

EDITORIALS HIGHLIGHTS

17-08-2026

1. SCIENTISTS FIND WHY AN ENERVATING DISORDER AFFECTS ONLY EURASIANS

(THE HINDU PAGE NO 7)

- 1. GS III (Science & Tech)
- 2. Topics: Science and Technology- developments and their applications in everyday life; Awareness in the fields of Bio-technology.
- 3. Concepts: Friedreich's ataxia (FRDA), FXN gene mutation, consanguinity, genetic disorders, evolutionary genetics (Neanderthals and Denisovans).

Scientists find why an enervating disorder affects only Eurasians

The Nizam's Institute of Medical Sciences in Hyderabad, diagnoses one case of Friedreich's ataxia every month on average – and almost all of these individuals come from consanguineous marriages, according to medical geneticist Ashwin Dalal

D.P. Kasbekar

Friedreich's ataxia, or FRDA, is a genetic disorder that progressively damages the nerves and the heart. The affected individuals typically begin to show symptoms between the ages of 5 and 15. They become unsteady and their coordination is impaired. Their speech slows down and slurs. Swallowing becomes difficult. Hearing and vision deteriorates. They feel fatigued, lose sensation, first in the arms and legs, then in the trunk and other parts of the body, and the spine curves to one side. Eventually, most patients die relatively young, of heart disease. There is no cure. According to Ashwin Dalal, a medical geneticist at the Nizam's Institute of Medical Sciences in Hyderabad, the institute diagnoses one case of FRDA every month on average – and almost all of these individuals come from consanguineous marriages. That is, marriages between relatives, such as uncles and nieces, or between cousins. Many Indian communities practise consanguinity – and it greatly increases the risk of genetic diseases that are otherwise rare. Friedreich's ataxia is one such disease.

Curiously, so far, FRDA has not been reported in people from sub-Saharan Africa, North America, and China, Japan, and Southeast Asia. For a long time, scientists have only found it in individuals of European, North African, West Asian, and South Asian descent.

A new study from researchers at the University of Oklahoma Health Sciences Center in the U.S. has finally cracked the puzzle. Their findings were reported in June 9 in the journal *Human Molecular Genetics*.

Inefficient powerhouses

FRDA is caused when a gene called *FXN* becomes mutated.

The *FXN* gene codes for a protein called frataxin. Frataxin is essential for mitochondria, which are our cells' powerhouses. The chemical ATP, which is the cell's energy currency, is made mostly in the mitochondria. Nerve, spinal cord, brain, and heart muscle cells use a lot of energy. When their frataxin levels become abnormally low, the mitochondria produce ATP less effectively and also accumulate toxic by-products. This renders the cell dysfunctional, leading to the symptoms of FRDA.

The most common disease-causing mutations occur in a part of the *FXN* gene called the intron. A mutation takes the form of modifying the number of times a particular sequence of bases is repeated in the intron. Normal variants of the *FXN* gene contain 5-11 or 12-33 repeats. They're called the short normal and long normal



For a long time, scientists found FRDA in individuals of European, North African, West Asian, and South Asian descent. GETTY IMAGES (REPRESENTATIVE IMAGE)

variants. The short-normal variant is common in Europe and South Asia (85-90% of the population), sub-Saharan Africa (90%), and East Asia (over 99%). The long-normal variants are absent in East Asia and make up most of the rest in sub-Saharan Africa and in Europe and South Asia.

However, the DNA sequences of people with Friedreich's ataxia revealed their *FXN* alleles variants had 100-1,500 repeats. The researchers called them expanded variants.

The short-normal and long-normal variants have an open structure in the chromosome that allows cells to make frataxin as needed. However, the expanded variants forced the chromosome to assume a closed shape that reduced frataxin expression.

Individuals who develop Friedreich's ataxia carry two copies of the expanded variant, one from each parent. A person with only one copy is called a carrier. Even though they themselves won't have the disease, carriers can pass their defective introns to their children.

Fortunately, genetic tests can find out if a person is a carrier and whether they passed their extended variant to their children.

From mutation to disease

The researchers also found that 95% of the expanded variants of the intron originally came from just two long-normal variants. Specifically, they reported that at two times in history, a long-normal variant mutated to an extended variant,

These findings will help scientists understand what makes the two protomutations different from other long-normal variants; this answer in turn will help find ways to prevent or at least slow down the genetic changes

both times in Eurasia. We don't know why these events happened nor why only long-normal variants mutated this way. We also don't know why this never happened in sub-Saharan Africa. On the other hand, the absence of long-normal variants in East Asian populations could explain why these problematic mutations didn't arise there.

These originator mutations, which the researchers called protomutations, didn't straightaway lead to Friedreich's ataxia. Instead, they slowly but steadily changed into pre-mutations – where the number of repeats was abnormally high but not enough to significantly impair frataxin expression.

The non-disease-causing but still abnormal pre-mutations turned into an extended variant in a sudden burst of repeat expansion in a single or few parent-to-child transmissions.

Recall that people with Friedreich's ataxia die earlier. So over time, the extended variants disappear from the population. People with protomutations and pre-mutations on the other hand did not present that risk. As a result, they

acted as 'reservoirs' in the population that steadily replenished the depleting extended variants over time.

Taken together, the patchy distribution of protomutations can explain why Friedreich's ataxia occurs only in some populations.

The protomutations arose only a few times and only in populations with a sufficient number of the long-normal variants.

Ancient DNA

Finally, by analysing DNA from the skeletal remains of individuals who lived in ancient times, the researchers also found both the two protomutations were present in Europe and Western Asia at least 9,000 years ago. However, they were not seen in the Neanderthals and Denisovans.

In a statement, research team leader Sanjay Bidichandani credited "the longstanding tradition in the human genetics community of freely sharing DNA sequence data" to be "crucial to accurately track the presence of susceptibility to Friedreich's ataxia from prehistoric humans to a wide variety of extant populations".

These findings will help scientists understand what makes the two protomutations different from other long-normal variants that don't turn into pre-mutations. This answer in turn will help find ways to prevent or at least slow down the genetic changes.

(D.P. Kasbekar is a retired scientist. kasbekardp@yahoo.co.in)

THE GIST

So far, Friedreich's ataxia has not been reported in people from sub-Saharan Africa, North America, and China, Japan, and Southeast Asia

A new study from researchers at the University of Oklahoma Health Sciences Center found that Friedreich's ataxia is caused when a gene called *FXN* becomes mutated

The study found that patchy distribution of originator mutations, called protomutations, can explain why Friedreich's ataxia occurs only in some populations

2. INDIA'S DEMOCRACY NEEDS DIFFERENT ELECTORAL RHYTHMS

(THE HINDU PAGE NO 8)

1. GS II (Polity & Governance)
2. Topics: Parliament and State legislatures—structure, functioning, conduct of business; Issues and challenges pertaining to the federal structure; Salient features of the Representation of People's Act.
3. Concepts: One Nation One Election (ONOE), parliamentary democracy vs. presidential mechanics, federalism, Model Code of Conduct (MCC), electoral synchronization.

India's democracy needs different electoral rhythms

The "One Nation, One Election (ONOE)" proposal (to enforce a uniform, synchronised timeline for national and State elections across India) represents a profound misapprehension of the structural mechanics of the parliamentary system, and poses an existential threat to the federal architecture designed by the framers of the Constitution.

To align the distinct political rhythms of dozens of individual States with the central government, in the name of national uniformity, is to prioritise administrative convenience over democratic substance. The argument for synchronisation relies heavily on a superficial calculation of financial expenditure and an overblown narrative of governance paralysis. Yet, it ignores the fundamental constitutional friction that occurs when presidential mechanics are clumsily grafted onto a parliamentary democracy.

Flexibility at democracy's core

At the very heart of the parliamentary form of government is the principle that the executive branch derives its legitimacy directly from, and remains continuously accountable to, the legislature. Unlike a presidential system, where the executive is elected independently for a strict, unalterable calendar term, a parliamentary executive exists entirely at the pleasure of the legislative majority. A Prime Minister or a Chief Minister rules only as long as they command the confidence of the house. Consequently, the parliamentary system is inherently built around flexibility; terms are not rigidly fixed because the collapse of a governing coalition, a successful motion of no confidence, or a shifting legislative realignment must naturally trigger a democratic reset. That is why India's elections, which ran on the same timetable from 1952 to 1967, no longer do: governments at the State and the Centre fell at different times when they lost their legislative majorities, and were elected accordingly thereafter, leading to the current situation where some State or the other is going to the elections every year.

Imposing a fixed-term electoral calendar artificially binds the legislature, completely short-circuiting this parliamentary accountability mechanism. If a government falls, forcing a fixed timeline means that the electorate is stripped of its sovereign right to choose a new government for a full five-year mandate. Instead, the system must resort to truncated midterm Assemblies elected merely to serve out the unexpired remainder of the original calendar. This introduction of variable, short-term governance undermines the stability it claims to protect, creating weak, insecure "lame-duck" administrations whose bureaucrats, police forces and political opponents will simply run down the clock rather than engage in decisive long-term policymaking.

The alternative, of resorting to President's Rule when a State government falls, rather than



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The 'One Nation, One Election' proposal will erode State autonomy, distort electoral mandates, and weaken democratic accountability

holding a fresh election, is even more undemocratic. This would inevitably force a domino effect of constitutional crises that severely erodes the value of a citizen's vote. Under a synchronised system, the democratic leverage of the electorate is fundamentally distorted. A citizen voting in a midterm election to fill a two-year unexpired term is structurally handed less political bargaining power than a voter casting a ballot at the dawn of the five-year cycle. If full-term and midterm governments wield identical constitutional powers, it is a violation of democratic equity that their corresponding popular mandates carry unequal temporal weight. Furthermore, the logic of synchronisation dictates that if the national Parliament dissolves prematurely due to a fractured coalition in New Delhi, stable State legislative assemblies possessing absolute, robust majorities would be abruptly terminated by operation of law, simply to keep the national "one election" clock on course. To dissolve a functional, democratically elected State government because of a political realignment in New Delhi is a direct assault on the political sovereignty of that state's electorate, subordinating regional democratic choices to national political dynamics.

National politics will overshadow States

This subordination exposes the deeply anti-federal undercurrents of the synchronisation agenda. India is fundamentally a union of States, a vast pluralistic landscape where regional identities, local economic contexts, and historical trajectories demand distinct political expressions. Federalism is not a mere administrative arrangement; it is a vital mechanism for cultural and political accommodation.

By combining State and national elections into a single mega-event, the distinct boundaries between localised issues and national narratives are blurred. In a synchronised ballot, national parties with vast financial apparatuses and dominant media presence naturally tend to overshadow regional players. Local grievances regarding regional infrastructure, provincial welfare, and cultural preservation risk being entirely subsumed by overarching national rhetoric or geopolitical theatre. Electorates are subtly coerced into prioritising national alignment over regional suitability, a phenomenon captured by the majoritarian push for uniform alignment under the guise of developmental efficiency. This dynamic pressures voters to instal identical parties at both the State and centre, penalising States that choose independent political paths and starving them of federal resources if they dissent from the national ruling party.

The financial justifications used to defend this centralisation of power are equally flawed. The claim that simultaneous elections will drastically cut public spending deliberately conflates the minimal, necessary administrative costs incurred

by the State with the unregulated, private campaign expenditures of political parties. The official funds spent by the Election Commission of India to manage independent cycles are a drop in the ocean for an economy of India's scale, a small and necessary price to pay for maintaining a responsive democracy. Conversely, the vast sums of money circulated by political parties during campaigns actually function as a form of informal economic redistribution, temporarily generating widespread employment and shifting capital back down to printers, local transport networks, artisans, and working-class citizens. To restrict this economic circulation to once every five years under the banner of austerity is an argument that privileges elite fiscal preferences over the periodic economic stimuli that campaigns provide to the informal sector.

Moreover, the complaint that the continuous cycle of elections creates a perpetual state of policy paralysis due to the Model Code of Conduct is an administrative myth. The electoral code is designed strictly to prevent the ruling executive from announcing opportunistic, brand-new financial handouts or executing politically-motivated bureaucratic transfers during the immediate run-up to a vote. It does not freeze the wheels of the State, nor does it halt the execution of ongoing public works, routine governance, or essential administrative duties. The narrative of paralysis is often deployed by executives to excuse structural inefficiencies that have nothing to do with the electoral calendar. In reality, the frequency of independent State elections serves as a critical check on executive hubris, forcing political representatives to regularly return to the doorsteps of their constituents with folded hands. This continuous accountability cycle keeps political parties responsive to shifting public sentiment, whereas a single, synchronised event leaves a five-year void where representatives are essentially insulated from the popular will.

Diminishing the voter's voice

Ultimately, the drive toward uniform elections is an attempt to transform the organic, messy vitality of a decentralised parliamentary democracy into the rigid, totalising efficiency of an authoritarian state model. It reduces the sovereign voter to a cog in an administrative machine, strips States of their distinct political timelines, and creates dangerous vacuums where insecure, short-term governments cannot effectively rule. By treating elections as an expensive administrative burden to be minimised rather than the primary lifeblood of public accountability, the ONOE model devalues the constitutional spirit of the republic. True democratic strength does not lie in forced conformity or synchronised clocks, but in the enduring resilience of a federal compact that allows its many distinct regions to live, breathe, and vote according to their own unique conditions.

3. INDIA IS LOSING WEST ASIA, BUT IT IS NOT TOO LATE

(THE HINDU PAGE NO 8)

- 1. GS II (International Relations)
- 2. Topics: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests; Effect of policies and politics of developed and developing countries.
- 3. Concepts: West Asia geopolitics, I2U2 agreement, India's strategic autonomy, regional security architecture, maritime security.

India is losing West Asia, but it is not too late

India is losing West Asia, one country at a time. Even as the region undergoes a once-in-a-generation shift in its security architecture and political battle lines, it is unclear what India's strategy is ...or whether New Delhi has one at all.

It was not supposed to be this way. Just 10 years ago, India was rapidly remaking its footprint in West Asia. In 2016, Saudi Arabia awarded India's Prime Minister its highest civilian honour. In 2021, the I2U2 agreement was signed binding India, Israel, the United States and the United Arab Emirates (UAE) together. In 2024, Iran leased Chabahar to India. All these successes though are now memories from the past.

Pakistan's new diplomatic moment

In the last four months, the U.S.-Israel war with Iran has escalated into a catastrophic regional conflict with Iran attacking the Gulf Cooperation Council (GCC) countries, the Saudis hitting Iraqi militias, Houthis attacking Saudi ships and Israel carrying out strikes in multiple countries. Now, the Gulf countries are rethinking the efficacy of the U.S. security umbrella. They see a threat from both Iran and Israel.

Among the Gulf countries there is a schism on how to handle this threat – through engagement (as the UAE is doing) or through deterrence (as the Saudis are contemplating).

In this context, Pakistan's role as mediator in the U.S.-Iran conflict is gaining it reputational benefits in the region. Irrespective of Pakistan's motives, analysts in the region see that Pakistan waded into the conflict at a time when it seemed that no one could bring U.S. President Donald Trump and the Iranians to the table despite efforts by Türkiye, Qatar and Egypt.

The latest collective defence pact in Mecca between Saudi Arabia, Türkiye and Pakistan comes in this context. This pact may mean less in shaping the U.S.-Iran war as none of these



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West Asia is changing rapidly and India must act before its influence fades

countries is likely to directly take on Iran alongside the U.S. The pact is thus aimed less at Iran and more at deterring Israel. All three countries see themselves as the next target of Israel after Iran. They thus want to pool Saudi capital, Pakistan's military strength, and Türkiye's technological advances.

This is a challenge for India. A future war between Israel and Pakistan will inevitably draw in India given the close partnership between Israel and India. Similarly, even greater Turkish support for Pakistan in a future conflict that Pakistan might have with India cannot be ruled out

The choices before India

What then is India's strategy? It appears to be confident of Israel's victory in its various battles in the region given its proximity to the U.S. But U.S. politics are changing rapidly, with both 'Make America Great Again' Republicans and Democratic Socialists questioning the once-unquestioned U.S. support for Israel. Can Israel then emerge triumphant alone?

India has cultivated a special relationship with the UAE given the importance of remittances from Indian expat workers in the country, the investments by the Indian elite in the UAE and the UAE's strategic investments in India. But the UAE's mounting differences with Saudi Arabia are a cause for concern, as are its positions against UN-recognised governments in conflicts as far as Sudan. Can the UAE emerge unscathed in all these conflicts?

India can choose to sign military alliances with Israel and the UAE. But this would hurt what is left of India's relationship with Iran and Saudi Arabia. India can choose to do nothing as it is doing now. And its merchant mariners may keep getting killed in the Strait of Hormuz while more Indian ships may sink in the Bab-el-Mandeb.

A great power in the making risks appearing humbled and hobbled in its immediate maritime neighbourhood.

Or, India can pick a third way. It can devise an active regional political strategy. Re-engage the Saudis with whom it has no explicit differences. It can start playing a role of rebuilding trust between the Arab countries and Iran, starting with the UAE-Iran relationship. It can engage in Jordan's security offering Jordan defensive technologies at a time when U.S. munitions are running low. It can engage in the future UN peacekeeping role in Lebanon, which is now under a cloud, with the forecast being an end to the UN Interim Force in Lebanon (UNIFIL). It can even run a back-channel with Türkiye sharing its red lines about its relationship with Pakistan. If India cannot join the new Saudi-led maritime force for the Red Sea, it can work with Egypt on a parallel effort to safeguard India-bound shipping, from the Suez Canal to Bab-el-Mandeb. It can look into setting up a military presence in the Red Sea region whether in Somaliland or Socotra. Building on current military training exchanges, it can start drills and military exercises with a range of countries in the region.

Think of bridge-building

India can also appoint a new Special Envoy for West Asia – not one focused on the Israel-Palestine peace process necessarily, but one who can draw all the threads together to secure India's interests in the region at a time of unprecedented turbulence. All of this can be part of one pro-active vision for India to support a new security architecture for West Asia – one that does not draw new battle lines but instead contributes to trust-building.

India cannot afford to be a stranger to West Asia. India has both the capacity and the responsibility to help restore peace and predictability in the region.

LETTERS TO THE EDITOR

Political labelling The Prime Minister often creates new terms and expressions to disparage opponents and dissenters. After previous labels such as 'urban Naxals', 'tukde-tukde gang' and 'andolanjeevis' became outdated, he has used the national platform to introduce a new one:	'dimagi (intellectual) naxals'. This seems aimed at the student leaders behind the Gen Z protests, which have somewhat damaged his strongman image. If his warning about a 'malicious plan to harm the country' was genuine, he should have clearly outlined the traits of such individuals.	This vague label is another excuse for his government to target inconvenient voices and regain lost ground (Page 1, August 16). Kamal Laddha, Bengaluru	of Vande Mataram at the headquarters of the Congress party (August 16) has emerged amid the government's emphasis on its complete rendition. Patriotism should extend beyond symbolic expressions of attachment to the nation to include a tangible commitment to the	safety, dignity and well-being of its people. Mindless violence against individuals suspected of transporting beef, or attacks on Christians at peaceful prayer meetings, are equally incompatible with the values of patriotism and constitutional democracy. The democratic ideal is not	the dominance of the majority over minorities, but a constitutional framework in which every citizen can participate with equal dignity and security. Matthew Adukanil, Chennai Letters emailed to letters@thehindu.co.in must carry the postal address.
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4. HOW AI CAN BE OPTIMISED FOR BETTER HEALTHCARE

(THE HINDU PAGE NO 9)

- 1. GS II (Health) & GS III (Science & Tech)
- 2. Topics: Issues relating to development and management of Social Sector/Services relating to Health; Awareness in the fields of IT, Computers.
- 3. Concepts: Artificial Intelligence in medicine, Ayushman Bharat Digital Mission (ABDM), healthcare infrastructure, digital health records, clinical validation.

How AI can be optimised for better healthcare

Modern medicine has built an extraordinary depth of knowledge. However, how much of that knowledge can reach the patient who needs it now? The answer has traditionally depended on the number and distribution of trained clinicians, the institutions in which they work, and the systems that connect them to patients. All three are difficult to expand quickly. For India, which is still expanding its healthcare capacity while its disease burden becomes more complex, the question of how far health expertise can reach is particularly consequential.

Here, Artificial Intelligence (AI) introduces a new dimension. It offers a way of taking the accumulated knowledge and making more of it available at the point of care. The change is visible across major health systems. In January 2025, the U.S. Food and Drug Administration (FDA) said it had authorised more than 1,000 AI-enabled medical devices. These include tools used in radiology, cardiology, and other areas of diagnosis. In the U.K., the NHS issued a guidance in April 2025 for the use of AI-enabled ambient scribing. By January 2026, the country was developing a national programme to support wider adoption, with early evidence suggesting that the technology could give doctors up to a quarter more time with their patients.

These examples point to a wider change. AI is moving out of innovation teams and into consultations, diagnostic workflows, and hospital operations. The real work now lies in making it dependable enough for routine use.

The economic benefits
India has its own set of challenges. Specialist care remains concentrated in larger cities, while chronic conditions require patients to be monitored over many years. Hospitals are also managing rising volumes without being able to increase clinical



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capacity at the same pace.

An AI tool that helps prioritise a radiology scan, alerts a care team to a deteriorating patient or supports a physician handling a complex case in a smaller city can make existing capacity work more efficiently.

The country has already built much of the digital foundation required for this shift. By May 2026, more than 100 crore health records had been linked to the Ayushman Bharat Health Accounts, twice the number recorded in February 2025. A July 2026 government update reported that the Ayushman Bharat Digital Mission (ABDM) Scan and Share service had reduced outpatient registration waits at participating hospitals from around an hour to between two and five minutes. These improvements did not require a dramatic reinvention. It came from removing friction from a familiar hospital process. AI can extend the same principle to appointment scheduling, clinical documentation, claims, inventory planning, and discharge management. Each task takes time away from care if handled poorly.

Additionally, the financial benefits from using AI is becoming harder for healthcare providers to ignore. A January 2026 McKinsey analysis estimated that applying AI across healthcare revenue-cycle operations could reduce the cost to collect by 30% to 60%. For hospitals, these gains can free resources for clinical teams, equipment and capacity. They can also reduce administrative work that contributes to staff fatigue.

There is yet another part related to the business side that receives less attention. AI can help providers offer services that were previously difficult to deliver at scale. Remote monitoring can extend care beyond discharge. Risk-based preventive programmes can identify people who need attention before symptoms become severe. Virtual specialist support can connect smaller hospitals with expertise located elsewhere. Diagnostics can

be taken closer to communities, while hospitals maintain an ongoing relationship with patients managing diabetes, cardiac disease or cancer.

Judicious use
These models create revenue, but their value does not come from selling more technology. It comes from reaching patients earlier and avoiding preventable deterioration. This is also where restraint matters. A system that performs well in one hospital or population may not work equally well across India's States, disease patterns, and care settings. Clinical validation, representative data, and human oversight also need to be seriously considered. The FDA's September 2025 call for better methods to evaluate AI-enabled devices in real-world settings reflects a concern that every health system will have to confront. The tools' performance at launch does not guarantee performance over time.

Healthcare does not need AI everywhere. It needs it where delays can be reduced, clinicians can make better-informed decisions, and more patients can receive appropriate care. As India marks another year of Independence, there is a larger dimension to this conversation. The economic strength of a nation ultimately rests on the capabilities of its people. Healthcare therefore belongs within the architecture of economic development. India has built considerable physical and digital infrastructure over the decades; the next phase of development will depend increasingly on the health, longevity and productivity of its population. AI can contribute by making expertise widely available and by shifting healthcare towards earlier detection and continuous management.

The economic return on AI in healthcare will be measured not by the number of systems deployed, but by the number of lives touched and its impact on human life and happiness.

5. THE FEDERAL DILEMMA OF DELIMITATION

(THE HINDU PAGE NO 10)

1. GS II (Polity & Governance)
2. Topics: Functions and responsibilities of the Union and the States; Issues and challenges pertaining to the federal structure; Parliament and State legislatures.
3. Concepts: Delimitation Commission, Article 81, North-South political representation divide, proportional representation, federalism.

The federal dilemma of delimitation

The Centre made an oral assurance while introducing the Bill to increase Lok Sabha seats that each State's share would increase by 50% on a pro-rata basis. However, the increase could weaken the Rajya Sabha's role as a check on the Lower House, while the Lok Sabha's limited sitting days would leave MPs with less time to raise issues

EXPLAINER

Rangarajan R.

The story so far:

The Tamil Nadu Legislative Assembly has passed a resolution urging the Centre to permanently freeze the number of Lok Sabha seats at the existing number of 543 and maintain the present State-wise distribution of those seats. It also advocated the preservation of current ratio of 2.2:1 between Lok Sabha and Rajya Sabha seats. It sought the implementation of one-third reservation of seats for women in the Lok Sabha from the 2029 election onwards, without linking it to any future census or delimitation.

Defining delimitation

Delimitation means the process of fixing the number of seats and boundaries of the territorial constituencies in each State for the Lok Sabha and Legislative Assemblies. This 'Delimitation process' is performed by 'Delimitation Commission' that is set up under an act of Parliament. The last time when the number of seats were determined was on the basis of 1971 census population.

'Democracy' means 'rule or government by the people'. It follows that the government is elected by a majority with the broad principle of 'one citizen-one vote-one value'. Article 81(2) of the Constitution provides that the ratio between the number of seats and population of a State, shall as far as practicable be same for all the States. The number of seats in the Lok Sabha based on 1971 census was fixed at 543, when the population was 54.8 crores. This broadly translated to an average population of 10.1 lakhs per constituency. However, it has been frozen as per 1971 census in order to encourage population control measures so that States with higher population growth do not end up having higher number of seats. This was done through the 42nd Amendment Act till the year 2000 and was extended by the 84th amendment act till 2026. This number will have to be readjusted based on the first census after 2026 which would be the next census in 2027. In 2023, through the 106th Constitutional Amendment, the Parliament had provided for one-third reservation of seats for women in the Lok Sabha and Legislative Assemblies. This would be through delimitation based on the census in 2027.

The issues involved

The population explosion that happened in our country during the last five decades has been uneven, with some States like Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan witnessing a greater increase than States like Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The ratio between the current number of seats and the projected population of States as of 2026 does not satisfy the core democratic principle of 'one person-one vote-one value' (Table 1). On the other hand, the increase in the number of seats among various States based on the current population (to 848) is provided in Table 2. Southern States, smaller states in the North, as well as the North Eastern States, are bound to be at a disadvantage when compared to large north Indian States in such a scenario. This would be against the federal principles of our country. It also goes against the philosophy for freezing the seats as per 1971 census with the States

Representation imbalance

The redistribution of seats based on current population could put smaller and less populous States at a disadvantage



Table 1: Value of vote of each citizen based on estimated population as of 2026

State	Number of seats at present	Projected population as of 2026 (in crore)	Projected population per Lok Sabha seat (in lakh)	Value of 1 vote*
Uttar Pradesh	80	25.7	32.1	0.56
Bihar	40	13.5	33.8	0.53
Rajasthan	25	8.4	33.6	0.54
Madhya Pradesh	29	9.1	31.4	0.57
Tamil Nadu	39	7.8	20	0.9
Andhra Pradesh + Telangana	42	9.3	22.1	0.81
Kerala	20	3.6	18	1
Karnataka	28	6.9	24.6	0.73
Punjab	13	3.2	24.6	0.73
Himachal Pradesh	4	0.8	20	0.9
Uttarakhand	5	1.2	24	0.75

* Kerala calculated as 1 and States' values derived on this base

that have been better at controlling the population losing out on their political significance.

Current proposal by the Centre

The Union government had introduced the Constitution 131st Amendment Bill in April 2026 to increase the maximum number of Lok Sabha seats from existing 550 to 850. The Home Minister made an oral assurance in the Parliament that the number of seats in each State/Union Territory would be increased by 50% on a pro-rata basis. However, this bill was defeated in the Lok Sabha. There are expectations that the government may introduce the bill again, in the near future with explicit provisions for 50% increase in seats for all States/Union Territories on a pro-rata basis.

The larger implications

The two main arguments in support of the proposal for 50% pro-rata increase. First, it would not alter the current proportion of representation of various States/Union Territories in the Lok Sabha. Second, it would enable seamless reservation of one-third seats for women with the additional 272 seats being reserved for women out of the enlarged house of around 816 seats.

However, such an increase has its share of challenges. Firstly, the current strength of Rajya Sabha is 245 that results in a ratio of 2.2:1 between the total strength of Lok Sabha and Rajya Sabha. An increase in Lok Sabha seats by 50% without altering seats in Rajya Sabha would skew this ratio to 3.3:1.

In the event of disagreement between the two houses on any bill, there is a mechanism for Joint Sitting under the Constitution to resolve the deadlock. Though used rarely in the past (only 3 times since Independence), this increased strength in the Lok Sabha runs the risk of rise in such joint sittings to push through Bills. In such a scenario, it would diminish the role of the Rajya Sabha as an effective check and balance on the Lok Sabha. Secondly, considering that the Lok Sabha sits for only around 60 days in a year, there would hardly be any meaningful time for each MP to raise their issues in the house. The purpose of the house would then be reduced to mere numerical representation rather than meaningful deliberation.

Finally, the increased cost to the exchequer because of additional MPs including allocation for the Members of Parliament Local Area Development Scheme (MPLADS) funds needs to be

Table 2: If the number of seats is increased to 848 based on 2026 projected population

(Based on research paper of Milan Vaishnav and Jamie Hintson, for the Carnegie endowment)

State	Number of seats at present	Projected number of seats	Existing proportion	Revised proportion
Uttar Pradesh	80	143	14.7%	16.9%
Bihar	40	79	7.4%	9.3%
Rajasthan	25	50	4.6%	5.9%
Madhya Pradesh	29	52	5.3%	6.1%
Tamil Nadu	39	49	7.2%	5.8%
Andhra Pradesh + Telangana	42	54	7.7%	6.4%
Kerala	20	20	3.7%	2.4%
Karnataka	28	41	5.2%	4.8%
Punjab	13	18	2.4%	2.1%
Himachal Pradesh	4	4	0.7%	0.5%
Uttarakhand	5	7	0.9%	0.8%
Total	543	848		

borne in mind.

Harmonious reconciliation

The issue arises as the democratic and federal principles seem to be at loggerheads in the delimitation exercise as currently envisaged. However, they can be harmoniously reconciled by giving equal importance to both. The main work of a Member of Parliament is to legislate on the 'Union List' subjects such as defence, external affairs, railways, telecommunication, taxation etc. and hold the Central government accountable. A majority of the schemes of the Central Government are implemented only by the State governments. Hence, the number of MPs in Lok Sabha may be frozen at the present number of 543, which would ensure no disruption to the current representation of various States. This would maintain and uphold the federal principle. One-third reservation for women can be provided out of the existing 543 seats. The number of MLAs in each State may be increased in line with the current population to address the democratic representational requirement. (Rangarajan R. is a former IAS officer and author of 'Courseware on Polity Simplified'. He currently trains at 'Officers IAS Academy'. Views expressed are personal.)

THE GIST

The Union government introduced the Constitution 131st Amendment Bill in April 2026 to increase the maximum number of Lok Sabha seats from the existing 550 to 850.

The Tamil Nadu Assembly recently passed a resolution urging the Centre to permanently freeze the number of Lok Sabha seats at 543 and maintain the present State-wise distribution of seats.

The ratio between the current number of seats and the projected population of States as of 2026 does not satisfy the principle of 'one person, one vote, one value'. However, increasing the number of seats based on current population would put smaller and less populous States at a disadvantage.

6. UNDERSTANDING ANTHROPIC'S MOVE TO WATERMARK CLAUDE AI CONTENT

(THE HINDU PAGE NO 11)

1. GS III (Science & Tech)
2. Topics: Awareness in the fields of IT, Computers; Science and Technology- developments and their applications.
3. Concepts: Generative AI, AI watermarking, European Union AI Act, deepfakes, digital misinformation.

Understanding Anthropic's move to watermark Claude AI content

While many regulators want AI content to be more clearly labelled, Claude users worry about their written work being flagged as AI; although watermarks provide a reliable way to verify the origin of images and videos, accurately detecting AI-generated text is uncharted territory.

Sahana Venugopal

The story so far:

As part of its measures to comply with the European Union's AI Act, the Google and Amazon-backed Anthropic announced that Claude content in the future will carry a machine-readable marking to better enable AI content labelling.

Adding a watermark to AI images and videos is not a new concept. However, the update that made waves was Anthropic announcing that it would add a watermark to Claude text as well, potentially forcing millions to reconsider their use of AI tools. This update will be globally implemented.

What is the new watermarking system by Anthropic?

The new policy was introduced after Anthropic signed the EU AI Act's Article 50(2) Code of Practice on Transparency of AI-Generated Content.

In order to better identify content that Claude has generated and/or processed, Anthropic is set to add watermarks embedded in text content, as well as signed provenance metadata attached to supported files in formats such as .svg, .png, or .jpg.

Regarding the text-based watermark applied at the model level, users will not be able to see it and Anthropic has confirmed that it will not affect Claude's response.

However, one statement in particular

caught the attention of AI users: "Because the watermark is part of the text, it will travel with the text when it's copied and pasted elsewhere, and may persist through some editing."

In essence, this update forces millions of Claude customers to entirely reconsider their use of AI tools.

Professional emails, personal messages, school assignments, workplace deliverables, and other types of written content that could once be passed off easily as human-made, may soon come with an AI watermark – even if Claude's involvement was close to negligible.

How exactly the watermarking technology works in the case of Claude text is not yet clear, as the rollout announcement did not reveal the full technical details.

Furthermore, Anthropic is still working on letting external parties detect the Claude AI markings. More information is expected in the future.

Output from the Claude Platform (API), Claude, Claude Code, Claude Cowork, and Claude Tag are set to get the embedded watermarks. The same applies when Claude models are accessed through AWS, Google Cloud, and Microsoft Foundry.

Why are Claude users and non-users concerned?

While some praised Anthropic's marking policy in the hopes of seeing more clearly labelled AI-generated content, critics argued that Claude adding a watermark even to lightly edited text could put

reputations at serious risk.

For example, if a human-made file is proofread, translated, summarised, or even converted by someone else using Claude, the final output could still carry a mark, according to Anthropic's update. Naturally, this has put both AI users as well as non-users on edge.

Anthropic also warned about the possibility of false positive and false negative results: detecting a Claude mark does not confirm that the work was created by AI, while the lack of a mark does not mean the work was 100% human-made.

Some factors that can throw off results include short text lengths, content changes after Claude processing, metadata being stripped by converting the file format, and the use of a Claude offering that does not yet support AI marking.

In the days following Anthropic's announcement, multiple dubious websites claiming to offer Claude AI watermark "removal" or "clean up" services have come online.

These concerns are not new. The earlier rise of a market for AI text detectors – and subsequently, AI text humanisers designed to deceive these same detectors – has resulted in multiple authors and bloggers being accused of passing off AI content as original creations.

Despite AI text detection tools being experimental, fallible, and prone to errors, they have been involved in cases that led to cancelled book deals and social

media trolling.

Claude users now fear that their own AI tool could end up damaging their credentials.

Are watermarks effective at stopping fake AI content?

Watermarks certainly help simplify the jobs of regulators, fact-checkers, and journalists by giving them a reliable way to verify the origin of an image or a video and even trace it back to a specific provider. But accurately detecting AI-generated text is uncharted territory.

What's more, AI-generated content often travels far and can be circulated thousands of times on social media unchecked, as content moderation rules have been loosened across Mark Zuckerberg's Meta family of apps and Elon Musk's X.

The average internet user distractedly scrolling through media on their phone often misses even visible AI watermarks, let alone invisible markings.

Tech providers and regulators will need to work hand-in-hand to make sure that the AI watermarks lead to a tangible reduction in misinformation, deepfakes, or AI content being passed off as human-made.

For now, however, Claude users are rethinking their workflows and debating at what point human content turns into AI content. Anthropic's watermarking initiative for AI text is an intriguing concept, but it is too soon to tell if this approach to labelling will lead to more clarity or create more confusion.

7. Bring back E10 for older vehicles. Work out food versus fuel trade-off

(INDIAN EXPRESS PAGE NO 10)

- 1. GS III (Economy / Environment)
- 2. Topics: Infrastructure: Energy; Major crops cropping patterns in various parts of the country; Conservation.
- 3. Concepts: Ethanol Blending Programme (E10/E20), food vs. fuel debate, water stress (green vs. blue water), agricultural price distortions.

Bring back E10 for older vehicles. Work out food versus fuel trade-off



V ANANTHA NAGESWARAN AND AKASH POOJARI

A COMPLAINT has been travelling fast online that the government's E20 petrol wrecks engines and empties the tank faster. The charge is loud, but it is also, on the main point, wrong. However, dismissing it outright would be a mistake because beneath the noise lies a real problem and a much larger question.

Start with the engine, and the evidence does not support the fear of damage. Ethanol carries about two-thirds the energy of petrol, so a litre of E20 takes you a little less far, but the loss is small and does not signal any malfunction. Ethanol is only a fifth of the blend, so the energy penalty is around 6 to 7 per cent, not the 30 per cent doing the rounds. Carbon monoxide and unburnt hydrocarbons actually fall, which is good for the environment. On durability, which is the primary point of contention, the record is reassuring and counters the online narrative. The US, one of the global leaders in ethanol blending, had the Oakridge National Laboratory run 86 vehicles for a cumulative total of nearly 10 million kilometres on blends up to E20 and found no increased wear in cars not rated for E20. India's own testing by ARAI, the petroleum institute, and Indian Oil reached the same conclusion. Thus, social-media worries about engine damage do not hold up.

However, one exception is genuine, that is, India has roughly 75 to 80 million older two-wheelers built before BS4 that run on carburettors. A carburettor cannot sense the extra oxygen in the blend and adjust for it, so on E20, the engine draws in too little fuel for the air it draws in and runs hot. Further, older rubber seals that are not rated for ethanol are a separate problem, as they degrade on contact with the fuel regardless of engine temperature. Retrofitting those seals with ethanol-compatible ones is cheap. Still, it happens one vehicle at a time, and covering 75 to 80 million two-wheelers that way will take years, even if every workshop starts today. The original roadmap anticipated this and requested that a lower-blend fuel remain on sale for these vehicles, but that fuel quietly vanished from the pumps and needs to return. Restoring a lower blend at the pumps, say, E10, alongside the option to buy E20, would calm most public concern, lower total ethanol use instead of raising it, and protect the existing fleet while the retrofit programme catches up.

With the engine argument settled, one must also ask the harder question that nobody is shouting about. How much further should blending go? Moving from E20 to E27 or E30 is a different decision altogether, because that is where fuel begins to crowd out food.

Consider the two import bills India is trying to shrink. The crude oil bill is huge, around Rs 11-12 lakh crore a year. The edible oil bill is far smaller, roughly Rs 1.6 to 1.75 lakh crore. Ethanol at E20 trims only 3 to 4 per cent of the crude bill. The edible oil gap looks less daunting and is far more closeable. India already produces about 40 per cent of its cooking oil and aims to reach

Once land and water are committed to fuel, and distilleries and cropping patterns are built around it, pulling back can be painful. When some moves are easy to undo, prudence says to move the reversible ones first

72 per cent by 2030-31. A gap that the government can not only close fully but also stop subsidising is worth more than one you can only nibble at forever.

The feedstock has shifted, and that turns a distant trade-off into a direct one. Maize now supplies about half of India's ethanol, and grains together nearly 67 per cent. Maize competes with soybean, groundnut and mustard for the same fields. Two forces pull land towards it. First, ethanol from maize is procured at a fixed price well above the sugarcane route, which keeps the crop attractive, whatever the market says. Second, the leftover grain from distillation is sold as animal feed, undercutting soybean meal. Weaker meal prices, in turn, drag down soybean prices. The oilseed farmer loses twice.

Similarly, water needs a clearer eye too, especially when it comes to the headline figures, that is, thousands of litres of water used for every litre of ethanol. The figures generally quoted mix two very different things. Green water is rain that the crop would have received anyway. Blue water is drawn from rivers, canals, groundwater pumps and wells. It is the blue water that is scarce, and cane in Maharashtra and Karnataka draws heavily on already-stressed sources. So the water rule should target blue-water use, not the frightening total.

Even the climate case is unsettled. Any blending beyond E20 would come almost entirely from grain, and Indian life-cycle studies do not agree on whether grain ethanol is cleaner than the alternatives once cultivation and processing are counted. The green argument for going further may not withstand closer scientific scrutiny.

That is not to say that the ethanol programme has not delivered

material gains. It has cleared sugarcane dues, lifted rural incomes and built an assured market. On the flip side, holding at E20 also carries its own costs. These include distillery capacity built for more, loans taken against expected demand, and a sugar surplus that ethanol helps absorb. These belong in the reckoning too, and like most public policy dilemmas, the honest course of action is to weigh both sides carefully.

Here is the principle that should guide the choice. Some instruments can be changed within a season and reversed if the evidence turns, such as the procurement price, the protection fuel, the water rules and the import duty on edible oil. However, the blend level cannot. Once land and water are committed to fuel, and distilleries and cropping patterns are built around it, pulling back is bound to be slow and painful. When some moves are easy to undo, and others are not, prudence says to move the reversible ones first and hold off on the irreversible ones until a thorough cost-benefit analysis is done.

In this context, the recommendation is modest. Bring back a lower blend, such as E10, for the older fleet of vehicles. Fix the price and water distortions that unintentionally favour maize over other crops, relook at the import duty on edible oil to support the push towards domestic self-sufficiency, and hold at E20 until India has thoroughly costed the food-versus-fuel trade-off, rather than assuming it away. The engine row we witnessed was never the real argument. The real one is about what we choose to grow, and what we will not be able to take back.

Nageswaran is Chief Economic Advisor to the Government of India and Poojari is consultant, Department of Economic Affairs. Views are personal

8. INDIA’S SWEET REVOLUTION DEPENDS ON THIS: SAFEGUARD THE BEE, SUSTAINABILITY IS KEY

(INDIAN EXPRESS PAGE NO 11)

- 1. GS III (Agriculture / Economy)
- 2. Topics: Economics of animal-rearing; Major crops cropping patterns.
- 3. Concepts: Sweet Revolution, apiculture (beekeeping), pollination services, National Beekeeping and Honey Mission, agricultural export diversification.

India’s sweet revolution depends on this: Safeguard the bee, sustainability is key



ASHOK GULATI, SUVANGI RATH, AND TANMOY ADHIKARY

INDEPENDENCE DAY this year coincided with the US’s National Honey Bee Day. A honey bee is a small insect that can sit on a fingertip. Why is it accorded such importance in the US? According to the UN’s Food and Agriculture Organisation (FAO), the quiet role of bees as pollinators is responsible for almost one-third of global crop output. It enhances yields for 87 of 115 leading food crops.

Bees do more than improve yields. They enhance the nutritional quality of farm produce. If India has to make its agriculture productive and nutritious, bees must be treated as farmers’ best friends. While passing by the mustard fields of Uttar Pradesh and Rajasthan or the apple orchards of Himachal Pradesh, one realises what these insects can do. They have helped India emerge as the second-largest producer of honey in the world, after China, and the third-largest exporter of honey after China and New Zealand in value terms.

Beyond the pollination service, bees have helped farmers augment their incomes through apiculture (honey bee farming). India’s honey production has nearly doubled over the last decade, from about 76,000 tonnes in 2013-14 to roughly 1,51,000 tonnes in 2025-26, signalling real scale in supply and capacity. Interestingly, almost 70 per cent of India’s honey production is exported (\$208 million in 2025-26), and India accounts for around 8.4 per cent of global honey exports. However, the export basket remains highly concentrated: The US absorbed about 76 per cent of India’s exports (\$157.8 million) in 2025-26. Such concentration carries risks for India’s export

India’s Honey Production and Export Trends



SOURCE: DGFT 2026, MOAFW 2026

markets, a taste of which was felt when the US suddenly imposed high tariffs on goods imported from India. It was a big blow to Indian honey exporters and farmers, but the turnaround was also very swift in terms of diversifying export markets.

India’s response was pragmatic. Shipments to countries such as the Netherlands, Belgium, Germany, and Israel have started reflecting a shift toward markets that value natural, sustainably sourced honey. At the same time, EU consumers are willing to pay a premium for traceable and environmentally responsible products, traits that India’s multifloral and organic honey varieties can uniquely offer.

However, India’s domestic market remains limited despite its large population. India’s per capita honey consumption remains low (about 37 gm per year) — this suggests enormous potential that’s yet to be tapped. As awareness of its health benefits spreads and retail penetration improves, a do-

mestic market can help stabilise producer incomes while supporting premium-quality exports.

This diversification mirrors a classic economic lesson: Trade barriers often compel resilience and innovation. Rather than being confined to one large buyer, India’s honey sector is now spreading its wings across geographies, reducing dependence on a single market and building stronger foundations for long-term export growth. However, unit value realisation remains a constraint: Indian honey’s unit value is about \$1,858 per tonne, well below the world average and far from premium categories like New Zealand’s Manuka. Upgrading quality, traceability and branding is therefore essential. Also, price realisation can improve if exports are in branded retail packs rather than wholesale unbranded volumes.

Reforms and investments will determine whether this moment becomes a structural transforma-

tion or a reprieve. At the same time, investment in NMR (Nuclear Magnetic Resonance) capable testing labs, cluster-based processing, GI branding for unique floral varieties (Sundarbans, Ramban Sulai), and turning farmer organisations into FPOs will lower compliance costs and enable entry into premium EU, Japanese and East Asian markets. The global bee products market (beeswax, propolis, royal jelly, pollen) is already sizeable — it was valued at roughly \$12.7 billion in 2023 and is projected to grow, offering India a high-margin diversification route beyond bulk honey.

Sustainability should be at the centre of the efforts. Expanding exports cannot come at the expense of bee health. Scientific beekeeping, pesticide management, and support for pollination services will protect both yields and ecosystem services that agriculture depends on. Initiatives under the National Beekeeping and Honey Mission and APEDA’s export support are steps in the right direction, but scaling them requires sharper targeting, labs, cluster grants, export promotion, and large-scale consumer campaigns (“Honey for Health”) to grow domestic demand.

Every rupee of honey we export rests on a far larger, unpriced service — the pollination that fills the orchard, the oilseed field and the vegetable plot quietly underwrites the food on our plates. The real measure of India’s sweet revolution, then, will not be how much honey we sell, but whether we learn to protect the tiny worker that makes both the honey and the harvest possible. Safeguard the bee, and prosperity follows. Lose it, and no amount of policy will buy the loss back.

Can our policymakers give due priority to these silent workers that pollinate without a charge and enhance rural prosperity? Can they set a target to double honey bee colonies in the country by 2030, and double India’s share in the global market by that year?

Gulati is a distinguished professor, Rath is a fellow, and Adhikary is a research assistant at ICRIER. Views are personal

India must look beyond honey exports and recognise bees as an essential, unpaid agricultural workforce

8. ASSAM FLOODS ARE NOT ONLY STORY OF A RIVER'S VAGARIES

(INDIAN EXPRESS PAGE NO 11)

1. GS III (Environment / Disaster Management) & GS I (Geography)
2. Topics: Disaster and disaster management; Conservation, environmental pollution and degradation; Important Geophysical phenomena.
3. Concepts: Flood plain ecology, anthropogenic causes of flooding, embankment infrastructure, land-use transformation, Brahmaputra basin.



ARUPJYOTI SAIKIA

Assam floods are not only story of a river's vagaries

IN THE third week of July, several south-bank rivers of Upper Assam rose with terrifying speed, unleashing torrents that swallowed paddy fields and grazing lands and swept through villages and towns. Several districts, once strangers to such catastrophic floods, found themselves engulfed in a disaster beyond imagination.

Assam's growing vulnerability to floods is rooted in a long history of shrinking safety margins in a landscape that, for centuries, enjoyed stability. In July, Upper Assam felt the brunt of the disaster even before the Brahmaputra swelled to its highest. Relentless rains pounded the Naga Hills and Arunachal Pradesh, soaking the slopes and unleashing sudden torrents into the southern tributaries. Many pointed to the region's land use — stone and boulder extraction from riverbeds and hillsides, a common sight in both highlands and lowlands — as a culprit that hastened the rainfall's journey, turning it into catastrophic floods downstream.

Cushioned between the Eastern Himalaya to the north, the Patkai and Barail ranges to the east, and the Bay of Bengal to the south, Assam is shaped by multi-layered environmental forces that have worked together for millennia. The southwest monsoon weaves together highlands, floodplains, billions of tons of sediments, and the ever-shifting channels of hundreds of rivers, creating a living, interdependent system. Each year, the monsoon decides whether Assam will bask in gentle rains or battle devastating floods. The July

flood brought this reality into sharp focus: Rainfall far beyond Assam's borders unleashed waters that surged across its land.

The highlands of Nagaland and eastern Arunachal Pradesh, which feed the rivers of the south bank of Upper Assam, have undergone dramatic land-use transformations in recent decades. Driven by growing populations, cultivation cycles have become shorter and more intense. Where once a colonial system of extraction dominated, today small-scale coal mining, woven into the fabric of local economies, and which competes with the highland agrarian economy, thrives through complex networks of speculators. Such pressure on uplands, along with relentless logging and expanding infrastructure, erodes the land's ability to absorb rainfall.

The south-bank districts of Upper Assam, at the heart of the recent flood, were once among the Brahmaputra valley's most resilient regions. Thick forests, scattered settlements, and a safe distance from the Brahmaputra's main channel defined these lands. But in the mid-19th century, this calm began to unravel as these areas drew the attention

of colonial tea planters. Where rain once vanished quietly into the forest floor, the land was transformed into sites of plantations, mineral extraction, and farms that could no longer hold back the water.

The loss of forest deepened when, in the mid-20th century, a techno-bureaucratic campaign to build embankments set out to shield settled floodplains from floods once seen as predictable and

nourishing for agriculture. These barriers interrupted the flow of sediment. By 1988, even after thousands of kilometres of embankments had been built, two-thirds of the valley still lay open to flooding. During the July floods, embankments along the southern tributaries gave way before the main river crested, unleashing sudden breaches and a fall of water on an unembanked plain.

This inherited vulnerability has now deepened, as shown by new evidence that the monsoon is fast transforming. Meteorologists report that India's rainy season has become more unpredictable, marked by sudden downpours separated by long, dry spells rather than simply more rain overall. Studies focusing on Northeast India echo these findings. The big gap between intense rainfall and weakened landscape paints a fuller picture of the flash floods than only focussing on the quantity of rain.

The flooding in Upper Assam is not just a seasonal misfortune but the outcome of vulnerabilities built over two centuries. Unfortunately, the state's ecology has been treated as a puzzle for engineers and each crisis has been seen in isolation and the deeper ecological story given scant respect. Assam's environment is inching closer to its tipping point, but it is not yet beyond repair. We need to understand and retain the intricate connections between highland and lowland, water and land, forests and floodplains, and accept that the resilience lost over generations cannot be rebuilt by technology alone.

The writer is a Guwahati-based environmental historian

Loss of forest deepened when, in the mid-20th century, a techno-bureaucratic campaign to build embankments set out to shield floodplains from floods once seen as predictable and nourishing for agriculture

9. 'ASHOKA-ERA STUPA, BIGGER THAN SANCHI': 90 YEARS ON, UJJAIN MOUND COMES UNDER RENEWED FOCUS

(INDIAN EXPRESS PAGE NO 12)

1. GS I (Indian Heritage & Culture / History)
2. Topics: Indian culture will cover the salient aspects of Art Forms, Literature and Architecture from ancient to modern times.
3. Concepts: Mauryan architecture, Ashoka-era Stupas, Vaishya Tekri (Ujjain), Archaeological Survey of India (ASI), ancient Indian history.

'Ashoka-era stupa, bigger than Sanchi': 90 years on, Ujjain mound comes under renewed focus

Striking engineering and construction, says 1938 survey report

Anand Mohan J
Bhopal, August 16

THE MADHYA Pradesh government has begun a push to excavate and restore monuments linked to Mauryan-era emperor Ashoka, beginning with a fresh excavation of Vaishya Tekri — after an almost 90-year-gap — in Ujjain.

The project comes amid a push by Chief Minister Mohan Yadav who has expressed interest in speeding up the excavation and restoration of the site, which belongs to his constituency of Ujjain.

Ujjain was an important city in the Mauryan world, and Ashoka was considered traditionally associated with it before he became emperor.

Dr Shivakant Bajpai, ASI Superintending Archeologist (Bhopal), told The Indian Express, "We have sent a proposal to the DG, ASI, for excavation of the site. It will take at least three years for the excavation to yield meaningful results and may also take several more years for completion. Restoring the stupa will be another monumental task and our objective is to ensure it is restored without inflicting any damage to the site."

The Archaeological Survey of India (ASI) believes that there is a possibility that a stupa larger than the famous Sanchi stupa may exist at this site. However, there is a need for a deeper scientific study to establish the fact.

The renewed focus on Vaishya Tekri is significant because the first excavation, carried out in 1938-39 by the Archaeological Department of the erstwhile



Vaishya Tekri has an estimated height of 100 feet against the 54-foot stupa at Sanchi, according to the excavation report

Gwalior State, had already established that the enormous mound was not a natural formation but the remains of a major stupa.

The original excavation report, preserved in the Annual Administration Report of the Archaeological Department, Gwalior State, for Vikram Samvat 1995 (1938-39), provides a detailed account of what archaeologists found beneath the mound.

The excavation report described Vaishya Tekri as a "huge stupa", estimating its base at approximately 350 feet in diameter and its height at not less than 100 feet. The height of the stupa at Sanchi is approximately 54 feet.

ASI officials said the name of the mound (or tekri) stems from the queen of Emperor Ashoka, who came from the Vaishya or merchant community. Ashoka is believed to have had a palace built there during his viceroyalty of Ujjain. However, at the time, the first archeologists who excavated the site opined that "excavations do not bear out the tradition."

What the 90-year-old report said

The monument's size was only one part of what fascinated the excavators; its construction was unlike what they had encountered elsewhere. Instead of

a conventional solid brick structure, the heart of the monument was made from local blackish murum, rammed hard to form the massive core. The exterior was then faced with brick masonry laid in mud mortar.

"The hearting is made up of local blackish murum rammed hard, while the facing is composed of brick masonry laid in mud mortar," the excavation report stated. The bricks were exceptionally large. The report recorded the biggest as measuring 22¼ inches by 18¼ inches by 3¾ inches, while another variety measured 22¼ inches by 15¼ inches by 3¾ inches.

"The size of bricks indicates that the structure belonged to the Mauryan period (3rd century BC)." That conclusion was further supported, the report said, by two coins recovered during the excavation — a punch-marked coin and a cast Avanti coin.

The archaeologists consequently considered a possible connection with Ashoka, but again stopped short of presenting it as an established fact and opined that "it is possible that the stupa is one of the many which Asoka is said to have built." The ancient builders had also substantially altered the landscape around the stupa. The report says the

enormous quantity of murum used for the core had been quarried from the surrounding area. The excavators found that these quarry areas had effectively formed a regular square moat around the stupa, while leaving a gap between the moat and the monument itself. On the western side, they found evidence of a passage across the moat.

"In the centre of the West side of the moat there are the vestiges of a passage across the moat, for worshippers coming from the city, which was situated in that direction," the report said.

But the first excavation also demonstrated just how much of Vaishya Tekri had already been lost. "The facing of the stupa has all but disappeared and it is not possible from what has survived to determine the exact plan and elevation of the stupa," it said.

Most striking was the engineering at its base. "An unusual and ingenious engineering device has been employed in the construction of the masonry at the bottom of this stupa..."

"This part of the masonry is built up in the shape of a bowl which supports the superstructure and with its slanting sides, resists the oblique thrust of the filling which is wide at the bottom and gradually narrows down as it rises up towards the top," it said.

The report also suggested that the monument had originally been taller than what survived. "The existing altitude of the stupa is slightly less in proportion to its base as compared with other stupas of the period but this can be explained by the fact that the top has been washed away," said the report.

The government and ASI will first have to secure control of the archaeological site. Ujjain district administration has sent a proposal to acquire the surrounding private land for Rs 40 crore for the excavation to begin in the first place.