islami Andolan Bangladesh, and Hefazat-e-Islam have been included as advisers in his regime. In a tweet (now deleted), one of the advisers expressed their desire to establish a caliphate in Bangladesh based on Sharia law, and even spoke about a civil war to achieve this goal. The strongly Islamist ideological leanings and objectives of those who hold the reins of power in Bangladesh have alienated them from the people.

An election delaying tactic
The third myth relates to the raison d'etre of any interim government. Its mandate can only be to ensure that free, fair and inclusive elections are organised within the specified 90-day period, with the participation of all registered political parties. An interim regime is not authorised to take any major decisions, especially those with constitutional significance or implications. Such decisions can be taken only by an elected parliament.

Instead of preparing for elections, the Yunus-led interim regime has initiated a reform process, insisting that this must be completed before the elections. It has set up reform commissions for the Constitution, for electoral reforms, and for police reforms, among others. The JeI is the key protagonist of these reforms, which it hopes will boost its vote share far above the meagre 5% to 10% it has been receiving. This so-called reform process is merely an excuse to delay the elections, a step strongly opposed by the Army and by major political parties such as the Bangladesh Nationalist Party which are

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Public opinion appears to have turned against the Yunus interim regime — with growing economic distress, the shared refrain seems to be a yearning for the 'earlier and better times'

insisting that elections be held by December 2025. This issue is now rapidly coming to a head, and election dates may be announced very soon.

Led by the JeI, the interim regime is unleashing unspeakable violence on the people. Prime targets are the non-Muslim minorities (Hindus, Christians, Buddhists) as well as Muslim religious minorities (Sufis and Ahmadiyyas). Equally vicious has been the violence unleashed against Awami League members and their supporters. Every statue, every building, every institution associated with the Liberation War of 1971 has been destroyed.

Over the months, as this violence has continued unabated, with varying degrees of ferocity, a huge backlash has built up among the people. Awami Leaguers have been jailed in large numbers or just brutally slaughtered. In May 2025, all Awami League activities were banned. While Sheikh Hasina is being tried on charges of ordering attacks on students (during the unrest of July-August 2024), there is deliberate amnesia about the burning and looting (by the mobs) of 400 police *thanas* across Bangladesh, followed by the killing of policemen in the hundreds, even thousands, using these looted weapons. The decision by the interim regime to indemnify itself and all "the students and people who actively took part in the mass uprising of July-August" against harassment or arrest has been sharply criticised within and outside Bangladesh.

A party, its disconnect
The 'students' party, the National Citizen Party (NCP), formed in February 2025, is dubbed the King's Party, owing direct allegiance to Mr. Yunus. So far, the party has no legal status since it is not registered with the Election Commission. At first it included erstwhile members or sympathisers of the Islami Chhatra Shibir (students' wing of the JeI) and claims 'it was established to fight for the rights of the student community'. Yet, it has little or no following among university students. On July 16, 2025, NCP leaders held a rally in Gopalgunj, the hometown of the Father of the Nation, Sheikh Mujibur Rahman, with the reported intention of desecrating his mausoleum in Tungipara.

The NCP was strongly resisted by the local people, staunch supporters of the Awami League. The Bangladesh Army is said to have supported the NCP by firing on unarmed civilians, resulting in the loss of several lives. The Gopalgunj incident has caused a furore, with dissatisfaction against the NCP and the Interim regime reaching new highs. A complaint has now been filed with the United Nations, describing this as a genocidal attack on the people of Bangladesh.

Important institutions of state such as the judiciary, the central bank and even the media have been compromised. In August 2024, the Chief Justice of the Supreme Court and the Governor of the Bangladesh Bank were surrounded by mobs and forced to resign. This pattern of mobocracy soon became the norm.

Strict media control has been ensured by peremptorily taking over media houses. Journalists have been imprisoned since the early days of the interim regime, many on charges of murder. Many have lost their jobs, and face penury. This massive clampdown on an otherwise vibrant and comparatively free media has allowed the interim regime to peddle its own version of events to the global media.

Economic distress, a patient India
However, it is difficult to hide the overwhelming economic distress being faced by the people. Growth rates have halved from the robust 6% and more per annum, that was the norm under Sheikh Hasina. Factories have shut down due to poor supply chain management, resulting in joblessness and hyper-inflation. In July 2025, Bangladesh Bank highlighted continuing macroeconomic challenges due to "persistent inflation, uncertainties associated with the forthcoming elections, slowing economic growth and stagnant private investment".

The economic distress is, in many ways, the direct result of the foreign policy goals set by the Yunus regime. As can be expected, the JeI is not averse to the moniker, 'client state of Pakistan', that is increasingly used for Bangladesh. The events of July-August 2024 were preceded and accompanied by vicious anti-India propaganda. Harsh criticism of Sheikh Hasina as a 'fascist dictator' was invariably followed by blaming India for the state of affairs in Bangladesh. The mutually beneficial trade and economic partnership between these two neighbouring countries was criticised as being one-sided and unfair.

One year of this unrelenting barrage has now boomeranged on the Yunus regime. Public opinion has turned against it because, except for words, it has provided no succour to the people of Bangladesh. Across the nation, the shared refrain openly describes the 'earlier times' as 'being better', including the benefits to Bangladesh of their strong economic, trade and investment links with India.

India has shown a lot of patience in dealing with the interim regime. In August 2024, India had conveyed its willingness to continue with and build upon its links with Bangladesh. In April 2025, during the bilateral meeting with Mr. Yunus, Prime Minister Narendra Modi reiterated India's support for a democratic, stable, peaceful, progressive and inclusive Bangladesh, enunciating India's people-centric approach to the relationship. Unfortunately, the hand of friendship was rebuffed. Now, a new grouping of China, Pakistan and Bangladesh is sought to be created. Bangladesh must have early free, fair and inclusive elections under a new caretaker government. India is confident that the new elected government, one that truly reflects the wishes of the people of Bangladesh, will work to re-establish a cordial and mutually beneficial relationship with India.

A crisis of trust
The ECI must be more transparent and impartial in its actions

The credibility of an electoral system, or democracy in general, is dependent solely on it being seen as fair by all, particularly so by the loser. This is comparable to a judicial dispute or a sporting event on this count. If the losers think they lost only because the process was rigged against them, a crisis of trust develops. The serious charges being raised against the Election Commission of India (ECI) by the Leader of the Opposition in the Lok Sabha, Rahul Gandhi, has to be seen in this context. He says that he has plans to disclose more information regarding discrepancies in the 2024 general election. One must wait for the details of those allegations before making any comments on their merits. The ECI has come under attack by politicians earlier too. Narendra Modi, when he was the Chief Minister of Gujarat, had repeatedly questioned the impartiality of the ECI. Many of these charges against the ECI are rhetorical attempts by political parties or leaders to animate supporters. In Bihar, the Leader of Opposition in the State Assembly, Tejashwi Yadav, has alleged his name did not exist on the draft electoral roll which is being revised by the ECI. As it turns out the Elector's Photo Identity Card (EPIC) number that he thought was his is different from the one in the ECI records, raising a new controversy. Politicians should be raising questions about the electoral process only when there are strong grounds for doing so. Trust in the electoral system is foundational to representative democracy.

That said, the ECI's recent statements and actions, far from buttressing public trust and enhancing transparency in the process, raise more questions. Its efficiency and its neutrality are on test in the preparation of rolls, scheduling of elections, enforcement of the code of conduct, counting process, and the redress of complaints. The ECI stands charged on each of these counts. Other than protesting that the electronic voting machines (EVM) are beyond tampering, and that political parties should raise objections regarding rolls at the appropriate time, the ECI has refused to come clean on multiple issues. It has not been transparent about the Voter Verifiable Paper Audit Trail (VVPAT) machine which is one of the three parts that make an Electronic Voting Machine. Unlike the other two parts – the Ballot Unit and the Control Unit – the VVPAT has software that is centrally installed and it is connected to the control unit. The random tallying of the VVPAT with the electronically cast votes is now an extremely arbitrary process. All political parties do not have the equal capacity to monitor the various stages of the electoral process. At any rate, the election process is not a matter of negotiation between parties and the ECI. Political parties have a role to play, but the real question is to ensure that the citizenry at large is reassured of the integrity of the electoral process. The ECI needs to correct its course to ensure that.

The missing link in India's battery waste management

India, with its focus on decarbonisation, has witnessed rapid electrification, particularly in the realm of electric vehicle (EV) adoption. There are projections that India's EV lithium battery demand may skyrocket to nearly 139 gigawatt-hours (GWh) by 2035 from 4 GWh in 2023. India's expanding renewable energy sector is also catalysing demand for lithium batteries, with rapid adoption of battery energy storage systems (BESS) to meet India's Net Zero goal by 2070. While the growth in EV adoption is desirable, it may impose environmental costs without a robust recycling framework in place. Improper disposal of lithium batteries has severe repercussions, including leakage of hazardous materials into soil and water. Added to this is the growing volume of battery waste, with lithium batteries alone accounting for 7,00,000 of the 1.6 million metric tonnes of e-waste generated in 2022. Recognising these risks, the government notified the Battery Waste Management Rules (BWMR) in 2022 to ensure sustainable management and recycling.

The first problem is the floor price
A cornerstone of the rules is the Extended Producer Responsibility (EPR), which compels producers to fund battery collection and recycling, and aims to close the loop in the battery value chain. Producers rely on recyclers to meet their recycling targets since they do not possess the logistics and the infrastructure for the collection of battery waste. In practice, recyclers must receive a certain price, known as the EPR floor price, in exchange for EPR certificates that attest that producers have met their recycling obligations. The EPR floor price ensures that recyclers are adequately compensated for their upfront investment in infrastructure, research and development, labour, technology and recycling methods.

Unfortunately, there are certain hurdles, the first being the EPR floor price being too low to sustain the robust recycling of battery waste generated by producers. Proper disposal of

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As the first step, it is essential that India ensures the adoption of fair Extended Producer Responsibility floor pricing

lithium battery waste is expensive, requiring advanced processing technologies, safe transportation, and skilled labour to prevent hazardous materials from leaching into ecosystems.

Lithium-ion batteries also have valuable and rare minerals such as cobalt, lithium and nickel, whose efficient recovery can significantly reduce India's import dependence. In case, the EPR floor price does not adequately cover proper recycling costs, it becomes economically unviable for legitimate recyclers to operate sustainably. As a result, informal and fraudulent recyclers tend to flourish, creating market distortions and perverse incentives for producers. They often issue false recycling certificates or dump hazardous waste – a failure previously witnessed in India's plastic waste management sector. If left unchecked, such practices may undermine India's circular economy ambitions. Without fair EPR floor pricing, India faces severe environmental degradation from improper battery recycling or dumping. The financial repercussions are equally alarming. Experts estimate that by 2030, inadequate battery recycling could cost India over $1 billion in foreign exchange losses.

A resistance to compliance
Large consumer electronics and manufacturers have further complicated the issue by resisting compliance. Large producers' policies are different for developed and developing countries, allowing corporations to circumvent environmental responsibilities in developing markets. This trend risks undermining the establishment of resilient and sustainable battery ecosystems across the global south.

Interestingly, adjusting the EPR floor price should not increase costs for consumers. While global metal prices have declined over the past two years, manufacturers have not passed on these savings to consumers, indicating that Original Equipment Manufacturers can absorb higher recycling costs without raising prices. A fair EPR floor price will ensure sustainable

recycling without burdening end users, while fostering a circular economy that benefits industry and consumers.

To protect legitimate recyclers and encourage compliance, India must consider adopting a fair and globally comparable EPR floor price that reflects the real costs of recycling and industry building, and which can ease to market-driven prices when the ecosystem is mature and standardisation is in place. This requires immediate constructive dialogue among policymakers, industry and recyclers to establish a viable pricing structure after analysing global pricing structures and best practices. For instance, the United Kingdom requires producers to pay close to ₹600 per kilogram for EV battery recycling, whereas what is under consideration for India is less than a fourth of that. This is a significant difference even after adjusting for purchasing power between India and the U.K. The EPR floor price for recycling battery waste should cover the full spectrum of recycling expenses, from collection to material recovery, ensuring that recyclers can operate sustainably without resorting to shortcuts. A fair EPR regime will also incentivise battery producers to hold recyclers accountable through audits.

Integrate informal recyclers
Enforcement mechanisms need urgent strengthening in India. This includes implementing robust audit systems, digitising the issuance and the tracking of EPR certificates, and imposing stringent penalties for fraud and non-compliance. Additionally, integrating informal recyclers into the formal sector through training and regulatory support can help eliminate hazardous practices while expanding India's recycling capacity. This is not just an environmental challenge. It is an economic and strategic imperative. By recalibrating the EPR floor price, strengthening enforcement, and formalising the informal sector, we can transform battery waste from a looming crisis into a catalyst for green growth and a truly circular economy.

India's pandemic toll remains elusive

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The Civil Registration System (CRS) data has brought into sharp relief the magnitude of excess mortality that India witnessed during the COVID-19 pandemic years. Excess mortality refers to the difference between the total number of deaths during a pandemic or any other natural disaster compared to the number of deaths that would have been expected under normal conditions. According to the CRS, India recorded 76.4 lakh deaths in 2019. This figure rose to 81.11 lakh in 2020 and further surged to 1.02 crore in 2021 – an implicit acknowledgement of the fact that the true mortality impact of COVID-19 far exceeds the official toll of 5.33 lakh.

Data from the Medical Certification of Cause of Death (MCCD) for 2021, released alongside the CRS and Sample Registration System reports, adds further weight to this claim. COVID-19 was identified as the second leading cause of death, with 5.74 lakh certified fatalities attributed to the virus – already exceeding the official figure. However, this estimate was drawn from less than a quarter (23.4%) of registered deaths in 2021. Taken together, the rise in all-cause mortality and the limited scope of medical certification offer a compelling case that India's true pandemic death toll may be far closer to the World Health Organization's estimate of 47 lakh deaths – a model that the Government of India had earlier rejected, citing concerns over its methodological robustness.

A systemic deficiency
CRS data/all-cause mortality data is indispensable, especially given the widespread undercounting of COVID-related deaths. This metric captures not only confirmed cases but also fatalities arising from misdiagnoses, misclassification, and pandemic-induced systemic disruptions. Nonetheless, the utility of the all-cause mortality data in gauging the true impact of

Even comprehensive datasets such as CRS may fall short in reflecting the full impact of the pandemic

COVID-19 is limited in the Indian setting, as the recording of deaths is far from universal. The National Family Health Survey-5 states that nearly 29% of deaths between 2016 and 2020 went unregistered. The omission of civil registration from the list of essential services during the 2020 lockdown further obscured the mortality landscape. As a consequence, even comprehensive datasets such as CRS may fall short in reflecting the full impact of the pandemic.

Beyond numerical discrepancies lies a deeper issue – the structural inadequacy of death certification and classification. During the pandemic years, we visited crematoriums and burial grounds in a locality in Kerala. We observed a marked rise in the number of daily cremations compared to previous years – an increase that was evident not only in facilities designated for handling COVID-19 deaths, but also in those without such designation. This raises pertinent questions regarding the misclassification of COVID-19 deaths and under-ascertainment of causes. A significant driver of this opacity is the absence of medical certification. In 2020, 45% of deaths occurred without any form of medical attention – 10% points higher than in pre-pandemic years. Within our study cohort, only 22.8% of the deceased had any formal medical documentation indicating the cause of death. Nationally, only 23.4% of deaths are medically certified as per the recent MCCD data. This systemic deficiency compromises mortality surveillance as well as public health planning.

Indirect deaths
A further dimension of the pandemic's mortality burden relates to indirect deaths – a category of deaths that, while not directly caused by SARS-CoV-2 infection, can be reasonably attributed to the wider repercussions of the pandemic. These fatalities, often absent from

COVID-19 official statistics, occurred due to systemic disruptions: delays in seeking care due to fear of infection, scarcity of hospital beds and essential medicines, post-infection complications, economic distress, and logistical barriers to healthcare access during prolonged lockdowns.

During our field study, we found that a considerable share of deaths was indirectly linked to these cascading effects of the pandemic. Many people suffered physical and psychological deterioration post-infection, some experienced an exacerbation of chronic conditions, and others refrained from seeking timely medical attention. When extrapolated to the broader national context, particularly in regions where healthcare systems are fragile and supply chains were acutely disrupted, the implications would be sobering. To gauge the true mortality impact of the pandemic, it is insufficient therefore to rely solely on officially recorded COVID-19 deaths or all-cause mortality data.

Our study in Kerala found that 34% of deaths were indirectly attributable to the pandemic, and 9% may have been misclassified. If such patterns exist in a State with a relatively strong public health systems (although the death registration in the prescribed time was around 61% in 2021), the scale of undercounting could be even more pronounced in States such as Gujarat and Madhya Pradesh where discrepancies between excess deaths and official figures are significantly wider.

These findings make a compelling case for a systematic inquiry into the full extent of mortality during the pandemic. Policymakers should consider conducting a large-scale study, which could be also accomplished by including questions on decedents in the next Census. More importantly, they must serve as a wake-up call to urgently reform India's mortality surveillance architecture.

After a brief pause, physical bank branches are back

The recent rise in physical bank branches was led by private banks, though public banks were not far behind

DATA POINT

Nirupama Kulkarni
Advait Moharir

Over the last two years, India's private sector banks have been expanding their physical presence. The two biggest lenders – HDFC Bank and ICICI Bank – opened 3,284 and 1,341 branches, respectively, between 2022 and 2024. Both lenders also increased their workforce, adding 40,305 and 9,204 employees in FY 2024, respectively. In FY25, however, HDFC Bank added only 994 new employees, while ICICI Bank cut back its workforce by 6,723. The juxtaposition of expanding physical bank presence with a recent slowdown in hirings places Indian banking in new, uncharted waters.

Traditionally, the presence of physical bank branches allowed banks to screen and monitor their borrowers. Proximity to their borrowers made it easier for bankers to gather 'soft' information and monitor their loans closely, especially for loans collateralised by movable properties. In a seminal paper published in 2002, Mitchell Peterson and Raghuram Rajan demonstrated that this model underwent a fundamental shift in the U.S. during the 1980s and 1990s, as banks adopted credit scoring technologies. Information technologies could substitute for the soft information based on local interactions. The average distance between a bank branch and its borrowers increased as a result. Similarly, the recent wave of digitisation in India has also fundamentally changed the need for close physical proximity between banks and their borrowers.

Over the last few years, the digital revolution in India has streamlined various administrative and logistical tasks related to banking. Consequently, ease of access has improved for many individuals across the country. With the

smartphone and 4G revolution ensuring affordable Internet access to the most remote corners, multiple banking services, including account creation, verification (via eKYC), and transactions (via UPI) are now possible online. Given this transformation, are traditional brick-and-mortar bank branches becoming obsolete?

From the turn of the century, physical bank branches expanded significantly. Between 2008 and 2023, the number of commercial branches doubled from 25 per 1,000 sq km to 50. Concurrently, accessibility also improved, with the number of commercial bank branches per 1,00,000 adults rising from 9 to 14 **(Chart 1)**.

Both per capita and geographical branch growth have stabilised since 2016. This physical expansion was accompanied by financial inclusion schemes such as the Pradhan Mantri Jan Dhan Yojana, which aimed to provide a bank account to every Indian citizen. According to the Comprehensive Annual Modular Survey, conducted by the National Sample Survey Organisation, 94.6% of adults have an active bank account (2022-23).

This phase of expansion was followed by a slowdown. Between 2020 and 2022, the rate of bank office closures saw a sharp uptick, despite new branches opening every quarter. Consequently, net bank branch openings fell sharply and stayed flat throughout this period **(Chart 2)**. This was a period of branch consolidation, with many small branches being subsumed into larger ones.

But from the second half of 2022, banks began re-opening branches, which is reflected in the uptick in net openings. Between 2022Q3 and 2024Q4, 11,963 new bank branches were opened on net, compared to 1,787 net branches between 2020Q1 and 2022Q2.

These closures were largely driven by public sector banks (PSBs), which closed 9,207 branches between 2019 and 2024, compared to private banks, which closed only

579 branches during the same period. PSBs closed an especially large number of branches in 2021 (3,519). From 2022H2 onwards, banks began reopening physical branches in large numbers. While private sector banks cumulatively added 15,537 branches between 2019 and 2024, PSBs added 8,995.

In summary, public banks drove closures, and private banks drove post-pandemic openings. This does not imply, however, that the latter are emerging as substitutes for the former. While fully functioning PSBs are diminishing due to consolidation and amalgamation, they nevertheless continue to service large segments of the population via banking correspondents (BCs). However, payment banks have emerged as the dominant player in this segment, adding between 1,50,000 and 3,00,000 new banking correspondents every year between 2019 and 2024. In comparison, public banks added between 15,000 and 33,000 new BCs, while the same number for private banks never exceeded 8,000 **(Chart 3)**.

Over the last few years, banking in India has undergone a significant churn. Two lessons stand out. One, the reversal of branch closures indicates that brick-and-mortar offices remain an important means of mobilising deposits and providing credit. Bank branches also help impart financial education by spreading awareness about group-specific schemes and potentially facilitating cross-selling of relevant financial products, such as mutual funds and insurance. Two, PSBs and payment banks are rapidly expanding their physical presence via banking correspondents. Outsourcing basic bank services to BCs has possibly allowed these banks to exclusively offer other services online. Hence, by combining the power of the digital revolution with the continued expansion of their physical presence, Indian banks are entering a "phygital" era, indicating that distance still matters in the digital age.
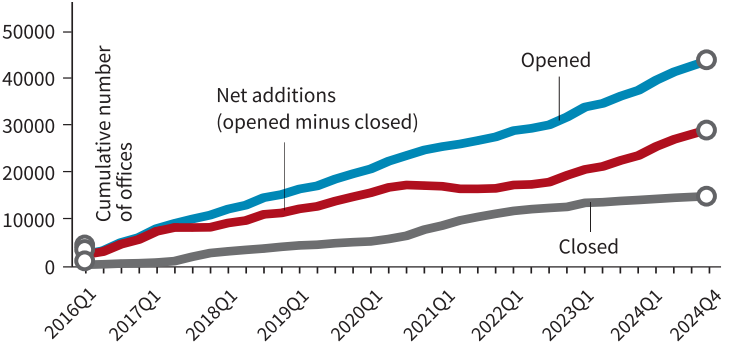
Building more branches

The data for the charts were sourced from Financial Access Survey, IMF, Database of Indian Economy, and the Reserve Bank of India
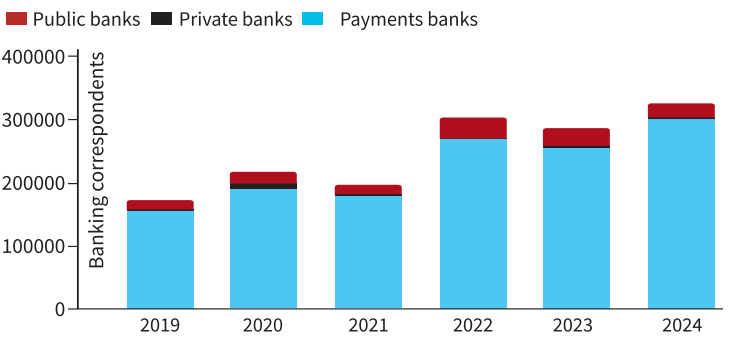

Chart 1: Bank branch availability over time

Branches per 100,000 persons

Branches per 1000 sq km
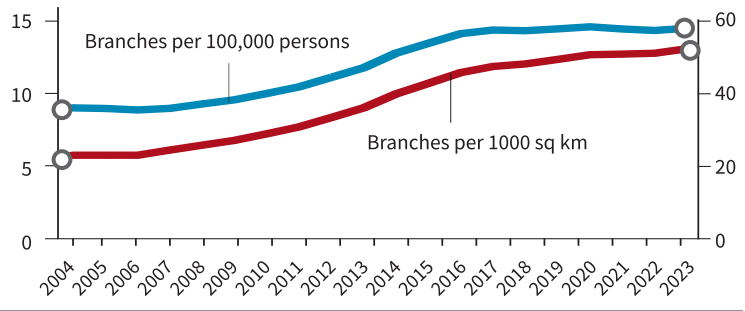
Chart 2: Bank branch openings, closures and net additions over time

Cumulative number of offices

Opened

Net additions (opened minus closed)

Closed

Chart 3: New bank correspondents by bank group (2019-2024)

■ Public banks ■ Private banks ■ Payments banks

Banking correspondents

Nirupama Kulkarni is a Professor at CAFRAL. Advait Moharir is an independent researcher

Text&Context

Funds disbursed by Rajasthan under investment scheme

765.78

crore. This investment falls under the Rajasthan Investment Promotion Scheme (RIPS) for the 2024-25 fiscal year, a statement said. RIPS 2024 targets priority sectors such as renewable energy, tourism, IT, and women-led startups. PTI

Projected drop in India's exports to the U.S. in FY26

30

in per cent. The additional 25% import duty announced by U.S. President Donald Trump on Indian goods could lead to this decline, the Global Trade Research Initiative said. India now faces a 25% country-specific tariff and an extra penalty on its exports to the U.S. PTI

IAF's unending fighter conundrum

Why have the MiG-21 fighter jets been called 'flying coffins'? Why has the induction of Mk-1A jets been delayed? How many jets does the Indian Air Force intend to induct in the next two decades? Are the engines for India's fifth generation fighter aircraft going to be indigenously developed?

Dinakar Peri

The story so far:

After over six decades in service, the MiG-21 fighter jets are set to be retired from the Indian Air Force (IAF) in September this year. The formal ceremony is scheduled to be held at Chandigarh where the jets were first inducted in 1963. With this the fighter strength of the IAF will dip from 31 to 29 squadrons, against the sanctioned strength of 42 squadrons. A fighter squadron typically has 16-18 jets. The IAF is awaiting deliveries of the Light Combat Aircraft (LCA)-Mk1A, which is expected to begin in the next few months after repeated delays. All this at a time when the Chinese Air Force and Navy have fielded around 1,900 fighters including more than 1,300 fourth-generation aircraft, not including trainers, as per a 2024 U.S. Department of Defence report. China has also deployed two Fifth Generation Fighter Aircraft (FGFA), recently unveiled two more advanced jets, and is likely to supply 40 J-35s stealth jets to Pakistan.

What has been the legacy of MiG-21s?
Contracted from the erstwhile Soviet Union after the 1962 war with China, the MiG-21s heralded the onset of supersonic aviation in the IAF and was also its first non-western fighter. A total of 872 MiG-21 aircraft have been inducted in the IAF, a bulk of them licence-manufactured by the state-owned Hindustan Aeronautics Limited (HAL). The MiG-21s remained the mainstay of the IAF for several decades and a spate of accidents in the early 2000s earned them the name 'flying coffins'. Over the six decades, there were over 450 accidents involving the jet.

The jets played a key role in the 1965, 1971 wars, the 1999 Kargil conflict, and more recently in the aerial dual with Pakistan on February 27, 2019, a day after the Balakot air strike. During the attack, Group Captain (then Wg Cdr) Abhinandan Varthaman's MiG-21 was shot down and fell in Pakistan Occupied Kashmir after he shot down a Pakistani F-16, according to the IAF.

In fact, in the absence of an Advanced Jet Trainer (AJT), before the Hawks were inducted in 2008, the MiG-21s were used for stage III training of young pilots for a long time as it was the "most suitable" fighter even though it was considered "sub-optimal" as a trainer.

The MiG-21 is also among the most successful fighter jets globally with over 6,000 jets of 12 types flown by over three dozen countries. Currently, there are two MiG-21 Bison squadrons in service – the No. 23 'Panthers' and the No. 3 'Cobras'. Incidentally, the No. 3 Squadron has the distinction of being the first to get the upgraded MiG-21 Bisons still in service and will now be the first to get the LCA-Mk1A. With the MiG-21s out, the MiG-29s are the last of the MiG series in service which together with the SU-30MKI remain the last of Russian-origin fighters.

What is the current status of the IAF?
Besides the MiG-21s, a majority of the current inventory, that is the early variants of the Jaguars, Mirage-2000s and Mig-29s, will start going out by the end of the decade. This leaves the SU-30MKI in service, the LCA variants planned to be inducted, and the Medium Role Fighter Aircraft (MRFA) while the indigenous FGFA, the Advanced Medium Combat Aircraft (AMCA) is under development.

The IAF currently operates two

Long legacy: Technicians preparing a MiG-21 fighter for a test flight at the Base Repair Depot at Ozhar, Maharashtra on July 24, 1982. HINDU PHOTO ARCHIVES

squadrons of the LCA-Mk1, which undertook maiden flight in January 2001 and was inducted in 2016. A more capable variant, the Mk-1A, which is to be inducted in large numbers, had been delayed initially due to development issues and later due to non-delivery of engines by General Electric (GE) Aerospace citing supply chain difficulties.

How did it get delayed?
The Defence Ministry had signed a ₹48,000 crore contract with HAL for 83 MK1A jets, and deliveries were to start in March 2024 with at least 16 planes to be delivered to the IAF every year. However, not a single Tejas Mark-1A has been delivered so far. In August 2021, the HAL placed an order for 99 F-404 engines with GE Aerospace at a cost of ₹5,375 crore for the 83 Mk1A jets. The first engine arrived in India only in April this year after a delay of one and half years and the second engine was delivered early this month. Additionally, a deal for 97 additional jets, estimated to ₹67,000

crore, is expected to be concluded in the next few months. HAL has assured to scale up production to 24 jets a year.

Amid these delays, an Empowered Committee for Capability Enhancement of the IAF headed by the Defence Secretary R. K. Singh identified key thrust areas and made recommendations for medium- and long-term measures in the report submitted to Defence Minister Rajnath Singh in March.

As per the IAF, the LCA Mk2, larger and more capable than the Mk1 variants, is meant to replace the Mirage 2000, MiG-29 and Jaguars. It is expected to take first flight in 2026. In February 2025, IAF Chief Air Chief Marshal A. P. Singh said that they need to add 35-40 jets every year to make up for the shortage in numbers. Both these programmes, LCA-Mk1A and Mk2, are extremely critical to shore up fighter numbers of the IAF over the next 10-15 years. In an interview to PTI in June, HAL Chairman and Managing Director D. K. Sunil said that GE Aerospace is expected to supply 12 engines in the current fiscal and that the jets would be delivered to the IAF.

Moreover, India has procured 272 Su-30MKIs from Russia of which around 260 remain in service. Last December, the Ministry of Defence signed a ₹13,500 crore deal with HAL for 12 Sukhois to replace those lost in crashes. A major upgrade programme for the Sukhoi's has been lined up to be undertaken by HAL. The upgrade of 84 jets in the first batch has already been approved. Meanwhile, by early 2040s, some of the earlier batch of SU-30MKIs will go out.

What is the way forward?
The IAF has drawn up an ambitious plan to induct more than 600 jets over the next two decades, a large number of them being LCA variants. This includes 180 LCA-Mk1A, over 120 LCA-Mk2, 114 MRFA and at least 120 AMCA. A Twin-Engine Deck Based Fighter for the Navy's aircraft carriers is also on the drawing board. However, all this hinges on timely

production and deliveries.

Mr. Singh said in an interview recently that they are talking to partners for the likely import of a small number of fifth gen fighters as an interim measure while the AMCA development continues. The option is between the Russian SU-57 and American F-35. These are sensitive negotiations, Mr. Singh said adding, "When it reaches a tangible stage, whether it is an Acceptance of Necessity (AoN), a Request For Proposal or ultimately through a contract that is when the media will come to know."

Ultimately, it is the fifth gen AMCA that is the way forward while the LCA variants and MRFA fill numbers and add strength in the medium term. The Aeronautical Development Agency (ADA) that is developing the aircraft has floated an AoN inviting private sector participation for the production. Even HAL has to bid for it, unlike the nomination in the past. "I imagine it will take 3-6 months to reach the contract award stage", Mr. Singh said. "Thereafter the project itself of development and an AMCA prototype to actually take to the skies, it would be a 10-year program, I would imagine."

On the engine front, the F414 engine to power the LCA-Mk2 is to be licence manufactured by HAL for which commercial negotiations with GE are underway. The AMCA development is envisaged in two phases – MK1 development and couple of squadrons with the GE414 engine, and AMCA-Mk2 with a more powerful 110KN engine that is to be co-developed with a foreign partner for which talks are underway.

All this leaves the MRFA deal, for which the Request For Information was issued to global aircraft manufacturers in April 2019, but there has been no progress since. Given the huge cost involved, the long timelines and various other programmes already in the pipeline, it has to be seen how it can be taken forward.

Dinakar Peri is Fellow, Security Studies at Carnegie India.

India's fighter jet strength

IAF CURRENT SQUADRONS

SU-30MKI	13
Jaguar	6
Mirage 2000	3
MIG-29UPG	3
Rafale	2
LCA	2
MIG-21	2
Total sqns	**31**

THE PLANNED LINE-UP

LCA-MK1A	180 (83+97)
LCA-MK2	120<
MRFA	114
AMCA	120<

IAF LCA Tejas during the Aero India 2023 air show at Yelahanka air base in Bengaluru.

Contracted from the erstwhile Soviet Union after the 1962 war with China, the MiG-21s heralded the onset of supersonic aviation in the IAF and was also its first non-western fighter.

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FROM THE ARCHIVES

Ongoing war: Students' bags are kept in front of a school building damaged in a bombardment by Myanmar's military at the Ohe Htein Twin village, Sagaing Region, on May 12. AFP

Why a progressive Indian policy on Myanmar is more than plausible

New Delhi has long defined its 'interests' in the Southeast Asian country in narrow strategic terms. However, it is possible for India to put in place a more progressive, values-driven Myanmar policy that works in favour, and not against, its national interests

Angshuman Choudhury

Late last month, the Myanmar junta ended the country's state of emergency and called for elections in December, even as the multi-sided civil war rages on. In this article dated June 22, 2024, Angshuman Choudhury outlines how Indian foreign policy towards the Myanmar junta should change in order to establish influence with its neighbour.

Three years on, the military in Myanmar, which overthrew the elected civilian government in February 2021, continues to kill, maim and displace its own people. India has steadfastly maintained formal relations with this regime, which has so far murdered more than 5,000 people and displaced some 2.5 million people. In its second tenure, the Narendra Modi government did very little to engage with the pro-democracy resistance, which now has both political and military wings. Indian foreign policy scholars and practitioners have doggedly defended this policy by arguing that India needs to work with the junta if it has to protect its "interests" in Myanmar and not get swayed by an idealistic preoccupation with "values".

How India can step out of China's shadow
But, in foreign policy, there is no clear line between "values" and "interests" simply because neither has a standard definition. It all depends on how a country defines these terms. This is also the case with India's Myanmar policy. New Delhi has long defined its "interests" in the Southeast Asian country in narrow strategic terms. But now, it needs to leverage a unique set of "values" to better defend its interests. It is possible for India to put in place a more progressive, values-driven Myanmar policy that works in favour, and not against, its national

interests.

This new policy should have two key pivots, namely, democracy and human security. The new National Democratic Alliance (NDA) government, therefore, needs to take four interlocking steps immediately.

First, India needs to use its credentials as the largest federal democracy in the region to sharpen its influence in Myanmar. For long, Myanmar's pro-democracy political elites and civil society have looked up to India as a model of a federal democratic union with a well-oiled power-sharing arrangement between the centre and various subnational units. This is even more relevant today as the democratic resistance in Myanmar, which is led by the National Unity Government (NUG), dozens of ethnic revolutionary organisations, civil society organisations, and trade unions, strives to replace the military-drafted 2008 constitution with a federal constitution. By helping this vibrant opposition achieve its aim through capacity-building and knowledge exchange programmes, India can distinguish itself from China, its primary regional competitor in Myanmar. Both Beijing and New Delhi can sell military hardware to Myanmar, but only India can sell the spirit of federal cooperation. Here is a chance for the new Indian government to outmanoeuvre the Chinese in their own 'backyard'.

Weapons sales and humanitarian outreach
Second, India needs to immediately halt all weapon sales to the Myanmar military. According to the advocacy group, Justice For Myanmar (JFM), Indian state-owned military hardware manufacturers have sold a range of non-lethal and semi-lethal equipment to the junta since the 2021 coup. In its most recent report, published on March 27, the group claimed that on

January 2, the Indian Air Force transferred a package which had 52 items, including navigation and communication parts, to its Myanmar counterpart. Another recent investigation by Frontier Myanmar claims that India sold more than $1.5 million worth of navy-grade diesel to junta-linked entities since the coup. New Delhi needs to immediately put a stop to these, as the Myanmar military continues to use all its three services – the army, air force, and navy – to attack non-combatant civilians using imprecise lethal tactics.

Third, India needs to immediately open cross-border humanitarian corridors to help civilians affected by the conflict along three border provinces – Sagaing Region, Chin State and northern Rakhine State. According to United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) data, Sagaing Region has seen the largest quantum of internal displacement in all of Myanmar since the coup (as of March 25, 2024). Rakhine comes next, while Chin State sits tenth in the list. Continuing air strikes by the junta and clashes between armed groups in these areas have only pushed more civilians across the borders. New Delhi needs to first revoke its plans to fence the India-Myanmar border and reinstate the Free Movement Regime, or the FMR, which the Union Home Ministry suspended in February 2024. Then, it should engage existing humanitarian aid networks along the India-Myanmar border to send emergency relief assistance including medicines, food and tarpaulin to the other side. Mizoram, where a multi-layered asylum and aid ecosystem is already operational, is a good starting point. India should also collaborate with local and international non-governmental organisations with experience in the field. Best practices from Thailand, which recently started cross-border aid deliveries into Myanmar,

should also be adopted.

New Delhi should use its clout to ensure that the aid is not distributed by the junta, which not only has a disastrous track record in this field, but is also not even in control of large areas along the India-Myanmar border. It is also possible to run cross-border aid corridors without allowing contraband to pass through, with stringent checks and pre-delivery vetting.

Detention of asylum seekers
Fourth, the Narendra Modi government should immediately halt the detention and deportation of asylum seekers from Myanmar. This is especially so in the case of Manipur, where the BJP-led government has so far deported 115 asylum seekers to Myanmar – the latest round was on June 11. These are people who entered India not because they wanted to or with mal-intent, but because they were forced to. Regardless of the fact that India has not ratified the 1951 Refugee Convention, it is incumbent upon the government to treat them as refugees in need of humanitarian assistance and protection rather than as "illegal immigrants". Both the Indian Constitution and international law allow the Indian state to do so. In fact, the customary international legal principle of non-refoulement discourages India from deporting refugees back to a home country where they face a threat of persecution or death. The Centre should also urge the BJP-led Assam government to release the 27 Chin refugees detained in the State and house them in a humane refugee shelter.

India, the "Vishwabandhu", routinely claims to stand with the people of Myanmar. It should now walk the talk.

Angshuman Choudhury is a New Delhi-based researcher and writer from Assam, and formerly an Associate Fellow at the Centre for Policy Research.

Centre hits back after Trump's tariff threat

The U.S. President had on July 31 signed an executive order that authorised a 25% tariff on imports from India. A day earlier, he had posted on Truth Social that he would be imposing this tariff plus a penalty "because their [India's] tariffs are far too high, among the highest in the world, and they have the most strenuous and obnoxious non-monetary trade barriers of any country".

Apart from this, he also cited India's energy and military equipment purchases from Russia as an irritant.

Following this announcement, Union Minister of Commerce and Industry Piyush Goyal had informed both Houses of Parliament that the government was "studying the implications" of Mr. Trump's announcement, consulting all the relevant domestic stakeholders, and would "take all steps necessary to secure our national interest".

Western trade with Russia

"This is significantly more than India's total trade with Russia that year or subsequently," the MEA said. "European imports of LNG [liquefied natural gas] in 2024, in fact, reached a record 16.5 mn tonnes, surpassing the last record of 15.21 mn tonnes in 2022."

Europe's trade with Russia includes not just energy, but also fertilizers, mining products, chemicals, iron and steel and machinery and transport equipment, the statement said.

"Where the United States is concerned, it continues to import from Russia uranium hexafluoride for its nuclear industry, palladium for its EV [electric vehicle] industry, fertilizers as well as chemicals," the MEA noted.

"In this background, the targeting of India is unjustified and unreasonable," it added. "Like any major economy, India will take all necessary measures to safeguard its national interests and economic security."

The 25% tariff places India at a relative disadvantage compared to some of its competitors such as Vietnam, Indonesia, Mexico, and the Philippines. Mr. Trump's new tariffs are expected to take effect from August 7

Women's inclusion in armed forces a priority, says Rajnath

Officials highlight expanding opportunities for women across all three armed services; as per data, women make up 13.4% of IAF, 6.85% of Army, 6% of Navy, with numbers rising steadily since 2005

Saurabh Trivedi
NEW DELHI

The parliamentary consultative committee on Defence, headed by Defence Minister Rajnath Singh, was briefed on the representation of women in the armed forces.

Mr. Singh spoke on the government's commitment to provide maximum representation to women in the forces.

As per the data from the Ministry of Defence (MoD), women form 13.4% of the Indian Air force workforce – the highest among all three services – while they make up 6.85% of the Army's workforce and 6% of the Navy's.

In 2024, there were a total of 1,735 women in the Army, 1,614 in the Air Force, and 674 in the Navy.

According to data, 13.4% women constitute the Indian Air force workforce, the highest among all three services. EMMANUAL YOGINI

In 2005, the figures were 767, 574, and 154, respectively.

Twelve branches in the Army are open to women officers, including combat. In the Navy, all branches are open for women officers except submarines. All branches of the Air Force are open for women officers.

More to come

Asked about women's representation in the armed forces, a senior Defence Ministry official said that they were opening more and more branches for women for all categories. Women are eligible for various roles, including technical and non-technical positions, and can join through different entry schemes. Most of the defence training institutes and academies have been opened for women.

Colonel Sofiya Qureshi of the Indian Army, who led the Operation Sindoor briefing along with Wing Commander Vyomika Singh of the Air Force, have become an inspiration for women aiming to join the armed forces.

Another senior defence officer said that women in the armed forces are doing remarkably well and their number is only going to increase in the future as the forces adopt a more gender neutral approach.

Pollution Control Boards have power to impose restitutionary damages: SC

Krishnadas Rajagopal
NEW DELHI

The Supreme Court on Monday gave Pollution Control Boards more teeth by declaring their power to impose and collect restitutionary damages to completely restore polluted air and waterbodies back to their original, pristine selves in an ecosystem.

"We direct that Pollution Control Boards can impose and collect as restitutionary and compensatory damages fixed sums of monies or require furnishing bank guarantees as an ex-ante measure towards potential environmental damage in exercise of powers under Sections 33A and 31A of the Water and Air Acts," Justice P.S. Narasimha, who authored the judgment, held.

The judgment came on an appeal filed by the Delhi Pollution Control Committee against a Delhi High Court decision that it was not empowered to levy compensatory damages in exercise of powers under Section 33A of the Water (Prevention and Control of Pollution) Act, 1974 and Section 31A of the Air (Pre-

The Bench directed that the power should be enforced only after issuing the necessary subordinate legislation. N. RAJESH

vention and Control of Pollution) Act, 1981.

The Bench, including Justice Manoj Misra, further directed that the power should be enforced only after issuing the necessary subordinate legislation in the form of rules and regulations under both statutes. The rules must incorporate the basic principles of natural justice.

"According to the polluter pays principle, the responsibility for repairing the damage is that of the offending industry... The focus has to be on restoration of the ecosystem as close and similar as possible to the specific one that was damaged," Justice Narasimha observed.

Justice Narasimha held that the Pollution Control Boards had expansive powers and "enormous responsibilities" under the Water Act and the Air Act. They had a broad statutory mandate to prevent, control and abate water and air pollution.

The provisions under these statutes bestowed the Boards with the power to direct closure, prohibition or regulation of any industry, operation or process. Further, this power extended to directing the stoppage or regulation of supply of electricity, water or any other service. The laws allow the Boards significant flexibility in deciding the nature of directions.

Largest Asian tortoise back in Nagaland community reserve

The critically endangered Asian giant tortoise, the largest in mainland Asia, has been reintroduced into the Zeliang Community Reserve in Nagaland's Peren. Officials said 10 individuals of the species from Nagaland Zoological Park in Chümoukedima were released through a community event on Saturday. The event was organised by the Nagaland Forest Department and the India Turtle Conservation Programme. The tortoises were released in a pre-constructed soft-release enclosure to help them develop site fidelity before dispersal. Once found in large numbers, the species was almost wiped out from Nagaland over a decade ago.

Study shows clerical errors in documents 'fatal' for citizenship

Rahul Karmakar
GUWAHATI

An 'f' ruined Rahman Ali's chances to prove his citizenship in the Gauhati High Court in 2013.

He failed to establish that his father Khurshed Ali, recorded in the electoral rolls in 1989, 1997, and 2010, was the same person as Furshed Ali, enlisted in the 1965 and 1970 rolls in Assam.

In 2010, the court noted "discrepancy" in the name of the father of Rajendra Das, enlisted in 1970 as Radha Charan and Radhacharan Das in 1966. And in 2019, Ibrahim Ali Mir was unable to establish that 'Late Nurul', listed as his father in the 1989 rolls, was the same person as Nurul Islam in the 1965 and 1970 lists of electors.

These are among several instances of inconsistencies in documents that have been "fatal" for the citizenship of many in Assam, driven by a "pervasive culture of suspicion", a study titled "Unmaking citizens: The architecture of rights violations and exclusion in India's citizenship trials" revealed.

The report by the Bengaluru-based National Law School of India University and the Queen Mary University of London, released on July 27, called for an urgent, fundamental rethinking of the legal structures governing citizenship in India, given the possibility of an Assam-like exercise to update the National Register of Citizens across the country. Mohsin Alam Bhat, Arushi Gupta and Shardul Gopujkar are the authors of the study.

The study elaborates on systematic violations of natural justice leading up to status determination, such as denying access to inquiry reports and shielding of officers, and systematic violations during the citizenship determination process by improper cross-questioning and evidence not read as a whole.

It further said the procedural defects are not corrected and are often reinforced by the court's jurisprudence.

The study calls for an urgent rethinking of legal structures governing citizenship in India.

Strategic autonomy is alive; neoliberalism is dead: India's takeaways from Trump era

Varghese K. George

Donald J. Trump can be brutally forthright and publicly so. It is partly innate and partly a strategy to throw his interlocutors off balance. In a 1989 interview on *CNN*'s *Larry King Live*, Mr. Trump was asked by the host about his strategies for gaining an edge in negotiations. Mr. Trump responded not with a direct answer, but with a startling personal comment: "Can I move my chair? Because your breath is very bad. It really is… Has this ever been told to you before?" Years later, Mr. Trump explained that it was a demonstration of his negotiation tactics.

Mr. Trump's outspokenness can be unsettling, but it can also be helpful. There are a few valuable lessons that Indian strategy could learn, thanks to the manner in which Mr. Trump conducts U.S. diplomacy.

Key elements of his worldview have largely remained consistent for decades. Even before he made an entry into politics, Mr. Trump was anti-trade, anti-war, cognisant of the economic and social challenges within the American society. He is trying to turn all those beliefs into policies. All countries are scurrying to reposition themselves.

The idea that India's hesitation to go into a complete strategic lock-in with the U.S. and to completely open its market is hindering progress in bilateral ties is commonplace be-

Donald Trump

cause its proponents are influential. India, whether under Jawaharlal Nehru or Narendra Modi, has been reluctant to do either of these, and strategic autonomy has held the country in good stead. For one, alliances are not insulated from shifts in U.S. priorities over time, Trump or not. To cite one example, when Joe Biden was President, Australia scrapped a $90 billion deal with France to build conventional diesel-electric submarines. Instead, it entered the AUKUS pact with the U.S. and the U.K. to acquire nuclear-powered submarines using the U.S. technology.

All within the family, but hanging France out to dry. Mr. Trump, who is often portrayed as hostile to U.S. allies, is saying it all too loud.

India's choice

Amid Mr. Trump's rhetoric, India could be further incentivised to reinforce the idea of strategic autonomy, which remains the most viable framework for sustaining a robust relationship with the U.S. The Modi government has, in practice, followed the path of strategic autonomy. Both strategic autonomy and strategic subservience

carry costs. India appears increasingly prepared to bear the cost of autonomy – rather than of subservience. Turning into a frontline of any U.S. strategy for containment of another country or expansion of its own interest can be fatal – ask Ukraine. If there was any doubt about strategic autonomy, the Trump moment has clarified it.

Mr. Trump wants to restore manufacturing and jobs in the U.S. and has, in the process, unsettled global trade. Access to its market has been a lever of American power for long, and Mr. Trump is just blunt about it. A trade deal may resolve some immediate issues, but India cannot ignore the reality that in a world where every country has turned protectionist, export-driven growth is a narrow and difficult path.

Ties with the U.S.

The Trump moment tells India two things – strategic autonomy is alive; and neoliberalism is dead. India has to navigate the path ahead, and the U.S. remains a key partner in that. It is reasonable to assume that the U.S. will remain the most powerful state for several decades to come. Ties with the U.S. will continue to be a major determinant of India's capacity to realise its ambitions. Neither obsequiousness nor confrontation can advance India's relations with the U.S. India should also learn that soft power is supposed to be soft, not loud and screeching. As the yoga teacher would say, pranayama practice should not make any sound.

A random number generator using quantum physics and a blockchain

While a new study isn't the first to describe how quantum phenomena can be used to generate random numbers, the technique also incorporates blockchains. As a result, the technique is fully traceable and certifiable by independent parties, making it the first of its kind

Sayantan Datta

In September 2013, whistleblower Edward Snowden revealed that American and British intelligence agencies had successfully cracked much of the online encryption internet users used to keep their personal data private. Snowden's solution appeared ironic to many: to adopt end-to-end encryption *en masse*, rendering mass surveillance prohibitively expensive and cumbersome.

In end-to-end encryption, an algorithm converts readable data (plaintext) to an unreadable form (ciphertext) using a string of numbers and letters called a key. A user with the key can feed it into a decryption algorithm, which will use it to turn ciphertext to plaintext. The success of any encryption method thus hinges on the secrecy of the key.

To prevent an unauthorised person from guessing the key, it has to be sufficiently random, i.e., lacking predictable patterns.

How does one get a sufficiently random key? For cybersecurity company Cloudflare, the answer lay in a funky 1963 invention: the lava lamp.

A lava lamp comprises a glass container with blobs of wax suspended in water and placed over an incandescent bulb. The heat from the bulb melts the wax and causes droplets to rise up. As the droplets reach the top of the container, they cool down and fall back to the bottom, starting the cycle once again. The rising droplets in a lava lamp don't take the same shape twice. That is, the shapes are "consistently random."

At Cloudflare's headquarters in San Francisco the company has arranged a hundred lava lamps on one of its walls. A camera takes pictures of the wall periodically, and computers convert each pixel in the image into a numerical value. Thus, each picture generates a string of numbers (called the seed) that is then input to an algorithm to generate an encryption key.

There are two problems, however. One, even the "consistently random" movements of the lava lamp are determined in theory by the laws of thermodynamics, the branch of physics that deals with how heat moves in a system (e.g., the glass container with water and wax) and how that affects the properties of matter it contains. At least on paper, this makes the seed predictable.

Second, even if the seed is practically random, the algorithm used to generate the key is deterministic, i.e., not random. In other words, if a person gets hold of the seed, they can generate the exact same key using the algorithm. This is why such algorithms, which are commonplace in most encryption systems today, are called pseudorandom number generators.

True randomness has been elusive – but scientists have known for some time where they could best hope to find it: quantum mechanics, where randomness abounds.
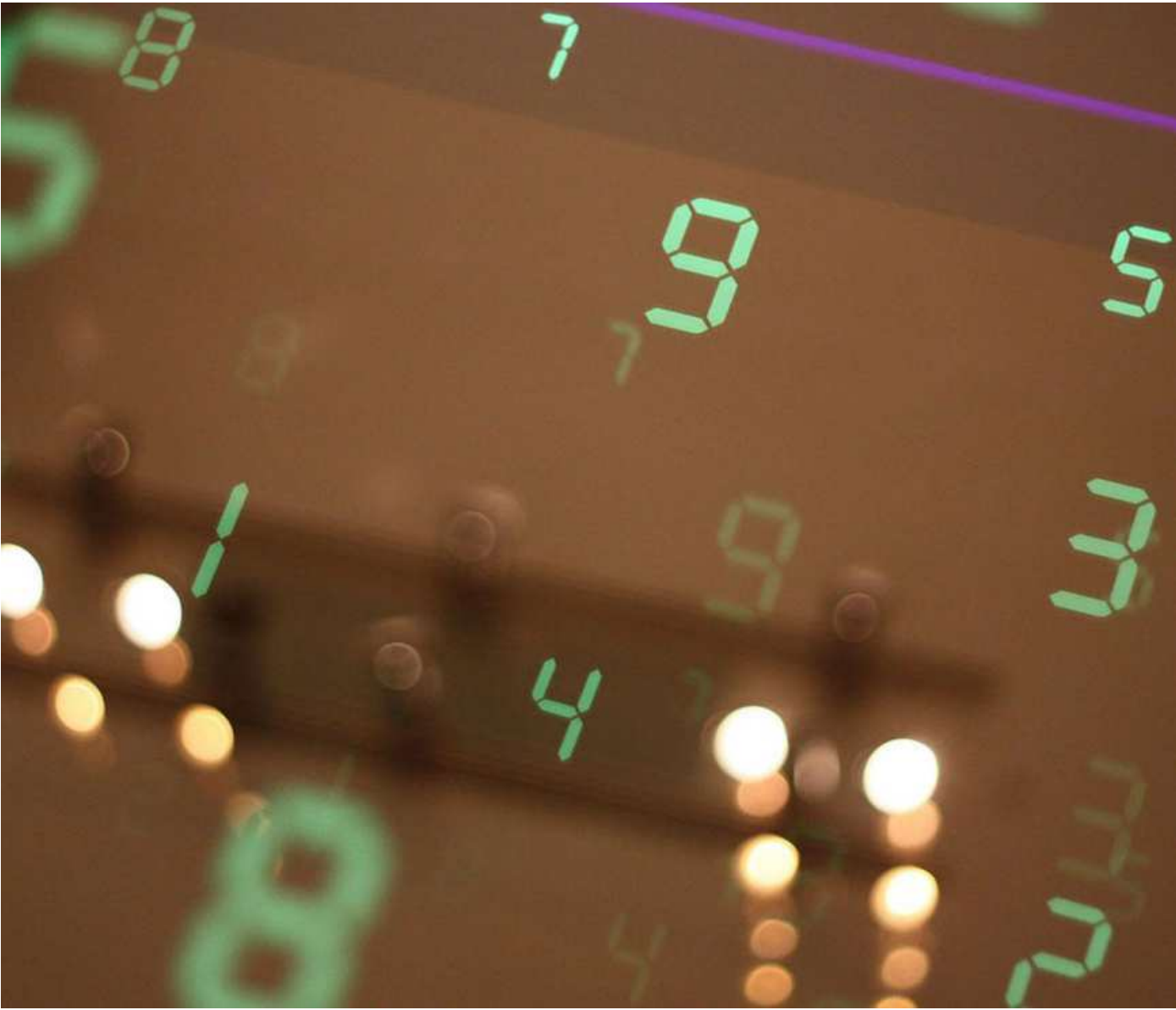
Quantum randomness

Quantum mechanics is the study of how matter and light behave in the atomic and subatomic realms. At those scales, the theories of physics are no longer able to make predictions with certainty. As Gautam A. Kavuri, a quantum communication researcher at the University of Colorado, Boulder (CUB) in the US, put it, the "outcome of a measurement [in the quantum realm] cannot be known before a measurement is made."

Consider the case of a photon, the particle of light. Each photon has an oscillating electromagnetic field. The direction in which the field oscillates is called the photon's polarisation. According to the laws of quantum mechanics, the polarisation of a photon can be both horizontal and vertical (or left and right) until it is measured – just like a coin tossed in the air is both 'heads' and 'tails' until it lands. It is only at the time of measurement that the polarisation becomes one of the two, and this choice is random.

In a paper published in *Nature* in June, Kavuri along with a team of researchers from the CUB and the National Institute of Standards and Technologies (NIST) in the same city have reported using this as a source to generate truly random numbers.

Once generated, the team broadcasts the numbers publicly via the CU Randomness Beacon (CURBy): this is a public service where receivers can pick up the numbers and use them in their applications.

While Kavuri *et al.* isn't the first team to

True randomness has been elusive — but scientists have known for some time where they could best hope to find it: quantum mechanics, where randomness abounds. IVONA ROŽ/UNSPLASH

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press quantum phenomena in the service of generating random numbers, the technique incorporates a cryptographic tool called blockchains in their protocol. This makes the technique fully traceable and certifiable by independent parties – making it the first of its kind.

Calling the work "innovative," quantum information theory researcher and University of New Orleans associate professor Peter Bierhorst said "every step in the process, from harvesting the raw data (which is only somewhat random) to processing it down to a near-perfect (uniform) string of random bits, can be audited and verified."

Bierhorst has worked in the past with some of the authors of the 2025 *Nature* paper but wasn't associated with the new study.

Numbers from photons

The protocol in the test by Kavuri et al. begins at the NIST, where a process called spontaneous parametric down-conversion is used to generate a pair of quantum entangled photons.

The process uses a special material called a non-linear crystal to convert a photon with higher energy to a pair of photons of lower energy. These photons are entangled, meaning that even at great distances, their properties are correlated.

Once the entangled photons are generated, they are sent in two different directions to two laboratories at opposite ends of a hall at NIST. There, the polarisation of these photons is measured. This process is repeated 15 million times in about one minute, and the polarisation state in each case is truly random. This data is passed to the CUB, where the next step unfolds.

Almost 2 km away, at the CUB, a computer programme converts the data to a bit string, a series of zeroes and ones. At this stage, the string, while truly random, is also biased: the frequency with which zeroes and ones occur is not equal. This random-but-biased bit string is then processed through a mathematical

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A shelf of lava lamps. DEAN HOCHMAN (CC BY)

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function called a randomness extractor. This function uses an independent random seed, obtained from a different random number generator called DRAND and extracts from the biased bit string a uniformly unbiased random string of 512 bits.

DRAND is run by a confederation of many independent parties around the world, including Cloudflare, Ethereum Foundation, and the Swiss Federal Technology Institute of Lausanne in Switzerland.

Building trust

Impressive as the protocol is, its novelty lies elsewhere.

For random number generators that are used to encrypt and decrypt data, trust has always been an issue. Sanjit Chatterjee, an information security researcher and associate professor at the Indian Institute of Science, Bengaluru, explained: "Suppose I claim I have a random number generator. How do you verify or get a certificate stating that its output is truly random? Or that the protocol has not been tampered with?"

To surmount this issue, the team led by Kavuri integrated a blockchain in their protocol. In blockchain technologies, data from different steps of a process is stored in blocks that are linked to each other using the output of a mathematical algorithm called a hash.

The hash algorithm converts a long string of data to a string of fixed length called the fingerprint. The fingerprint is

uniquely linked to the input data; any tampering with the input data leads to a substantially different fingerprint, which a verifying party can easily check and call out.

According to Chatterjee, "It is not possible to change the fingerprint at one step without changing the fingerprints of all the subsequent steps."

Thus, by linking different blocks of data using different fingerprints, researchers are able to ensure that any tampering in one step of the process will be reflected in the fingerprints of all the subsequent processes.

Kavuri and colleagues developed a blockchain protocol they called 'twine' to "create a traceable ... cryptographic contract between three parties" responsible for a part of the random number generation process, they wrote in their paper.

The first party, NIST, provided the raw bit string. The second party, CUB, ran the randomness extractor. The third party, DRAND, provided the independent seed to the extractor.

Each step of the process was marked with a hash fingerprint, and the fingerprints could be used by one of the three parties or any user to verify the integrity of the process.

"As long as all the parties are not compromised, we can be sure that the analysis and extraction is carried out correctly," Kavuri said.

'Challenging proposition'

According to Chatterjee, the researchers have provided a "prototype" that shows generating traceable random numbers "is possible in practice".

"But if you think about the amount of random numbers generated in everyday operations, then this is nowhere near that stage," he added.

Kavuri *et al.* stated in their paper that they could generate 7,434 random numbers over a 40-day period.

Bierhorst, the University of New Orleans quantum information theorist, added that the protocol requires "an intricate apparatus employing state-of-the-art optical components to create and manipulate the entangled photons" – which would be the starting step for the protocol.

"Deploying this commercially is a challenging proposition," he said. He added that he expects it will take another few years before the protocol can be deployed widely.

Kavuri, meanwhile, said he was looking forward to bringing more parties under the ambit of their twine protocol. "This will further decentralise trust in the random number generation process," he said.

(Sayantan Datta is a faculty member at Krea University and an independent science journalist. The author thanks Apoorva Patel and Shayan Srinivasa Garani for inputs. dattasayantan95@gmail.com)

An oil palm plantation in Ijok, Malaysia. REUTERS

Old trees, ageing farmers worsen outlook for palm oil exporters

Reuters

Malaysian farmer Suratmen Mosman faces a dilemma that threatens to sap supply from the world's top palm oil exporters and drive up prices of the vegetable oil essential to billions of consumers worldwide in the next five years.

The ageing trees on his plantation 300 km south of Kuala Lumpur are bearing less fruit, but the 85-year-old is holding off replacing them as he doesn't want to lose income while waiting the three to five years it takes for new trees to start yielding a crop. Government subsidies to encourage replanting are not as high as they once were and he needs to support his family.

Used mostly as cooking oil, but also to make cakes, cosmetics, and cleaning products, palm oil makes up more than half of the world's vegetable oil supply and 85% of the crude product comes from Malaysia and Indonesia.

But after decades of soaring output, the market is now at a tipping point as combined exports from the two producers are set to slow sharply, the result of stagnating production and efforts by Indonesia to divert more palm oil into the production of biodiesel.

While financial markets have factored in the slowdown, there is growing evidence that plantations run by smallholders like Suratmen may be in worse condition than previously thought as ageing and lower-yielding trees are not replaced, which will add to the decline. Smallholders make up 40% of the plantations across Malaysia and Indonesia, so they play a vital role in the supply chain.

Supplies to global markets from Indonesia and Malaysia could fall as much as 20% over the next five years, according to calculations based on government and industry projections, some previously

Small plantations may be in worse condition than previously thought, as owners fail to replace ageing trees. Smallholders make up 40% of the plantations across Malaysia and Indonesia

unpublished.

Future output from smallholders may well be over-estimated because the condition of trees and the rate of planting new trees is worse than estimates by the governments in Kuala Lumpur and Jakarta, according to veteran industry figures Dorab Mistry and M.R. Chandran.

Other previously unpublished data also shows the acreage of plantations where trees are older than 20 years, a point at which they are considered beyond their peak, is growing fast.

Exports from the world's top two producing countries are set to fall further on replanting delays, rising local demand because of higher biodiesel blending mandates

Mistry, a director of Indian consumer goods firm Godrej International and a long-term palm oil analyst who has been in the industry for more than 40 years, and Chandran, the former head of the Malaysian Palm Oil Association, estimated that more than half of the trees on Malaysian smallholder plantations are well past peak production.

The estimate is significantly higher than Malaysian government data, which shows 37% of smallholder plantations are past their peak yielding phase.

In Indonesia, just 10% of a 2016 government target to replant 2.5 million ha by 2025 had been met as of October 2024, publicly available government data showed.

Thus, calculations based on Malaysian and Indonesia palm oil body estimates suggest combined exports are likely to drop by 20% by 2030 over 2024 levels.