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# Rare earths emerge as a geopolitical lynchpin in the rising China-U.S. rivalry

With China dominating the global rare earth supply chain, and tightening grip over exports amid escalating trade and tech tensions, the U.S. is now actively seeking alternative sources and investing in recycling rare earths from used electronics and magnets to reduce its strategic dependence

## NEWS ANALYSIS

Smriti S.

**T**hey are going to deliver rare earths to us," U.S. Commerce Secretary Howard Lutnick said in an interview on June 27. "And once they do that, we will take down our countermeasures." Mr. Lutnick's remarks came just a day after a White House official confirmed that the U.S. and China had reached "an additional understanding" to implement the Geneva agreement – a May 12 deal that paused new tariffs for 90 days and set a mid-August deadline for further talks.

Soon after, U.S. President Donald Trump announced that Washington had signed an agreement with Beijing. He offered few details but hinted at a possible deal with India in the near future. China also confirmed the agreement. These announcements were the first formal confirmation of a partial breakthrough after months of escalating trade and technology tensions between the world's two biggest economies.

This came after high-level delegations from both countries met in London on June 9 and 10 for two days of negotiations. The focal point of the talks was one mineral group: rare earth elements (REEs) – a strategic mineral group critical to both economies.

Often described as the "vitamins of the modern



**High-level talks:** U.S. Secretary of the Treasury Scott Bessent with China's Vice-Premier He Lifeng and other leaders during a bilateral meeting in Geneva in Switzerland in May. REUTERS

economy," it is a group of 17 chemically similar metallic elements.

These include 15 silvery-white metals called lanthanides, or lanthanoids, plus scandium and yttrium, which are indispensable to a range of civilian and military applications, from electric vehicles and wind turbines to radar systems, precision-guided weapons, and stealth aircraft. REEs are not finished magnets or minerals, but raw elements extracted from complex ores and later processed into specialised materials.

Despite their name, REEs are not geologically scarce, rather, their extraction and processing is expensive, complex, and environmentally hazardous.

The 17 elements include lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium, and yttrium.

Neodymium and praseodymium are used in powerful magnets that run electric vehicle motors and wind turbines. Europium is used in LED displays. While cerium and lanthanum are employed in catalytic converters, glass polishing, and camera lenses, samarium and dysprosium are essential in high-performance magnets and defence systems. Gadolinium has applications in MRI machines, while other REEs play a role in lasers, batteries, and fibre-optic cables.

REEs are divided into two categories: light rare earths and heavy rare earths. Light REEs are widely used in consumer electronics, batteries, and industrial applications, while heavy REEs are more valuable due to their specialised uses, limited supply, and crucial role in military, nuclear, and high-performance magnet applications.

REEs are typically dispersed in mineral ores,

such as bastnäsite and monazite, unlike gold or copper found in pure form. Once mined, they undergo a complex, multi-step process: the ore is crushed, chemically leached, and then separated through solvent extraction to isolate individual elements. These are then refined into metals or oxides.

### The choke point

While deposits exist in many parts of the world, China dominates the rare earth supply chain – not because it holds the most reserves, but because it invested early in large-scale refining infrastructure. According to the U.S. Geological Survey (USGS), China accounts for nearly 70% of global REE mining and more than 90% of refining capacity.

The country's rare-earth journey dates back to 1927, when scientists discovered major deposits in Bayan Obo in Inner Mongolia. Production began in 1957, and over time, depo-

sits have been located across 21 provinces and autonomous regions, from Fujian and Guangdong to Jiangxi and Sichuan.

While rare earths are often discussed in terms of green energy and electronics, their military importance is equally, if not more, critical. Samarium-cobalt magnets, for instance, remain stable at high temperatures and are vital to precision weapons. Dysprosium strengthens magnets used in stealth aircraft. Yttrium and terbium enhance night vision and targeting systems.

This military dependence is precisely why recent export curbs by Beijing rattled Washington.

The London talks resulted in noteworthy progress. However, it did not cover military-grade materials. According to a *Reuters* report, Beijing has not committed to grant export clearance for some specialised rare-earth magnets that U.S. military suppliers need for fighter jets and missile systems.

Hence, the U.S. is actively seeking alternative resources for rare earth elements.

The Mountain Pass mine in California currently supplies over 10% of the world's rare-earth raw materials. However, much of the ore still has to be sent to China for processing.

This has prompted a broader outreach beyond U.S. borders.

In Greenland, the vast Kvanefeld deposit could alone supply up to 15% of global demand for REEs. Its resources, include some of the world's largest re-

serves of rare earth, lithium, cobalt, and uranium – all critical to the clean energy transition and modern defence technology.

However, it lacks processing infrastructure.

Greenland's Minister for Business, Trade and Raw Materials, Naaja Nathanielsen, in a *BBC* report, said that interest in the territory's minerals has "absolutely increased within the last five years or so." And, Mr. Trump also floated the idea of acquiring Greenland, calling it essential "for national security and international security."

Ukraine, too, holds enormous potential. According to USGS, the country has 5,000,000 tonnes of lithium in its reserves, 20% of global graphite reserves, and significant supplies of neodymium and other high-tech metals.

Other possible locations, according to USGS are: Australia, Brazil, Russia, India, Vietnam, and Canada, as well as African nations such as Madagascar, Tanzania, South Africa, and Burundi.

Parallel to these efforts, the U.S. is also investing in recycling rare earths from used electronics and magnets that could reduce dependence on heavy REEs.

For now, all the talk and frameworks offer a temporary easing of tensions. With military-grade materials still off the table, the deal falls short of a reset. And unless the U.S. ramps up investments in rare earth processing infrastructure, China's dominance will remain not just an economic asset but a powerful geopolitical lever.





ISTOCKPHOTO

# Fostering innovation from business models to DeepTech

Without a culture of experimentation and long-term thinking, no amount of funding can build DeepTech. For R&D culture to flourish, founders need to dirty their hands in technicality. Great DeepTech companies are built by founders with hands-on technical expertise

**Bhupendra Bhate**

**F**ew months back, the Minister for Commerce and Industry Piyush Goyal sparked a debate by drawing comparisons between Indian startups and their Chinese counterparts. While his comments stirred some discontent within the startup ecosystem, they also raised a crucial point – India must now shift its gaze from surface-level innovation to DeepTech.

## The journey so far

If we look at our startup ecosystem journey so far, it has flourished largely on the back of business model innovation. From food delivery apps and e-commerce to fintech and gig economy platforms, startups have created new value by reimagining how services are delivered. While this has driven revenue and encouraged entrepreneurship, it's time to aim higher. As Mr. Goyal emphasised, the next frontier is DeepTech – technology grounded in scientific discovery, engineering excellence, and fundamental research.

But what is DeepTech? One will get different answers depending on who you ask. Ask around in VC circles or among founders, and the usual buzzwords emerge – AI, robotics, Internet of Things (IoT), drones etc. While these are important, DeepTech is far broader.

Material science, power electronics, advanced manufacturing, and molecular drug research are the fields which underpin critical advances in everything from energy systems and robotics to next-generation healthcare and AI hardware. For example, what makes drones both lightweight and durable?

Material science. Why is China ahead in battery tech? Because companies like BYD invested early in core chemistry and engineering, and not just assembly.

DeepTech isn't about repackaging existing components. It's about bold and original work. It's about building from scratch, failing repeatedly, and pushing the boundaries of what is possible.

## Building DeepTech

Understanding DeepTech is like peeling an onion with each layer revealing new dependencies and challenges. There are five core pillars which must align – a product mindset; R&D culture; technical depth; the educational ecosystem; and supportive government policies.

Product mindset is a big missing link. Let's start with a simple question. Which globally recognised product, across sectors – consumer, industrial, medical, telecom, mobility etc – have been conceived and built in India? Even in software, our supposed strength, we haven't produced tools like TensorFlow, Android, QNX, or SAP. While Indian talent leads some of the world's top companies, the DNA of product creation remains weak at home. China began by reverse engineering global products, steadily moving up the value chain, and eventually creating new products with original R&D.

A product mindset and R&D go hand in hand.

Without a culture of experimentation and long-term thinking, no amount of funding can build DeepTech. For R&D culture to flourish, founders need to dirty their hands in technicality. Great DeepTech companies are built by founders with hands-on technical expertise. Think of Google, Tesla,

NVIDIA, and Microsoft. Their founders were engineers, builders, and coders. Larry Page and Sergey Brin wrote the algorithm that became Google while Bill Gates wrote software as a teenager.

To create such companies from scratch, we need founders with deep domain knowledge and an urge to solve complex problems, and not just manage teams.

Moreover, to promote technical depth, our education system needs to change its focus from tools to fundamentals. The journey towards DeepTech starts in the classroom. But how many Indian colleges teach AI or robotics from first principles, the mathematical derivation of AI or close loop control systems fundamentals? Beyond a few IITs, most focus on tool-based training, not foundational understanding. As a result, our engineers often become tool users, not tool creators.

We can emulate the likes of MIT and Stanford, where students master core theory before picking up tools. Multidisciplinary collaboration is another must. Most innovations especially in healthcare, mobility, or automation lie at the intersection of fields. Our college projects should involve multi-disciplinary student participation. We must move toward academia-industry collaboration, internships, and real-world problem-solving. In the U.S., the Defense Advanced Research Projects Agency has funded challenges that have fostered innovation in robotics, leading to breakthroughs like Intuitive Surgical's Da Vinci robot.

And finally, smarter government support will always be a catalyst. India has institutions like the National Research Development Corporation (NRDC) to

promote R&D, but many of the qualifying criteria are irrational. For example, why restrict funding to startups only inside incubators? Shouldn't we evaluate based on the technical depth of the founders, the R&D roadmap, and its potential impact?

DeepTech startups often need access to fabrication labs, pilot facilities, and test and certification centres, all of which are costly infrastructure the startups themselves can't build. Micro, Small and Medium Enterprises often lack precision, and large corporations demand volumes that early-stage ventures can't deliver.

The government must create shared facilities, and affordable, high-quality spaces for low-volume, high-precision prototyping and testing. This is the only way to bridge the gap between idea and viable product.

## The road ahead

India's aspiration to lead in DeepTech is both timely and necessary. But to realise this vision, we must orchestrate a coordinated shift across the entire ecosystem.

Founders must deepen technical expertise and adopt a true product plus R&D mindset. Educational institutions must prioritise fundamentals and interdisciplinary learning, and the government must offer smarter, broader, and more agile support.

Only through this kind of systemic transformation can we build world-class DeepTech products which are driven by science, born in India, and built for the world.

*Bhupendra Bhate is CEO and co-founder of Saintiant Technologies Pvt Ltd, a company specialising in advanced medical devices powered by AI.*



# What will be effect of rising military spending?

Why have NATO nations decided to increase their defence expenditure? During which period was global military spending the most? Will increased remilitarisation have an effect on domestic health spending? Why has the United Nations decided to cut down on its budget?

## EXPLAINER

Nissim Mannathukkaren

### The story so far:

**T**he North Atlantic Treaty Organization (NATO) summit in June pledged to increase military spending to 5% of the member nations' GDP (specifically "core defence requirements as well as defence and security-related spending by 2035"). The previous spending target was 2%. Such a move is symptomatic of the sharp increase in global military spending in the last few years.

### What has been the historical trajectory of military expenditures?

According to the Stockholm International Peace Research Institute (SIPRI), which produces the most comprehensive database on military spending, global military spending was \$2,718 billion in 2024. The year saw a 9.4% increase, which was the highest year-on-year increase since 1988, with the Russia-Ukraine war and the Israel-Gaza conflict contributing to it. In 2025, the world saw two big additional conflicts, between India and Pakistan, and Israel and Iran. This, combined with the NATO pledge, will see further increases in global military spending in the coming years.

Historically, the Cold War period saw the highest amounts of global military spending. It was 6.4% of the world's GDP in 1960. In the last year of the Cold War, it was at 3%. It reached its lowest levels in 1998 at 2.1% (a total expenditure of around \$1,100 billion). In 2024, it reached 2.5% (from 2.3% in 2015).

### Who are the biggest military spenders?

The United States is the biggest military spender in the world with \$947 billion, followed by China at \$314 billion, Russia at \$149 billion, Germany at \$88.5 billion and India at \$86.1 billion—these nations are the top five military spenders. Almost 80% of the total worldwide military spending is spent by the top 15 military spenders. All of the NATO members (32) combined spent \$1,506 billion, which makes it around 55% of global military spending. Thus, there is a concentration of spending in a few countries.

In terms of GDP percentage, among the top 20 spenders (excluding countries at war such as Russia, Ukraine and Israel), the highest spenders include Saudi Arabia (7.3%), Poland (4.2%) and the U.S. (3.4%). The rest fall in the range of 2.6% to 1.3%.

### What about the expenditure on other public goods?

The present wave of remilitarisation threatens to eliminate the gains made from declining military expenditures after the end of the Cold War.

According to the Global Peace Index, in 2023, militarisation increased in 108 countries and the year saw the highest number of conflicts since World War II. Of course, military spending, driven by the military-industrial complex, can benefit certain sectors of the economy. Yet, as studies show (for example, by Masako Ikegami and Zijian Wang, based on 116 countries), there is a significant crowding-out effect that increased military spending has on domestic government health spending, the effects of which are borne more by middle- and low-income countries. But even high-income countries are not immune. Spain, which spends only 1.24% of GDP on defence, asserted its sovereignty and opted out of the new NATO target citing



Increasing the cost: Police experts work at the site of the Russian drone strike, amid Russia's attack on Ukraine, in Kharkiv, Ukraine on July 7. REUTERS

that it is "unreasonable" and that the extra burden of 300 billion euros will cut welfare spending. It should be noted that nine NATO members failed to meet even the 2% target by 2024 despite it being proposed first in 2002.

### What about the UN?

The present military spending of \$2.7 trillion and its scale can be understood only by placing it in the context of other critical global expenditures. The latest budget of the United Nations is only \$44 billion—with which it should fund development, humanitarian aid, and peacekeeping operations. But the UN, in six months, has only received \$6 billion, and as a result, is seeking to reduce the budget to \$29 billion. In the 12-day Israel-Iran war, the U.S. is estimated to have spent nearly \$1 billion on missile interceptors alone.

The U.S., under President Donald Trump, seeking to cut foreign aid is the major cause of the UN funding crisis. While Mr. Trump wants to be known as a peace-making President, he has pushed NATO to adopt the 5% military spending target and has closed down the U.S. Agency for International Development (USAID), which provided annual assistance to the tune of \$50-60 billion worldwide in the few years until the Russian-Ukraine war. A *Lancet* study found that USAID assistance in healthcare, nutrition, etc., prevented 91 million deaths in low- and middle-income countries in the past two decades, and that Mr. Trump's decision could potentially cause a staggering 14 million

additional deaths by 2030, a third of them being children. It demonstrates that peace is not just the absence of war, but also the material conditions for the healthy sustenance of life.

Additionally, increased defence spending is upending the progress of achieving the UN Sustainable Development Goals (SDGs). It is estimated that ending extreme poverty and absolute monetary poverty globally by 2030 would need \$70 billion and \$325 billion respectively per year. It constitutes only 0.1% and 0.6% of the gross national income of high-income countries. The UN estimates that in 2021, around 4.5 billion people did not have full coverage of essential health services, and, that even spending just \$1 per person yearly on preventing non-communicable diseases could save nearly seven million lives by 2030.

Increased military spending has deleterious effects on another SDG as well—combating climate change.

According to a study by the Conflict and Environment Observatory, if NATO's defence spending reached 3.5% of GDP, greenhouse gas emissions would increase 200 million tonnes annually. When the world is seeing unprecedented heatwaves, and with 2024 being the hottest year on record, increased military spending will only divert scarce resources from climate mitigation, and other pressing public goods.

### How is India affected by increased military spending?

Close to home, after Operation Sindoor,

₹50,000 crore was additionally sanctioned (to supplement the annual budget of ₹6.81 lakh crore) for emergency defence purchases to replenish used weaponry.

To put it in perspective, funds allocated by the centre for Ayushman Bharat health insurance which covers 58 crore people was ₹7,200 crore for 2023-24. India spends 2.3% of GDP on the military whereas the public expenditure on health, despite increasing in recent years, is very low. It is 1.84% of the GDP, less than the 2.5% target of the National Health Policy, and much less than the 10% mark of most developed countries. In the light of heightened tensions and public sentiment being in favour of militarisation, spending on other public goods might suffer. Military conflicts and spending can be ruinous for middle- and low-income countries. Lebanon spent 29% of its GDP, and Ukraine 34%, on military spending last year.

NATO Secretary General Mark Rutte stated that "We must spend more, to prevent war." The present proposed increase is, according to NATO, mainly to counter Russia. Scholars note of the huge disparity between Russia and NATO: Russia's economy is 25 times smaller and military spending, 10 times lesser. This shows how fear-mongering can be used by leadership to militarise society further.

If the NATO pledge does indeed become a reality, the consequences for human well-being will be enormous.

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## THE GIST

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# The ECI does not have unfettered powers

**T**he Election Commission of India (ECI) ordered a special intensive revision (SIR) of the electoral rolls in Bihar, which will be facing Assembly elections in November. Political parties in the Opposition have alleged that the SIR is aimed at disenfranchising thousands of voters in Bihar by disqualifying them on the ground that they are not citizens of India. The ECI has denied this allegation and justified the revision. In the meantime, many petitions have been filed in the Supreme Court challenging the ECI's order. While the controversy centres on the motive behind this exercise being conducted just a couple of months before elections, especially when electoral rolls were revised in 2024, this article focuses on the legality of this exercise and the powers of the ECI to undertake it.

## Reasons for disqualification

Article 326 of the Constitution declares that elections to the Lok Sabha and the Assemblies shall be held on the basis of adult suffrage. This means every adult person is entitled to be a voter provided they are not disqualified on certain specified grounds. There are two essential qualifications of being an elector under this Article: the person should be citizen of India and should be aged not less than 18. The Representation of the People Act (RPA), 1950, lays down disqualifications for registration as an elector. These are namely unsoundness of mind as declared by a competent court, and disqualification from voting as provided in Section 11A of the 1951 RPA. Conditions for registration as a voter are laid down in Section 19 of the RPA: the person should not be less than 18 years of age and they should be ordinarily resident in a constituency. The term 'ordinarily resident' is explained in Section 20, which says a person shall not be deemed to be ordinarily resident merely because they own or possess a dwelling house in that constituency. Also, a person does not cease to be ordinarily resident if they absent



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Former Secretary  
General of the  
Lok Sabha

The Special  
Intensive  
Revision in  
Bihar does not  
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of the  
Representation  
of the People  
Act

themselves temporarily from their ordinary place of residence.

The ECI enjoys enormous powers in respect of the preparation of electoral rolls and the conduct of elections to Parliament, the State Legislatures, and to the offices of the President and Vice President. Article 324 of the Constitution, which empowers the ECI to undertake these tasks, is characterised by the Supreme Court as a "reservoir of power". Since the conduct of free and fair elections is an essential feature of the basic structure of the Constitution, the ECI needs to be vested with all the necessary powers to complete its task.

Nevertheless, it is inconceivable that the Constitution should confer on any authority unfettered powers. The Supreme Court has made it clear that the ECI can exercise all powers in its discretion in areas which are not covered by any statute but shall act in accordance with the law wherever it exists. In *Mohinder Singh Gill v. Chief Election Commissioner* (1978), the Court stated the law as follows: "Firstly when Parliament or any State Legislature has made valid law relating to or in connection with elections, the Commission shall act in conformity with, not in violation of, such provisions but where such law is silent, Article 324 is a reservoir of power to act for the avowed purpose of pushing forward a free and fair election with expedition."

## The qualifying date

Let us look at the relevant provisions of the RPA to get a perspective on the powers of the ECI in regard to revision of the electoral rolls. Section 21 of the 1950 RPA deals with the preparation and revision of electoral rolls. It speaks of four stages of revisions: (1) before elections to the Lok Sabha or Assembly; (2) before each by-election; (3) on the direction of the ECI in any year; and (4) a

special revision for a constituency or part of a constituency with the ECI recording reasons for doing so. All revisions except (4) are done with reference to a qualifying date, which, under Section 14, is the first day of January. The only exception is (4): no qualifying date is mentioned because it can be done any time.



The ECI order of June 24 mentions the qualifying date as 01/07/2025 and is a direction under Section 21(2)(b) of the RPA. It can be assumed that the revision being done in Bihar is under the same Section. But under this provision, the qualifying date should be 01/01/2025. The revision then should have been done from January 1, 2025. The qualifying date mentioned in the ECI order has no sanction under the law. Similarly, the term 'special intensive revision' is not found in the law. The only case where a special revision can be ordered by the ECI at any time is in relation to a constituency or a part of it and not in relation to an entire State.

Thus, it is reasonable to conclude that the SIR in Bihar is not in conformity with the provisions of the RPA. The ECI has claimed in its order that it has power under Section 21 to undertake the exercise. True, but that power is limited to a constituency or part of it under Section 21(3) of the Act.

While enjoying enormous powers under Article 324, the ECI is responsible to the rule of law and should be amenable to the norms of natural justice as per the Supreme Court. Electoral registration officers cannot summarily reject applications on the ground that foolproof documents are not being furnished to prove citizenship. Rule 8 of the Registration of Electors Rules clearly state that information shall be furnished "to the best of ability" of the citizens. The ECI cannot ignore this statutory stipulation.



# What the 'neutral clean-up' of Bihar's poll rolls really is

In recent years, India has experienced a subtle, yet significant, shift in how citizenship and national belonging are defined, and, increasingly, how voting rights are determined. This transformation is most evident in the ongoing electoral roll revision by the Election Commission of India (ECI) in Bihar, just months before the State Assembly elections later this year. The hurried and opaque nature of this process risks the wrongful exclusion of lakhs of eligible voters, posing a serious threat not only to the integrity of the electoral system but also to the constitutional values of equality, fraternity and justice.

## Anything but a routine update

On the surface, the Special Intensive Revision (SIR) of electoral rolls in Bihar appears to be a routine update. But in practice, it is anything but. Nearly 4.74 crore voters – close to 60% of Bihar's electorate – are now required to prove their eligibility through a new set of documents. The threshold for inclusion has shifted dramatically. Under the SIR guidelines, any voter not listed in the 2003 rolls must now provide documentary proof of citizenship. This includes birth certificate, school-leaving documents, land deeds, or official citizenship papers, which are records that are difficult to produce even in urban centres, let alone in the rural stretches of Bihar. Crucially, many of these documents, particularly birth certificate, are the responsibility of the state to issue. However, the state has historically failed to do so at scale, placing the burden on individuals to obtain and provide them.

What is being presented as a neutral "clean-up" of electoral rolls carries a serious risk of disenfranchising millions. The poor, Muslims and migrant workers, who make up a significant portion of Bihar's population, with migrants alone constituting around 20% are likely to be disproportionately affected. There is a significant risk that large numbers of migrant workers, predominantly men, could be removed from electoral rolls.

This represents a sharp break from previous practices, where self-declaration was deemed sufficient for enrolment, a principle supported by electoral regulations and the Supreme Court of India. The shift suggests a deeper reconfiguration of the relationship between the state and its citizens.

The ECI claims that the revision is aimed at eliminating duplicate entries, removing deceased voters and filtering out ineligible electors, while also including newly eligible ones. Legally, the ECI is empowered to do this. But the scale, the timing and the method of the current exercise are deeply problematic. It is neither practical to execute such a massive overhaul within a few weeks, nor reasonable to demand documentation that many voters, particularly from marginalised communities, simply do not possess. Media



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The hurried and opaque revision is a form of demographic manipulation and part of a broader political project aimed at weakening pluralism

reports suggest that many such voters do have widely held government-issued IDs such as Aadhaar, voter ID card, labour cards, and MGNREGA cards, none of which is being accepted as sufficient proof of eligibility.

There is a Kafkaesque irony at the heart of this:

the very voter ID cards issued by the ECI are now deemed inadequate. By refusing to recognise its own identification document, the ECI is not only disenfranchising citizens but also eroding its institutional credibility. If its own ID cards are no longer considered trustworthy for verification, what does that imply about the integrity of the electoral process and the legitimacy of past elections?

## An encroachment

Electoral integrity is not just about removing duplicates; it is about ensuring that every citizen has an opportunity to vote. The ECI's mandate is to facilitate participation, not put up bureaucratic hurdles. By shifting into the terrain of citizenship verification, the ECI is encroaching upon a domain that lies with the judiciary and designated tribunals. There is an apprehension that Electoral Registration Officers (EROs) could be given the authority to refer individuals suspected of being foreign nationals to citizenship authorities – a task previously outside the ECI's remit.

This shift, and the resistance to it, both have precedent. In the past, the judiciary has expressed concern over attempts to place the burden of proving citizenship on individuals, including those who had already participated in the electoral process. It has held that prior inclusion on an electoral roll implies that verification had already taken place. Again, in 2005, during the Assam roll revision, the Court stressed that anyone facing deletion from the rolls must be given notice and an opportunity to respond, and that questions of citizenship must be resolved by the appropriate authority.

The current process in Bihar, with its heavy documentation demands and compressed timelines, is beginning to resemble a de facto National Register of Citizens (NRC) but without any legislative basis or judicial oversight. It imports the logic of citizenship audits into electoral administration, turning a democratic procedure into an exclusionary instrument.

There is a deeper political logic behind the timing of this voter roll revision exercise. Its launch is particularly significant in the context of fiercely contested State elections, where every vote matters. The political motivations are hard to ignore: estimates suggest that as many as two crore voters could be removed from the rolls if the current process continues unchecked. In States such as Bihar, the deletion of even a few

hundred thousand names could decisively influence outcomes in tightly contested constituencies. Already facing strong anti-incumbency sentiment and a growing challenge from the Indian National

Developmental Inclusive Alliance (INDIA) bloc, the ruling National Democratic Alliance (NDA) stands to gain from such revisions. With the outcome still uncertain, voter roll revisions take on clear political significance.

Compounding matters is the logistical challenge. The ECI has launched this document-heavy exercise during the monsoon season, when large parts of Bihar are flood-prone. It has imposed a 30-day

deadline – a window in which many migrant workers are still away from home. This confluence of administrative rigidity and ecological vulnerability has created a perfect storm for disenfranchisement. An institution entrusted with ensuring free and fair elections, risks becoming a gatekeeper to democratic participation.

## The larger implications

Critics rightly see the revision as a form of demographic manipulation – a subtler version of gerrymandering by exclusion. The implications go well beyond Bihar, carrying national significance.

This new process is part of a broader political project aimed at weakening pluralism, even as substantive political participation and contestation are systematically constrained. It aligns with majoritarian narratives that cast a doubt on the loyalty and belonging of certain communities, particularly Muslims, and seeks to diminish their political influence by undermining both their representation and their right to vote.

What is unfolding in Bihar may well serve as a template for other States. ECI officials have indicated plans for similar special revisions in Assam, Kerala, Puducherry, Tamil Nadu and West Bengal. If this model is replicated, it may institutionalise a more document-intensive approach to voter verification – one that risks undoing decades of progress in empowering historically marginalised communities by offering them meaningful opportunities to participate in the democratic process.

The Bihar voter roll revision is now under challenge in the Supreme Court for violating fundamental rights including the right to vote, equality before law, non-discrimination, and dignity. If it is not struck down, it could strip lakhs of citizens of their right to vote, distorting electoral outcomes and eroding faith in democratic institutions. What is at risk is not just participation, but the very credibility of free and fair elections, an inviolable part of the Constitution's basic structure.



# The dark signs of restricted or selective franchise

**W**e are now in the second week since the sudden launch of the ongoing Special Intensive Revision (SIR) of electoral rolls in Bihar, on June 24, 2025. By now we all know that this SIR is happening after a gap of over 20 years. But this is only a half truth. The SIR now is fundamentally different from all the earlier SIRs. The ongoing SIR entails a complete reconstruction of the electoral rolls based on the submission of documents by aspiring and applicant electors.

## Revisiting trauma

Its suddenness and utter lack of transparency have rekindled memories of the traumatic experience of demonetisation in 2016. It is no wonder that the people of Bihar have begun calling the SIR as 'votebandi' after the popular Hindi term 'notebandi' to denote demonetisation. But the SIR also has features of the ordeal the people of Assam experienced during the National Register of Citizens exercise. An estimated 50 million voters of Bihar are being subject to a harsh 'eligibility test' in order to prove their citizenship and voting right.

The NRC in Assam was, however, not a sudden campaign, and was under the watch of the Supreme Court of India. It took six years and two rounds to cover an applicant population of 33 million, and even now the Assam government is not ready to accept the NRC that emerged, with close to two million rejections/exclusions. In Bihar, filled-in enumeration forms and accompanying enabling documents are to be collected from all, in just a month's time. And the month in question is July when the monsoon is vigorous, and when large parts of north Bihar are likely to be flooded and seasonal migration is at its peak. While the sheer scale and circumstances of this sudden operation make it clear that it is going to be a logistical nightmare, what makes it an insurmountable hurdle race for large numbers of Bihar electors is the list of 11 enabling documents that the Election Commission of India (ECI) wants as proof of electoral eligibility.



**Dipankar Bhattacharya**

is General Secretary of the Communist Party of India (Marxist-Leninist) Liberation

What is about to unfold in Bihar is a fundamental disruption of India's electoral democracy, with millions of second grade and insecure citizens

Documents commonly available with the people such as the Aadhaar card, voter card, ration card, job card or even the driving licence are not acceptable to the ECI. Instead, the documents it demands – birth certificate, matriculation degree, land or house ownership record, caste certificate, passport – are rarely available with the common man in Bihar. How on earth are they going to prove their eligibility or citizenship?

What makes matters inordinately more difficult is the high out-migration from Bihar. Almost every family has a member who is studying or working outside the State. During the COVID-19 pandemic, the lockdown in 2020 saw the shocking spectacle of migrant Biharis trekking back home over thousands of kilometres. Now many of these migrant Biharis are liable to be removed from the revised rolls on the spurious grounds that they no longer 'ordinarily reside' in Bihar.

The cruel reality that forces millions to seek a livelihood outside Bihar now renders them 'outsiders' for purposes of the electoral roll. Even as the slums built by migrant Bihari workers are being bulldozed in Delhi, the electoral rolls being prepared in Bihar threaten to evict them in their own State. The spectre of mass disenfranchisement is now an undeniable reality. The ECI recently gave us an electoral roll in Maharashtra exceeding the adult population of the State. Unable to explain this statistical scam, has the ECI now chosen Bihar for a 'balancing act' where millions are liable to be removed from the electoral roll for no fault of theirs?

## A fundamental disruption

According to the ECI's declaration, the Bihar SIR template will be replicated across the country in the months ahead. What we are witnessing is a fundamental disruption of the electoral democracy that has been practised in India since the adoption of the Constitution and enactment of the Representation of the People Act 1951.

Amid the chaos that has been triggered by the 'votebandi' drive in Bihar, are at least three warning signals for India's beleaguered democracy.

The onus of proving citizenship is being shifted from the state to the citizen. The empowered

elector has become a doubtful voter and the onus to clear this doubt and pass the eligibility test lies on the suspect and document-deficient voter. This is akin to a reversal of the fundamental principle of natural justice that one is innocent till proven guilty. This is a huge disaster in the making.



## A disenfranchising category

The ECI tells us that being a citizen is a constitutional prerequisite for becoming an eligible elector, and all that the SIR is doing is a verification of that eligibility. Electors on the 2003 roll are being presumed to be India's citizens, and, hence, rightfully eligible voters; all the others will have to prove it. Even if we accept that those eliminated from the electoral roll will still be considered 'citizens', we are now looking at a permanent category of disenfranchised citizens. In other words, India will have millions of second grade and absolutely insecure citizens who will, henceforth, be at the mercy of the state or the majority of empowered first-grade citizens. The implications are alarming and clear.

Universal adult franchise has been the cornerstone of India's Constitution and electoral framework. In many countries, vast sections of 'excluded' and 'disempowered' people, on grounds of race, ethnicity, class and gender, had to fight for decades in order to secure equal electoral rights.

In India we won it at one go with the attainment of freedom and the adoption of the Constitution. Now, in Bihar, with the insistence on submitting educational certificates and ownership records, are we now looking at a new order of restricted or selective franchise?

IAS Academy





## Quick fix

### Budgetary allowances alone will not solve India's R&D problem

**T**he Union Cabinet recently approved a ₹1-lakh crore Research Development and Innovation (RDI) scheme that aims to incentivise the private sector to invest in basic research. The scheme will primarily consist of a special purpose fund established within the Anusandhan National Research Foundation (ANRF), which will act as the custodian of funds. The funds will be in the form of low-interest loans. The ANRF is conceived as an independent institutional body, with oversight by the Science Ministry, to allocate funds for basic research and to incentivise private sector participation in core research. The involvement of the ANRF here is a novel move as the newly created organisation is meant to be the equivalent of a single-window clearance mechanism for funding research and development for universities and academic institutions. It is also expected to get about 70% of its budget from private sources. In sum, through the RDI and the ANRF, the government is looking to stake the bold claim that it has played its part and that it is now up to the private sector to come forward and reverse the ratio from where the government today accounts for about 70% of India's R&D spend. However, already incipient in the government's tall ambitions are traces of what has caused previous such schemes to falter. The first of these is conservatism.

It turns out that a condition for availing funds is that only products that have reached a certain level of development and market potential or, what are called Technology Readiness Level-4 (TRL-4) projects, would be eligible. There are nine TRL levels, a hierarchy that was first conceived by the United States' National Aeronautics and Space Administration (NASA) in the 1970s. TRL-1 represents a basic level of research and TRL-9 a state of advanced readiness. TRL-4 appears to be an arbitrary decision to support any promising research that has progressed halfway. Were there such a magic sauce, venture capital industries, premised on the fickleness of predicting the 'next big thing', would not exist. The scheme also seems to forget that technologically advanced countries have become what they are because of their military industrial complexes – where the spectre of war incentivises the development of technology that is risky and expensive but, over time, may prove to be of immense civilian value – examples are the Internet or the Global Positioning System. India continues to haemorrhage scientists to the West due to the lack of opportunities commensurate with their training. Finally, it lacks a deeply skilled manufacturing sector that can make the products that scientists conceive of. Budgetary allowances cannot overnight fix that which requires major surgery.





# Stop the slaughter

Trump must use his leverage to force  
Israel to end the war in Gaza

**I**n his third White House visit in six months, Israeli Prime Minister Benjamin Netanyahu, on Monday, heaped praise on U.S. President Donald Trump for his “pursuit of peace and security... in the Middle East” and even nominated him for a Nobel Peace Prize but stopped short of making any commitment on the most pressing issue in West Asia today – a ceasefire in Gaza. While indirect talks between Hamas representatives and Israel continue in Doha, Israel appears to be readying the forcible relocation of Palestinians to the south of Gaza. Defence Minister Israel Katz says he has instructed the Israeli Defence Forces (IDF) to come up with a plan to relocate the entire population of Gaza, of 2.3 million people, to the ruins of Rafah, which the Israelis call a “new humanitarian city”. There were reports in the Israeli media about the IDF chief, Eyal Zamir, opposing the plan, saying that “the hungry and angry” Palestinians “could turn on the IDF”. The IDF killing dozens of Palestinians, including children, in Gaza is a daily occurrence; starving civilians are shot down in aid centres. Doctors who served in Gaza in the past 20 months have horror stories of babies being starved to death or bodies of children being brought to hospitals with sniper wounds in their heads. None of this moves Mr. Netanyahu and his backers in the West, including Mr. Trump, who calls himself “a man of peace”.

Mr. Trump had said before the meeting that he would be “very firm” with Mr. Netanyahu on the need for a ceasefire. But words alone are not enough. Mr. Trump has the leverage to compel Israel to accept a ceasefire in Gaza. He demonstrated his influence in the final hours of the Iran-Israel war, publicly demanding that Tel Aviv turn back its fighter jets that had taken off to bomb Iran. Israel complied, after carrying out only a symbolic strike. Today’s Israel is dependent on the U.S. as ever before. During the war on Iran, Israel had to rely on America for offensive and defensive support. Israel needs American weapons to continue its devastating war in Gaza. And Mr. Netanyahu, who is facing an arrest warrant from the International Criminal Court for war crimes and crimes against humanity, needs American political and diplomatic backing to continue his wars across West Asia with impunity. If the U.S. continues to support Israel and refuses to use its leverage to end the Gaza war, it will be condemned by future historians and fact-finders as a country that was complicit in Israel’s crimes against Palestinians. There are no excuses for Israel to prolong this brutal war, which has killed an estimated 70,000 people in 20 months. The slaughter must stop, and Israel must be held accountable for its crimes.





Gene-edited japonica rice flourished better due to higher seed and panicle numbers. SPECIAL ARRANGEMENT

# NIPGR's gene-edited rice has better phosphate uptake, more yield

Phosphorus is an essential mineral for plant growth and development. In case of limited phosphorus availability, crop productivity drops drastically. Even when phosphate fertilizers are used, only about 15-20% are taken up by plants, while the balance gets leached out or lost through runoff

R. Prasad

Scientists at the Delhi-based National Institute of Plant Genome Research (NIPGR) have used CRISPR-Cas9 gene editing technology to increase phosphate uptake and transport in japonica rice varieties. The resulting rice lines had higher seed and panicle numbers, and thus higher yield without compromising seed quality. The studies were carried out in a greenhouse.

Phosphorus is an essential mineral for plant growth and development. When its availability is limited, crop productivity plummets. Even when phosphate fertilizers are used, only about 15-20% are taken up by plants; the rest is leached out or lost in surface runoff.

In the gene-edited rice lines, a recommended amount of phosphate fertilizer increased yield by 20%. However, when only 10% of the recommended dose was used, the yield increased by 40% over the control group, Jiender Giri of NIPGR and the corresponding author of a paper, published in *Plant Biotechnology Journal*, says.

"The purpose was to just demonstrate that even under extreme conditions of using only 10% of the recommended dose, the gene-edited lines showed increased phosphate uptake, resulting in 40% higher yield compared with the control group, where the yield reduced sharply," Dr. Giri says. "But if phosphate fertilizer supply is reduced by 10% or even 30%, it is very likely that the gene-edited lines will still outperform the control plants."

Rice absorbs phosphate through its roots and transfers it to the shoots. One class of transporters brings phosphate from the soil into the root while another inorganic phosphate transporter (OsPHO1.2) transfers phosphate from the root to the shoot.

The NIPGR researchers restricted their work to the root-to-shoot phosphate transporter. "When the phosphate transporter OsPHO1.2 starts working more, it will create more demand for phosphate in the root. When this happens, the root-bound transporters will bring more phosphate from soil into the root," Dr. Giri explains. "We already know there is a negative regulator that controls the expression of the phosphate transporter in the model plant *Arabidopsis*. But what's happening in rice was not known till now."

**Identification, removal of repressor**  
In *in silico* and DNA-protein interaction studies, the researchers identified the repressor gene, OsWRKY6, and showed that the repressor physically binds to the promoter. To verify if the repressor was indeed reducing the expression of the phosphate transporter, they silenced the repressor by knocking it out using the CRISPR-Cas9 gene editing tool. The

expression of the phosphate transporter OsPHO1.2 consequently increased significantly.

The increased expression of the transporter should have ideally led to more yield. But instead, the gene-edited rice lines fared poorly compared with the control.

"This was unexpected. We figured out that the repressor was also needed for other functions in the plant. While knocking out the repressor gene completely helped in removing the repression of the phosphate transporter thereby increasing the levels of phosphate in the shoot, we were also removing some essential functions regulated by the repressor," Dr. Giri says.

## Removing the binding site

The researchers then identified the site where the repressor actually binds to the promoter. The binding site in the promoter is a very short sequence of just 30 base pairs. Again CRISPR-Cas9 was used to remove the binding site of the repressor on the promoter.

"We removed only the binding site and not the repressor itself. So the repressor is present in the plant and continues to execute other vital plant functions," Dr. Giri explains.

The phosphate transporter OsPHO1.2 is also regulated by other regulators. By specifically removing only the site where the repressor binds to the promoter, the researchers ensured the binding sites of other regulators are intact, so they could continue to bind to the promoter and regulate its function. Dr. Giri likens it to undertaking a precise, minimal invasive surgery in the promoter gene.

There was enhanced expression of the promoter in the roots, along with increased shoot phosphate accumulation and improved plant growth. When the binding site of the repressor gene was removed from the phosphate promoter, the gene-edited rice plants transferred more phosphate from root to shoot.

"The roots start behaving like a sink by absorbing more phosphate from the soil, and this phosphate is distributed throughout the plant," Dr. Giri says.

The team found that the gene-edited lines were channeling the extra phosphate absorbed by the roots to produce more seeds by increasing the number of panicles – the fruiting body that bears seeds – leading to an increase in yield by 30%. The researchers analysed the seeds' sizes, dimensions, and starch and phosphate content, and found their quality to be normal.

Since the roots of gene-edited plants absorb more phosphate than before, will it become more necessary to continue using the same amount of phosphate fertilizer? Dr. Giri says phosphate is very reactive.

In alkaline soil, phosphate forms complexes with either calcium or magnesium or, if it is acidic, with iron and aluminium. Since these complexes are

**In the gene-edited rice lines, a recommended amount of phosphate fertilizer increased yield by 20%. However, when only 10% of the recommended dose was used, the yield increased by 40% over the control group**

insoluble, the transporters in the root can't absorb them.

"In the case of gene-edited rice, the plants will quickly absorb more phosphate before it combines with aluminium, iron, calcium or magnesium and become insoluble," he explains.

## Testing the hypothesis

In the study, japonica cultivar Nipponbare was used, since making gene-edited lines and transgenics is generally easy with japonica. "Japonica variety is easy to work with. It's not easy to raise transgenics using indica varieties. It will take more time to generate a sufficient number of gene plants when using Indian cultivars," Dr. Giri says.

"It's a very important scientific advancement," says P.V. Shivaprasad of the Epigenetics lab at the National Centre for Biological Sciences, Bengaluru.

He wasn't part of the study. "Soil in several parts of India has phosphorus deficiency. When the same modifications are performed in indica rice lines, it will be extremely useful. One must also check the efficacy of phosphate absorption, and how much less phosphate fertilizer can be used without compromising yield in indica lines. Exciting times ahead."

## Off-target events

Activists have previously objected to gene-editing on the grounds that the IP rights are held by foreign entities. Dr. Giri says India is negotiating to license the CRISPR-Cas9 technology.

This technology doesn't always target only the bases or genes of interest. Off-target events do happen – another concern that activists have raised.

To address this issue, Dr. Giri says there is software to predict where a gene edit might have unexpected, unwanted or even adverse effects on the genome.

"We checked for all off-target genes to check if there are any changes. In our case, we tested the top 10 contender off-target sites and did not find any deletion on those sites," Dr. Giri says.

Before the seeds are actually approved and released and farmers are allowed to cultivate, efforts will be taken to ensure the deletion is restricted only to the receptor binding site on the promoter, with no off-target effects, Dr. Giri adds. "What we do actually is that we produce a large number of lines and then select the best line and check for off-targets."

"It is very much possible to eliminate off-target events," says Dr. Shivaprasad.

"There are multiple tools available for guide RNA design that almost eliminate the possibility of off-target events. It is also important to check for off-target regions to ensure off-target events have not happened. It needs expertise."

According to Dr. Shivaprasad, there are more than three good *in silico* tools available to check for off-target events: "Southern blot analysis, particularly junction fragment analysis, is carried out to verify the successful integration or modification of DNA sequences within a genome and to confirm if multiple copies or half copies are not present."

NIPGR researchers have tissue culture-based transgenic generation. When plants are produced using tissue culture, the plants are tested to check if gene-editing has been precise even before the seeds are produced.

"Only if the gene editing has been precise with no off-target events will we even allow the plants to grow to the seed stage," Dr. Giri says. "The rest are discarded. So whatever plant we grow until the seed stage will always carry the correct gene editing."

The seeds coming from that plant and from the progeny will carry the phosphate transporter that has been precisely gene-edited to remove the 30 base pairs that form the binding site for the repressor."

## Foreign DNA

The third major objection is the presence of foreign DNA. The Cas9 protein used in CRISPR gene editing is derived from *Streptococcus pyogenes* bacteria. Therefore, Cas9 – which is the DNA-cutting enzyme – carries foreign DNA. Foreign DNA also comes from a soil bacterium as a vector to deliver the CRISPR-Cas9 components into plant cells.

Dr. Giri claims that the DNA from bacteria is removed in the second generation through a simple Mendelian segregation method, as the plants are tested before growing to the seed stage to know if the gene editing has been precise. "If you have one trait, the next generation will segregate into 3:1, where three will have the foreign DNA, and one will not. In the next generation, foreign DNA free plants are identified and propagated," he says.

"It is possible to remove the DNA of *Agrobacterium tumefaciens* – the soil bacterium that is used as a vector for delivering the CRISPR-Cas9 components into plant cells – through the Mendelian segregation method," Dr. Shivaprasad confirms. When the soil bacterium vector is removed, the *S. pyogenes* bacterium is also removed as well.

India depends almost entirely on imports to meet the domestic demand for phosphate fertilizers. If the new technology is successfully replicated in Indian rice varieties, it could contribute to sustainable agriculture.

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# Countrywide survey reveals deficits in student learning

Punjab, Kerala among top performers; Grade-level gaps seen in key subjects such as mathematics and language; PARAKH RS finds that 54% of Class 9 students can identify main points of a text

**A. M. Jigeeesh**  
NEW DELHI

**T**he results of the Performance Assessment, Review, and Analysis of Knowledge for Holistic Development Rashtriya Sarvekshan (PARAKH RS), formerly known as the National Achievement Survey (NAS), have revealed that Punjab, Himachal Pradesh, Kerala, Dadra Nagar Haveli and Daman & Diu and Chandigarh are the best performing States and Union Territories in school education.

PARAKH RS assessed the performance of 21,15,022 children in Grades 3, 6 and 9 from 74,229 schools in 781 districts of the country in the following subjects: language and mathematics (for Grades 3, 6, and 9), the world around us (for Grades 3 and 6), and science and social science (for Grade 9). As many as 2,70,424 teachers and school leaders responded through questionnaires.

Punjab, Himachal Pradesh and Kerala emerged as the top performing States in Grade 3. Kerala, Punjab and Dadra Nagar

## Survey snapshots

The PARAKH Rashtriya Sarvekshan was conducted on December 4, 2024, covering 21,15,022 students from both government and private schools in Grades 3, 6 and 9



- Punjab, Himachal Pradesh, Kerala, Dadra Nagar Haveli and Daman & Diu and Chandigarh are the best performers in school education
- Kendriya Vidyalayas recorded the lowest performance in Mathematics in Class 3
- In Class 6, government-aided and State government schools showed poor performance in Mathematics
- For Class 9, Kendriya Vidyalaya students performed the best across all subjects

Haveli and Daman & Diu were the top performers for Grade 6. Punjab, Kerala and Chandigarh were the best performing States for Grade 9. The Kendriya Vidyalayas, run by the Union government, recorded the lowest performance in mathematics in Grade 3. In Grade 6, government-aided and State government schools showed weak performance in mathematics. For Grade 9, students from Kendriya Vidyalayas performed the best across all subjects, particularly in language.

The results found that in Grade 3, 67% students know and use enough words to carry out day-to-

day interactions effectively and could guess the meaning of new words by using existing vocabulary.

### Figuring it out

In mathematics, 68% students in Grade 3 could sort objects into groups and sub-groups based on more than one property, while 69% could identify and extend simple patterns in their surroundings, shapes, and numbers. Only 55% could arrange numbers up to 99 in ascending and descending order.

In Grade 6, only 54% could represent numbers using the place value structure of the Indian number system, and knew and

could read the names of very large numbers. Only 38% students could solve puzzles and daily-life problems involving one or more operations on whole numbers.

Only 38% of Grade 6 students asked questions and made predictions about simple patterns (season change, food chain, phases of the moon, movement of stars and planets, shapes of trees, plants, leaves, and flowers, rituals, celebrations) observed in the immediate environment.

In Grade 9, 45% of students could explain how the Constitution came to be and understood the ideas and ideals of the Indian national movement enshrined in it as well as those drawn from India's civilisational heritage. About 54% of students could identify the main points in a text from careful listening or reading of news articles, reports or editorials.

Only 31% could explore and understand sets of numbers, such as whole numbers, fractions, integers, rational numbers, and real numbers, and their properties, the survey results said.

# ‘Convergence of China, Pak., Bangladesh interests may impact regional stability’

**Saurabh Trivedi**

NEW DELHI

There has been a convergence of interests between China, Pakistan, and Bangladesh, which may have implications for regional stability and security dynamics, Chief of Defence Staff General Anil Chauhan said on Tuesday.

He was addressing a gathering at the launch of the Observer Research Foundation’s (ORF) Foreign Policy Survey 2024.

In the context of regional stability, General Chauhan did not think any intervention would be in India’s interest as far as Myanmar was concerned, and “this is creating crisis of refugees, which has spilled over to the northeast region, creating a problem”. It could become a security challenge for a country like India in the long-term, the CDS said.

“The IOR (the Indian Ocean Region) has given outside [...] powers to leverage their influence through debt diplomacy, creating vulnerabilities for India. Similarly, frequent shifts in government in South Asia with changing geopolitical equations and ideological views is another major challenge that we face. Similarly, there is a possible



Misinformation, cyberthreats, and the weaponisation of digital spaces had created new frontiers of conflict, the CDS said. PTI

convergence of interest we can talk about between China, Pakistan and Bangladesh, [which] may have security implications for regional stability and security dynamics,” General Chauhan said.

## State of flux

The spread of misinformation, cyberthreats, and the weaponisation of digital spaces had created new frontiers of conflict, undermining trust and manipulating perception, which was going to become an important thing, he added.

“The global security situation today, as we all know, is in a state of flux. The world is transiting between two orders. Amid this chaos, the U.S. stance adds an additional layer of complexity, [of] which we all are aware,” he said.

Focusing on intelligent stocking for India, and creating surge capacities domestically as well as with trusted partners abroad, he emphasised reliance on resilient supply chains.

By combining global and local expertise, he said the aim was to build a robust and self-reliant defence ecosystem that strengthened national security while promoting technology and economic growth.

To stay ahead of a rapidly evolving global landscape, defence R&D must innovate and be forward-looking, driving the integration of cutting-edge technologies and processes to deliver the next generation of defence solutions, General Chauhan said.



# India-Brazil partnership is relevant for the world: Modi

The two large democratic nations are unanimous that disputes should be resolved by diplomacy, Prime Minister says, highlighting their role in safeguarding the interests of the Global South

**Kallol Bhattacharjee**  
NEW DELHI

India and Brazil were in agreement that all global problems should be resolved through dialogue, Prime Minister Narendra Modi said in Brasilia on Tuesday.

Speaking after bilateral talks between the Indian and Brazilian teams, Mr. Modi described President Lula da Silva as the “chief architect” of the India-Brazil Strategic Partnership. He said India-Brazil cooperation was an “important pillar” for the world.

“India and Brazil have always worked in close coordination at the global level. As two large democratic countries, our cooperation is relevant not only for the Global South, but for the entire humanity,” Mr. Modi said, highlighting the role of the two countries in safeguarding the interests of the Global South.



President Lula da Silva presents Narendra Modi with the National Order of the Southern Cross, at the Alvorada Palace, Brazil. REUTERS

Earlier, the Prime Minister was accorded a ceremonial welcome in Brasilia, where he arrived on Monday after attending the BRICS summit in Rio De Janeiro.

“Today, when the world is going through a period of tension and uncertainty, my friend [President Lula] explained in great detail. I am not repeating it. This India-Brazil partnership is

an important pillar of stability and balance. We are unanimous that all disputes should be resolved through dialogue and diplomacy,” said Mr. Modi, highlighting terrorism as one such area of cooperation which should have “zero tolerance and zero double standards”.

The Prime Minister expressed gratitude to Brazil after receiving the Grand

Collar of the National Order of the Southern Cross (the highest state honour) from President Lula.

Mr. Modi also thanked him for playing “an important role” in strengthening India-Brazil ties. “In today’s discussions, we talked about strengthening cooperation in every field. We have set a target to take bilateral trade to \$20 billion in the coming five years,” he said.

## Six pacts signed

The two sides signed six agreements that included renewable energy, cooperation on combating terrorism, intellectual property, agriculture and protection of classified information.

“We will continue our efforts to connect our defence industries,” Mr. Modi said, announcing that the two sides were “working together on the adoption of UPI [Unified Payments Interface] in Brazil.”



# Rare Great Hornbill sighting in Ezhimala sparks renewed calls for biodiversity conservation

**The Hindu Bureau**  
KANNUR

In a rare and remarkable sighting, the Malamuzhakki Vezhambal (Great Hornbill), Kerala's State bird, was spotted in the coastal belt of Kakkampara, near Ezhimala, in Kannur, an area far from its usual forested habitats.

The bird was first observed perched on a fig-laden *Ficus exasperata* tree on May 24 and later it flew towards the Ezhimala Naval Academy's campus.

Birdwatchers Manoj Karingamathil, P. Jameela and Abhinav Jeevan, a student of the Forestry Department in Sir Syed College, Taliparamba, confirmed the sighting and



**Piqued interest:** The Malamuzhakki Vezhambal (Great Hornbill) seen near Ezhimala in Kannur recently. SPECIAL ARRANGEMENT

said the bird spotted was a male.

The hornbill remained in the area for about two weeks, foraging from fruit-bearing trees and occasionally flying to neighbouring regions, said Mr.

Manoj, adding that the bird was first noticed by Abhinav's relatives, who without knowing the rarity of the bird sighting, used its photos for WhatsApp status update.

Typically found in Kera-

la's evergreen and moist deciduous forests such as the Silent Valley, Nelliampathy, Athirappilly, Aralam and Parambikulam, the hornbill is rarely seen in coastal areas, Mr. Manoj said, adding that its unexpected presence is hailed as an ecological indicator.

There were very few reports of the birds being sighted near forest regions of the Aralam and Karimbam farms. However, there is no public documentation, Mr. Manoj said.

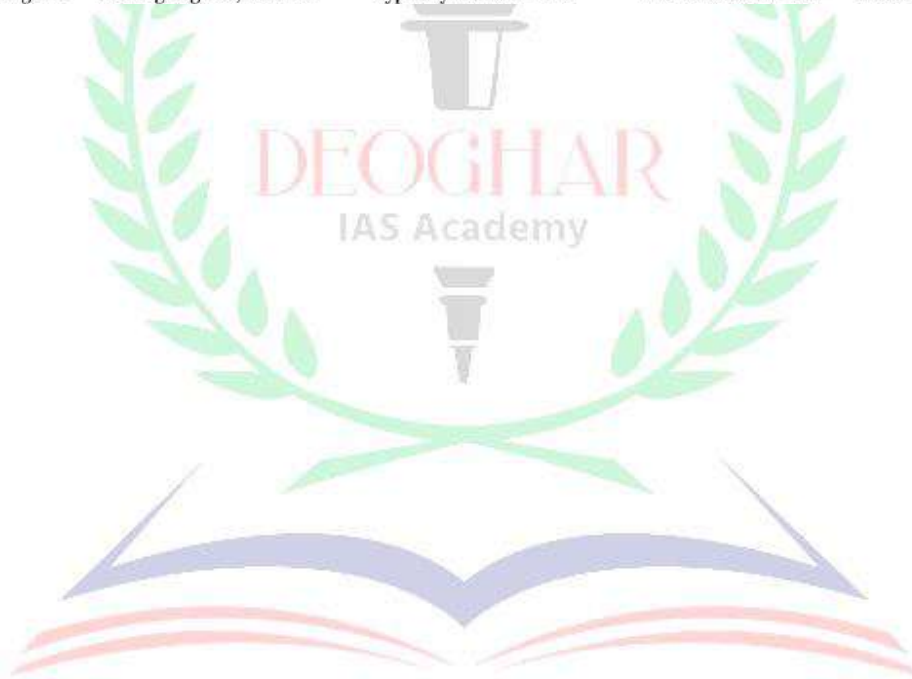
Ramanthali grama panchayat president V. Shyma said the sighting is significant proof that the region remains a biodiversity hotspot despite human habitation.

"This reflects the eco-

logical richness of the area," she said.

Sneha Subhash, head of the Department of Forestry, Sir Syed College, emphasised the need for further studies on the Great Hornbill's movement to coastal hills. "Such occurrences near the sea are unusual and point to the broader ecological value of the region," she said.

Listed as Endangered by the International Union for Conservation of Nature (IUCN) and protected under Schedule 1 of the Indian Wildlife (Protection) Act, the Great Hornbill's appearance in Ezhimala has sparked both excitement and renewed calls for conservation efforts in the areas.





# Auroville greenlights key development proposals

**The Hindu Bureau**  
PUDUCHERRY

The Governing Board of Auroville Foundation has green-lit a set of key proposals, including the launch of the first phase of a 1,000-bed residential complex to house 380 individuals.

The 69th meeting of the Governing Board (GB) of the Auroville Foundation convened by its chairman and Tamil Nadu Governor R.N. Ravi cleared the housing initiative, under the Line of Progress project in Sector 2 of the Residential Zone, which was proposed for inclusion under the Higher Education Financing Agency (HEFA) scheme, a press note said.

The GB also passed a resolution to establish a 'Sustainability Campus' through an MoU with IIT-



The 69th meeting of the Governing Board of the Auroville Foundation was convened on Tuesday. SPECIAL ARRANGEMENT

Madras (signed in March 2025) on a leased land in Auroville with the facility focusing on fostering global excellence in sustainable technologies, the note said.

The Governing Board, which reviewed key developments since its previous meeting in December 2024, also passed a resolution sanctioning 'Serveurs Volontaires' housing' pro-

posal that envisaged a 100-bed housing facility for long-term volunteers and newcomers. This was aimed at addressing the shortage of high quality volunteer accommodation, the press note said.

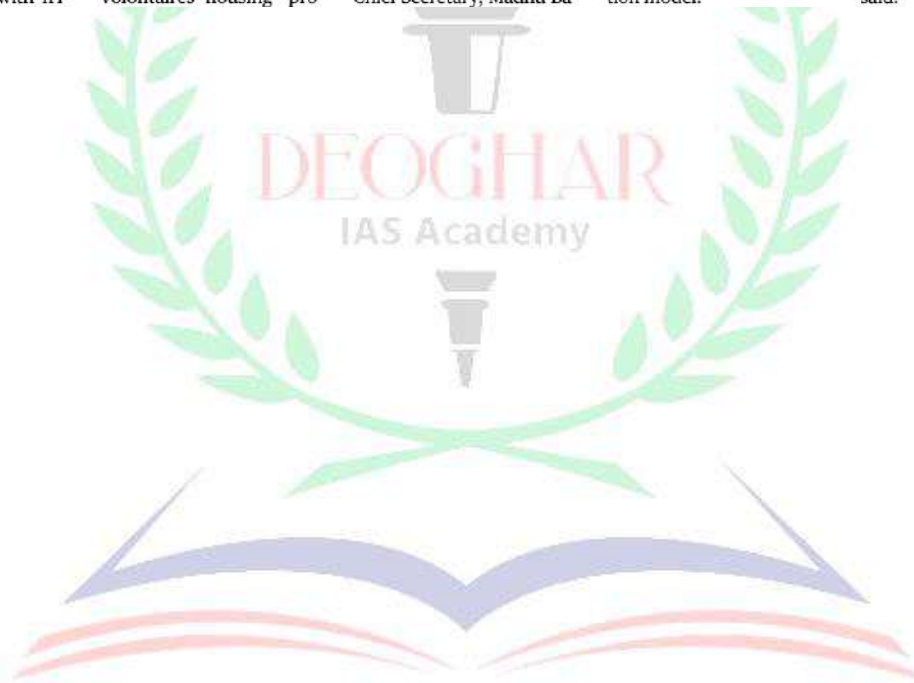
The meeting was attended by K. Kailashnathan, Lieutenant Governor of Puducherry, Sharat Chauhan, Chief Secretary, Madhu Ba-

la Soni, Under Secretary, Department of Higher Education, Ministry of Education, Jayanti. S. Ravi, Additional Chief Secretary, Revenue, Gujarat and Secretary of the Auroville Foundation, Nirima Oza and R.S. Sarraju, Governing Board members, G. Seetharaman, Officer on Special Duty, Auroville Foundation, and Koshy Varghese, Visa Consultant of the Foundation. Governing Board members Aravindan Neelakandan and Goutam Ghosal participated online.

The other important proposals cleared by the Governing Board, included setting up of a 'Free Progress' school within Auroville, in line with The Mother and Sri Aurobindo's teachings on a new education model.

On the governance side, the Board ratified two new Standing Orders – the Code of Conduct for Business Units 2025, streamlining and regulating unit operations and the Framework for Functioning of the Residents' Assembly 2025, ensuring clarity and order in community governance.

The GB took note of "significant judicial successes" that reaffirmed the Foundation's legal standing in as many as 24 writ petitions filed by some residents, especially the Supreme Court's dismissal of the NGT order that now cleared the path for Auroville's development as a model international township rooted in the vision of Sri Aurobindo and The Mother, the press note said.



# India says trade deal with U.S. 'imminent'

U.S. President Donald Trump extends tariff pause to August 1 and threatens new hikes for 14 countries

Negotiations could be extended to August 1 if the deal specifics do not suit India, says an official

India has placed its final proposals, now the U.S. has to decide whether to accept it, says a source

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NEW DELHI

India expects to announce a 'mini' trade deal with the United States "in a day or two", government officials said on Tuesday, though U.S. President Donald Trump has now extended his tariff pause until August 1. They cautioned, however, that India will not push ahead if the deal specifics do not suit Indian interests.

This came hours after U.S. President Donald Trump also said that the U.S. was "close to making a deal with India".

Mr. Trump has also sent letters to 14 countries, threatening higher tariffs from August 1, in a bid to address their trade deficits with the U.S. They include Japan, South Korea, Kazakhstan, Malaysia, Tunisia, South Africa, Bosnia

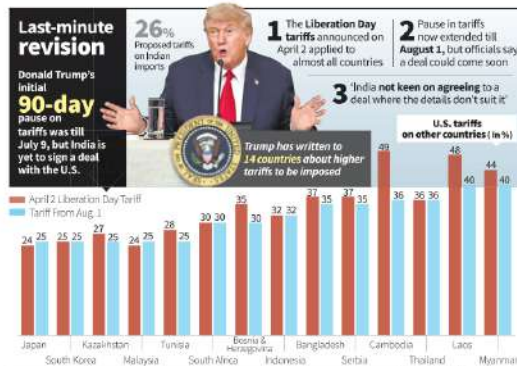
and Herzegovina, Indonesia, Bangladesh, Serbia, Cambodia, Thailand, Laos, and Myanmar.

The Liberation Day tariffs – announced on April 2 and originally paused till midnight on July 8 – applied to almost all countries, and included a 26% tariff on Indian imports.

"The August 1 deadline is for countries that have been sent the letters," an official told *The Hindu*. "India has not been sent a letter, and we are still working to finalise the deal, so the July 8-9 deadline is still what we are operating under."

## New deadline

However, as per an executive order signed by Mr. Trump in Washington on Monday, "based on additional information and recommendations from various senior officials,



including information on the status of discussions with trading partners", the suspension of higher tariffs will now extend until 12:01 a.m. on August 1, by U.S.

Eastern Daylight time.

Another official aware of the negotiations said a deal could materialise by the night of July 8, or "in a day or two".

However, this official added that India could use the expanded August 1 window "if the deal specifics do not suit us".

Stating that levies would

start being paid on August 1, Mr. Trump on Tuesday said that he would not extend the deadline again.

"No extensions will be granted," he posted on Truth Social. "There will be no change."

On Monday, Mr. Trump said that the U.S. had "spoken to everybody".

"We have made some [trade] deals, but for the most part we are going to send a letter," he said.

## Deal dynamics

A team of Indian negotiators led by Special Secretary in the Ministry of Commerce and Industry Rajesh Agrawal returned from their second trip to the U.S. last week. A team from the U.S. has also visited India twice in the last few months.

According to sources, India has placed its final proposals before the U.S.

and now the U.S. has to decide whether to accept the deal or not. India, for its part, will not further amend its proposals for the mini deal.

As *The Hindu* has reported before, the main issues holding up a deal between India and the U.S. continue to be genetically-modified (GM) crops and dairy imports.

The U.S. is pushing India to allow the import of GM products such as soybean meal and distillers dried grains with solubles (DDGS) for animal feed. DDGS is a by-product of the ethanol production process. India has not been inclined towards GM crops even produced domestically, let alone imported.

Another demand is for India to allow the import of cow milk from the U.S., which India has been resisting.

