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C.P Radhakrishnan elected Vice-President of India

GS-2 : Polity

Radhakrishnan elected Vice-President of India

The NDA candidate got 452 first preferential votes against the Opposition's joint candidate Justice B. Sudershan Reddy who got 300 votes; while 14 MPs abstained, 15 votes were found to be invalid

Sobhana K. Nair
NEW DELHI

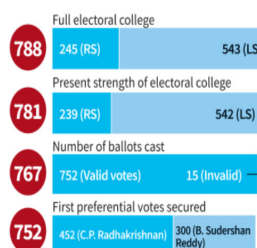
Maharashtra Governor C.P. Radhakrishnan was elected the 17th Vice-President of India on Tuesday by a margin of 152 votes. The Opposition fell short of its own expected tally, even as 98.2% of the total electorate cast their ballot.

Mr. Radhakrishnan – the ruling National Democratic Alliance's nominee – got 452 first preferential votes against the joint Opposition candidate Justice B. Sudershan Reddy, who got 300 votes. Fifteen votes were found to be invalid and 14 MPs abstained.

Including the strength of both Houses, the full electoral college comprises 788 electors. With six vacancies in the Rajya Sabha

Comfortable victory

Radhakrishnan won by a margin of 152 votes, as 98.2% of the total electorate, comprising both Houses of Parliament, cast their ballot



C.P. Radhakrishnan

and one in the Lok Sabha, this tally was reduced to 781 for the election.

Cross-voting

Out of this, 767 electors cast their vote before the polling closed at 5 p.m. Rajya Sabha Secretary-General P.C. Mody, the Returning

Officer for the election, announced the results.

Though the Opposition declared the final count a "moral victory", it still fell short of its own estimated strength of 324, despite having managed to get nearly all of its members to vote. On the other hand,

the NDA and others aligned with the government, which had an presumed strength of 439, seem to have managed an additional 13 votes, indicating cross-voting from the Opposition's ranks.

"Congratulations to Thiru CP Radhakrishnan Ji on winning the 2025 Vice Presidential election. His life has always been devoted to serving society and empowering the poor and marginalised. I am confident that he will be an outstanding VP, who will strengthen our Constitutional values and enhance Parliamentary discourse," Prime Minister Narendra Modi posted on X.

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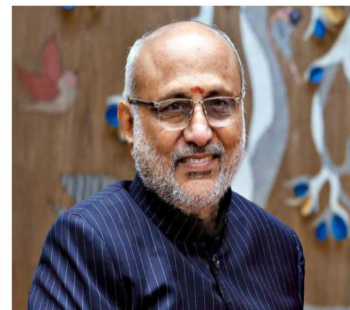
C.P. Radhakrishnan: affable organisation man who can reach across the aisle

The Hindu Bureau
NEW DELHI

At the National Democratic Alliance's Parliamentary Party meeting in August, Prime Minister Narendra Modi introduced Vice-Presidential nominee C.P. Radhakrishnan as someone who has keen interest in sports but "does not play games in politics".

It was a telling remark that reflected Mr. Radhakrishnan's image within his party of an affable organisation man who had steered the Rashtriya Swayamsevak Sangh and the Bharatiya Janata Party through the ideologically challenging terrain in Tamil Nadu. Untainted by corruption and having remained above petty organisational politics, Mr. Radhakrishnan is seen as someone who can steer the Rajya Sabha with a similar reach across both sides of the aisle.

Mr. Radhakrishnan, who was elected Vice-President of India on Tuesday, ticked all the boxes for the NDA in its search for a replacement for former Vice-President Jagdeep Dhankhar, who resigned in July, triggering a mid-term vacancy. He was born in Tiruppur in 1957 and holds a



C.P. Radhakrishnan is known as the 'Vajpayee of Coimbatore', a reference to the similarity in personality with the former PM. PTI

Bachelor's degree in business administration.

Mr. Radhakrishnan joined the RSS as a teenager and rose through the ranks in the organisation and the BJP. He was elected twice to the Lok Sabha (1998, 1999) from Coimbatore and had been the BJP's Tamil Nadu chief from 2004 to 2007.

During his tenure as the State unit president, he undertook two rath yatras and a march over issues of river interlinking, imposition of a common civil code, and the eradication of untouchability.

Locally, he was known as the "Vajpayee of Coimbatore", a reference to the similarity in personality

with the former Prime Minister, who also had friends across party lines.

While Tamil Nadu has not been a State where the BJP enjoys much support, Mr. Radhakrishnan's two tenures in the Lok Sabha established that there were areas where the party could make headway. He was appointed Governor of Jharkhand in 2023 and was later given additional charge of Telangana and Puducherry till July 2024. He was subsequently appointed Governor of Maharashtra in July 2024.

Government managers say he may be more successful in the sportsmanship required of a presiding officer.

Nepal in chaos: PM Oli resigns

Nepal in chaos: PM Oli resigns; Parliament, top court set afire

Sanjeev Satgainya

KATHMANDU

Nepal's Prime Minister K.P. Sharma Oli resigned on Tuesday, a day after 19 people were killed in police firing as Gen Z-led anti-corruption protests intensified across Kathmandu and other parts of the country.

In his resignation letter to President Ram Chandra Poudel, Mr. Oli said he was stepping down to facilitate a political solution to the deepening crisis. President Poudel accepted the resignation and urged all stakeholders, including "the representatives of Gen Z", to engage in peaceful dialogue, even as attacks and arson incidents continued to grip the capital.

Call for dialogue

Despite a curfew imposed by the local administration since early morning, thousands of protesters poured into the streets.

Late on Tuesday, Army



A protestor wearing flak jacket and carrying a shield snatched from a policeman shouts slogans in Kathmandu on Tuesday. AP

Chief Gen. Ashok Raj Sigdel addressed the nation, calling upon protesters to halt all their programmes and engage in dialogue. "Maintaining peace, security, harmony, national unity, and goodwill is the responsibility and duty of every Nepali," he said. "To provide a peaceful resolution to the current difficult situation, we call upon the protesting groups to suspend their programmes and come forward for dialogue."

Earlier, in a dramatic escalation, demonstrators stormed the Parliament building, the Supreme Court, and Singha Durbar, the seat of government, and set them on fire. Numerous government offices were attacked across Kathmandu and beyond.

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Langkhun Festival

Tribal communion



Traditional fete: Tiwa tribesmen celebrate Langkhun festival in Umsowai village in Karbi Anglong district of Assam on Tuesday. The Tiwa Langkhun festival is celebrated with great cultural significance and community involvement, praying for a good harvest. RITU RAJ KONWAR

China digs in on 'rare earth', commands global market

China digs in on 'rare earth', commands global market

China is world's largest producer of rare earths, contributing over 60% of global production

DATA POINT

Sambhavi Parthasarathy

Last month, China's Ministry of Industry and Information Technology introduced interim measures to tighten controls on 'rare earth' mining and processing. The rules are the latest in Beijing's efforts to centralise oversight of extraction, exports, and refining.

While China's trading partners such as India and the U.S. are seeking alternative sources to reduce dependency, data shows that China's dominance in rare earths stems not only from resource availability but more so from its long-standing strength in mining and research capacity.

Rare earth elements (REEs), despite the name, are not particularly scarce. According to the International Energy Agency (IEA), they comprise 17 metals, typically grouped into light rare earths (LREEs) – including lanthanum, cerium, praseodymium, neodymium, samarium and europium – and heavy rare earths (HREEs) such as gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium and yttrium. Promethium is not included in the list as it is radioactive and does not occur in mineable quantities.

They are critical components in clean energy technologies such as electric vehicles and wind turbines, as well as in defence applications. Rare earths are also essential for high-tech devices including smartphones and hard drives.

Although rare earth deposits exist in countries such as Brazil, Australia, and India, China holds nearly half of global reserves (Chart 1). It is also the world's largest producer, contributing over 60% of global production in the last five years (Chart 2). Beyond extraction, China dominates the value chain with around 92% of global refining capacity, according to the

IEA. Moreover, in the last five years, China has been the largest exporter, supplying close to 30% of global demand (Chart 3).

Charts 1, 2 and 3 establish China's dominance across reserves, production, and exports.

In April, amid escalating U.S.-China trade tensions, Beijing imposed export restrictions on seven rare earth elements. The move targeted elements used in neodymium-iron-boron (NdFeB) magnets – essential for clean energy technologies – as well as those critical to ceramics, phosphors, steel, optical glass, fibres, and aerospace applications (Chart 4).

China's decision to curb rare earth exports, amid its for-tat-tariffs, dealt a significant blow to the U.S., which remains heavily dependent on Chinese supply. The U.S. is the second-largest importer of Chinese rare earths, after Japan (Chart 5). India, too, is heavily dependent on China for its rare earth imports. Since 2021, more than 75% have come from China.

Under China's interim measures announced last month, Chinese companies must now operate within government-set quotas for various minerals and obtain approval to trade in rare earths. This is not the first time China has tightened its rare earth trade. It has already prohibited export of tools and methods used to extract and separate rare earths, and in December 2023, it banned the export of processing technology.

China's monopoly over rare earths is also reinforced by its strong research base. A study found that China leads the field of rare-earth research, contributing nearly 30% of all published papers. The U.S. and Japan followed with shares of 10% or less, while India accounted for about 6%.

In parallel, China has increased funding for mineral exploration, allocating about \$14 billion annually since 2022, according to the IEA. The agency notes that this marks the highest three-year stretch of investment in the past decade.

Tightening its grip

The data for the charts were sourced from the U.S. Geological Survey, UN COMTRADE, the International Energy Agency, AP and Reuters



Chart 1: Country-wise share (in %) of global reserves of rare earths (as per U.S. Geological Survey 2020).

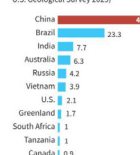


Chart 2: Country-wise share of estimated global mine production of rare earths in the last five years

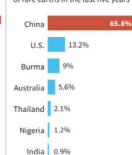


Chart 4: Sector-wise demand for rare earth elements under export controls announced by China in April

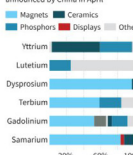


Chart 3: Major exporters of rare earth. Figures in % show their share in global exports

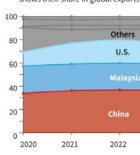
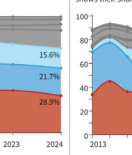


Chart 5: Major importers of China's rare earth. Figures in % show their share in China's exports



Why was Indonesia rocked by protests?

Why was Indonesia rocked by protests?

How did the protests start and what led to its escalation across the country? How many people have been arrested or detained by the police? What did Indonesian President Prabowo Subianto say about the looting and rioting by protestors on the streets? What fuelled such anger against the elites?

EXPLAINER

Joan Sony Cherian

The story so far:

What started as a peaceful protest against Parliament members of Indonesia on August 25 in Jakarta, quickly snowballed into violent riots between civilians and the police/military when, on August 28, footage emerged of an armoured vehicle of the paramilitary police running over and killing a 21-year-old delivery worker. Since then, thousands have been arrested and at least seven have died in one of the most violent protests Indonesia has seen recently.

What happened?

The initial protests, which were mainly composed of students and labour unions, were conducted outside the Indonesian Parliament, against the housing allowance accorded to legislative members which is almost 50 million rupiah (\$3,000) – 10 times the national average monthly minimum wage.

However, after 21-year-old Affan Kurniawan, a delivery worker, was run over and killed by a police vehicle, protests escalated and spilled out of the capital across the country against the 'corrupt elite' and Indonesian President Prabowo Subianto's government. The delivery driver's killing became the flame which ignited the long-repressed anger of the people at the various austerity measures of the President in the past year. Protestors attacked public buildings, burned down and looted houses of public officials, including the house of then Finance Minister Sri Mulyani Indrawati, and violent clashes were reported between protestors and the police.

How has the government responded? President Prabowo announced that the Parliament had come to a consensus to reduce housing allowance and foreign visits for Parliament representatives. He also assured that an investigation will be



In rage: Demonstrators set alight banners during a protest in Bandung, West Java on September 1. AFP

conducted into the killing of Mr. Affan, and that those responsible will be brought to book. However, he warned that while his government respected the right to peaceful assembly, looting and rioting would be punished and that the same bordered on "terrorism and treason". "I order the police and military to take the strongest possible action against destruction of public facilities and looting of homes and economic centres," Mr. Prabowo said.

At least 3,000 people have been arrested or detained by the police across the country, and hundreds have been injured, some of whom include police personnel. Rights groups have said that at least 20 people are missing since the protests began.

What about income inequality?

The protests in Indonesia have generally been seen as an incitement of anger against the elites by a shrinking middle

class. While the Gini co-efficient of Indonesia has been declining, the country still registers one of the highest levels of inequality in the Southeast Asian region.

As per an Oxfam report, Indonesia ranks sixth among countries with the greatest wealth inequality. The four richest people in Indonesia have a combined income of more than 100 of the poorest citizens in the country. Additional issues which plague the poor include low wages and job insecurity. Education also remains underfunded, with various barriers restricting higher education.

Is this the first time protests have emerged against the ruling party?

Mr. Prabowo and his government came to power last year in October. And since then, his government has embarked on a cost-cutting drive to increase 'efficiency'.

In the beginning of this year, the Prabowo government announced a fiscal cut of 306 trillion rupiah (\$18.8 billion)

from the country's budget. These cuts were justified by the government as being redirected to fund the 'free meal' programme in schools, which was one of the key election campaign promises of the ruling government. The programme was aimed at not only providing nutritious food to school students but also as a tool to build back the dilapidated schools of the country.

However, this reallocation has come at a great cost. The budgets of several government departments have been reduced significantly; for example, there has been a 70% reduction for public works, a 52% cut for economic affairs and a 40% reduction in investment. To cope with such budget cuts, regional governments increased local taxes, the most infamous of them being a 250% increase in property tax in Pati, a town in central Java. The higher education ministry's budget was also cut by 25%.

These cuts caused massive outrage among college students who stated that these reductions will make education expensive as well as cut scholarships. On February 17, thousands of students came out in protest of these budget cuts. The movement was dubbed 'Dark Indonesia' as opposed to the President's vision of bringing in a 'Golden Indonesia'. The movement reached its zenith on February 20 with hundreds of thousands of students taking to the streets in Jakarta and other cities. However, Mr. Prabowo slammed the protests and said that these cuts were necessary to fuel the economic future of the country.

What next?

In a bid to quell some of the public anger, one of the police officers behind the killing of Mr. Affan has been "dishonourably" fired. The Cabinet has also been reshuffled with five Ministers losing their job, including Ms. Indrawati. Parliamentary officials also met with at least 10 student unions whose demands included the release of demonstrators and detainees. Fitch Ratings has said that the unrest could harm Indonesia's sovereign credit profile.

THE GIST

▼ The initial protests, which were mainly composed of students and labour unions, were conducted outside the Indonesian Parliament, against the housing allowance accorded to legislative members.

▼ However, after 21-year-old Affan Kurniawan, a delivery worker, was run over and killed by a police vehicle, protests escalated.

▼ These protests in Indonesia have generally been seen as an incitement of anger against the elites by a shrinking middle class.

Centre grants licences to five firms to manufacture its first indigenous malaria vaccine

Centre grants licences to five firms to manufacture its first indigenous malaria vaccine

Bindu Shajan Perappadan
NEW DELHI

The Union government has given licences to five firms for manufacturing and commercialisation of its first indigenous multi-stage malaria vaccine developed by the Indian Council of Medical Research (ICMR) and its partners.

Indian Immunologicals Ltd., Techinvention Life-care Private Ltd., Panacea Biotec Ltd., Biological E Ltd., and Zydus Lifesciences will make the vaccine targeting the parasite before it enters the bloodstream to prevent transmission.

The council said it was an affordable, stable, and scalable solution. It remains effective for more than nine months at room temperature, it said.



The ICMR-developed vaccine targets the parasite before it enters the bloodstream.

The ICMR had invited expression of interest from eligible organisations, companies, and manufacturers for transfer of technology for commercialisation of "a recombinant chimeric multi-stage malaria vaccine (AdFalcVax) against *Plasmodium falciparum* useful in preventing infection in humans

and minimising community transmission".

The goal is to facilitate the commercialisation of the vaccine to prevent and minimise malaria transmission.

"The pre-clinical validation of this technology was conducted in collaboration with ICMR-National Institute of Malaria Research, another constituent institute of ICMR, and National Institute of Immunology (NII), New Delhi, an autonomous research institute of the Department of Biotechnology," the council said.

Malaria remains one of the major public health problems in India. The country carries 1.4% of the global malaria case burden, and accounted for 66% of cases in the South-east Asia region.



Lessons for India: how Kerala is tackling rapid urbanisation

EXPLAINER



Rejuvenating cities: A fisherman casting his net into the backwaters, in Kochi. *HVIBHU*

Lessons for India: how Kerala is tackling rapid urbanisation

As the first State-level urban commission in the country, the Kerala Urban Policy Commission's report promises nothing less than a data revolution, governance recalibration, identity revival, and finance empowerment

Tikender Singh Panwar

The story so far:

Kerala is a tapestry of villages rippling into towns, of backwaters, and midlands and highlands woven together in a living continuum. Capital cities and hamlets bleed into each other, forming a unique "rurban" landscape. Yet beneath this tapestry lies a race against time – urbanisation accelerating faster than infrastructure and governance can keep up, while climate stress lurks in floods, landslides, coastal erosion, and unpredictable weather. In response, Kerala decided to tackle the problem head-on with the Kerala Urban Policy Commission.

What is the KUPC?

The Kerala Urban Policy Commission, (KUPC) set in motion in December 2023, was charged with designing a 25-year urban roadmap that sees cities not as concrete problems, but as organic, climate-aware ecosystems. When the KUPC handed its report to the State in March 2025, the result was not a mild adjustment – it was a structural reset. The blueprint promised nothing less than a data revolution, governance recalibration, identity revival, and finance empowerment – all tied together in one bold vision.

Why was it needed?

By late 2023, Kerala was urbanising at a pace well ahead of the national average. Estimates projected an urban population of over 80% by 2050 – a seismic shift in a region where villages and towns intermesh in a delicate mosaic. Meanwhile, climate threats were intensifying. Floods devastated Ernakulam; landslides shattered hillsides; and coastal zones reeled from sea-level pressures. The gap between crisis and planning was growing wide.

The cabinet's December 2023 resolution to form the KUPC was a calculated break from India's centralised, project-based urban model. It was a

political acknowledgment that Kerala needed its own compass – tailored to its place, history, and climate context. No other State had taken such a leap. Therefore, the KUPC became India's first State-level urban commission, signalling a paradigm shift – from reactive fixes to systemic thinking.

What were the recommendations of the commission?

The commission conducted 33 deep-dive studies, covering everything from land-use patterns and water systems to finance flows and civic health. It held 53 district-level stakeholder dialogues, involving mayors, NGOs, unions, resident associations, gig workers, and panchayat members.

A 2,359-page final report, structured around 10 thematic pillars, ranging from climate readiness and finance to well-being and identity, was submitted to the State. The commission drew on Census numbers, satellite imagery, socio-economic realities, ecological hazards, and Kerala's lived "rurban" character to deliver actionable insights grounded in evidence and local narrative.

Some of the most important recommendations of the KUPC report submitted to the Chief Minister on March 30, 2025 include:

Climate and risk-aware zoning: Any kind of urban planning must reflect hazard mapping of landslides, coastal inundation, flood zones etc. Thus, planning becomes proactive, instead of being reactive.

A digital data observatory: At the Kerala Institute of Local Administration, a real-time data nerve centre could collate high-resolution Light Detection and Ranging, and ground penetrating radar, tide/water gauge, satellite and real-time weather data. Thus, every municipality gains a living intelligence feed.

Green fees and climate insurance: Projects in eco-sensitive zones could come with environmental levies (green fees) which would fund urban resilience. A parametric insurance model ensures pre-approved payouts for disaster-prone

areas.

Municipal and pooled bonds: While Thiruvananthapuram, Kochi, and Kozhikode, being bigger cities, could issue municipal bonds, smaller towns would use pooled instruments. Bond subscriptions were even plugged into the 2024 Interim Budget.

Governance overhaul: City cabinets, led by mayors, could replace bureaucratic inertia. Specialist cells (climate, waste, mobility, law) with dedicated municipal cadres should be formed. A "Jnanashree" program would recruit and deploy youth tech talent.

Place-based economic revival: Thrissur-Kochi is known as a FinTech hub; Thiruvananthapuram-Kollam a knowledge corridor; Kozhikode is known as the city of literature; and Palakkad and Kasaragod have been elevated to smart-industrial zones.

Commons, culture, and care: The report stressed the need to revive wetlands, reactivate waterways and preserve heritage zones. It also recommended city health councils to cater to migrants, students, gig workers.

Why is the report unique?

The KUPC highlighted a deeper innovation: the fusion of local narratives and data systems.

Commission members described how fishermen's ordeals with coastal recession, youth-crafted water conservation drives, or mobility woes voiced by bazaar vendors – all became structured into the urban data apparatus. LIDAR maps now register tidal health near fishing zones; municipal dashboards carry community-generated indicators; and city briefing templates reflect lived stories. Rather than imposing "top-down solutions," policies were co-produced with citizens, giving Kerala an urban intelligence engine – a living, breathing system where city systems absorb, interpret and act on the emotional, lived intelligence of local communities.

What distinguishes the KUPC isn't one big idea – it's the collision of several game-changing ones.

The KUPC is the first State-level commission built for sub-national realities and not recycled from national frameworks. In its report, climate resilience is embedded and not appended – every pillar integrates disaster awareness. The report also calls for the emancipation of public finance through municipal bonds and green levies which give local bodies fiscal agency.

It also re-defines governance from passive bureaucracies to dynamic election-led city cabinets, guided by youth technocrats. Rich stories fuel data, and data fuels policy, closing the feedback loop between lived reality and institutional action. Together, these features dismantle silos – in planning, finance, governance – and re-assemble them into a 360° urban system.

Does it offer lessons for other States?

Kerala's Urban Commission offers a template with tangible takeaways for other States – mandate a time-bound commission; combine technical data with lived experience and create dialogic systems where citizen inputs are mapped into data observatories; empower local bodies with green levies, bonds, and risk premiums; and insert youth and specialists in governance.

What next?

The KUPC changed more than planning – it rewired the DNA of how a State conceives its cities and towns. It entwined climate awareness, community narrative, financial empowerment, digital governance, and identity economy into a living document-functional plan.

As the first such State-level commission in the country, KUPC isn't an end – it's a beginning. For Kerala, it's a chance to grow not just richer, but wiser; not just bigger, but better; not just more urban, but more human.

For others, it's a call to action: urban transformation isn't a problem to solve. It's a story to be authored – together.

Tikender Singh Panwar is a Member of the KUPC and a former deputy mayor, Shimla.



The long march ahead to technological independence

The long march ahead to technological independence

India celebrated its hard-won political freedom on the 79th Independence Day, on August 15, 2025. But we must recognise that true independence today requires more than political autonomy. It also demands technological sovereignty, as technology aids every walk of life today.

Geopolitics has taken a darker turn recently. Modern wars are fought with software and drones, not bullets and bombs. The most damaging war is in cyberspace. Our banks, trains and power grids run on information and communication technology. A small number of companies, primarily from a single country, build and control these systems.

This dependence is a serious vulnerability. What happens if these companies turn off their cloud or Artificial Intelligence services under national diktat or out of malice? The capacity to inflict serious harm on the country is very real. We saw this when cloud services were stopped to a company recently. This is not a hypothetical threat, but a reality that we must confront.

Building the foundation

Technological autonomy is the solution. India has no operating system, database, or other foundational software that it builds and can trust completely. This leaves the country dependent on external sources that it cannot control or trust. However, the path to independence is not as difficult as it might seem.

The open-source model offers a path to a solution. India can create its own versions of Linux and Android that are safe and free of backdoors. It is possible for a dedicated group of professionals to do this. The real challenge lies in long-term support and maintenance. A large, supportive user base is necessary for a home-grown operating system (OS) to be viable. If we are to adopt an OS that is a little behind, we can make them competitive and viable. This is a



P.J. Narayanan

is Professor and former Director of IIIT Hyderabad, and a researcher in computer vision, computer graphics and parallel computing

True independence today demands that India pursues technological sovereignty, as dependence is now a vulnerability

mission for India's sizeable technology community. The problem affects everyone, but the solution lies with IT professionals who build the digital world. They must join hands to remove this debilitating dependence. This is too big a task for any single institution, but is achievable if many unite behind this goal.

The path to hardware sovereignty

Achieving hardware sovereignty is a greater challenge than software sovereignty. Building sophisticated semi-conductor fabs requires massive, long-term national investment in chip design, manufacturing and supply chain management. Do we have the resources and, more importantly, the patience to build them? A crucial first step is to focus on specific hardware components and invest in partnerships to build expertise in chip design and assembly, even if fabrication is outsourced.

India's journey to political independence was defined by non-violence. Its quest for technology independence should be through open-source software, which is a gift of society to itself. This is about supporting ourselves and not opposing others.

The global open-source movement is no longer the powerful socio-political force that it was. Much of the software today is open-source, including Android, Linux, and Hadoop. However, key control is with centralised cloud and data managed externally by powerful companies. A social movement for autonomy in software and hardware is needed today. India has the necessary talent and the capability. The way exists.

What India needs is the collective will. Let it start an urgent mission of planning, development, and execution before a crisis forces its hand.

Assembling a crack team to create India's own versions of essential software from the open

source resources is the first step. India must build client-side components (such as database, email client, calendar) and server-side components such as web server, email server, and cloud server. Open source versions are available for all of them. India needs to set up teams to continually update and maintain these components, which is the harder task. These teams should work like product teams in companies. This is possible only when there is a sound business model behind it, outside of government or private funds. The mission has to be self-supporting or better.

While this may have been a difficult idea to sell in the past, the current climate is different. Previously, only the strategic sectors were concerned with having trusted and secure software. Now, private companies and individuals are concerned about being dependent on outside forces for critical needs. People are already paying, either directly or indirectly, for the free and open-source software that they use. The shift to a model where these costs are explicit and support trusted software would be a small one.

A mission as the core

The immediate step is to establish a mission to plan the necessary actions. This will be an implementation mission and not a research and development mission aimed at academic/research communities. It will primarily involve strong development and support teams of engineers and a capable project management team to coordinate activities.

There is ample expertise in both industry and academia to make it happen, provided a viable model is established. The government will need to play an enabling role, but should focus on establishing a self-sustaining model as early as possible.

Let us embark on the long march toward technological independence.