

SANSKRITI IAS EDITORIALS HIGHLIGHTS

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1. Why is Jantar Mantar in Delhi facing scrutiny?(THE HINDU PAGE NO 8)

1. **GS II** (Polity & Governance)
2. **Topics:** Fundamental Rights; Judiciary; Important aspects of governance.
3. **Concepts:** Right to peaceful protest, balancing citizens' rights with public order, designation of official protest sites.

Why is Jantar Mantar in Delhi facing scrutiny?

Where were protests in Delhi held in the first few decades of independent India? How and when did Jantar Mantar become the designated protest site? Why has it become contentious and what have courts said? What are alternative sites for demonstrations in Delhi?

Shrimansi Kaushik

The story so far:

In August 7, the Delhi High Court raised concerns over the continued use of Jantar Mantar as the designated venue for protests in Delhi. Justice Amit Mahajan said that Delhi should not be "put to ransom unnecessarily" by demonstrations. The court said this while hearing a petition by the All India Dalit Christian Rights Protection Committee seeking a direction to Delhi Police to decide on its request for permission to protest at the site on August 10.

This observation came on the heels of the Supreme Court directing the Centre earlier last week to consider a plea seeking to remove Jantar Mantar as a designated protest site and instead make Ramlika Maidan the principal venue.

Why is the location of Jantar Mantar important for protesters?

For more than three decades, Jantar Mantar, located in the heart of Delhi, has been the focal point of democratic dissent. But despite being referred to as the Jantar Mantar protest site, it is not the 18th-century astronomical observatory where protests are held; the designated site is on the road opposite the monument, at the intersection of Jantar Mantar Road and Sansad Marg (Parliament Street). This location allows protesters to carry out demonstrations within sight of the political establishment while remaining outside the high-security zones of Parliament. Its proximity to Parliament has also enabled political representatives to step out of Parliament and address protesters.

How did Jantar Mantar become the designated protest site in Delhi?

Before the 1990s, Delhi's principal venue for

While its central location has made Jantar Mantar a symbolic substitute for the erstwhile marches to Parliament, it has also been a source of contention for residents living nearby

demonstrations was the Boat Club lawns along Rajpath (now Kartavya Path). The site witnessed some of independent India's largest political rallies. Om Prakash Mishra, a former IPS officer who served in various positions in the Delhi Police, said, "As part of crowd-control measures, it is important to have enough space for the movement of both protesters and policemen. In case of police action, protesters should have space to retreat. That kind of maneuvering was possible at the Boat Club lawns."

The turning point came in 1988 when a massive farmers' rally, led by farm leader Mahendra Singh Tikait, drew lakhs of protesters to the Boat Club lawns. Multiple protests held by farmers between 1987 and 1989 led to the formation of the Bharatiya Kisan Union. "The scale of the gathering raised concerns about security and disruption in the capital's administrative centre," Mr. Mishra explained.

Following the rally and the heightened security concerns during the Ram Janmabhoomi-Babri Masjid movement, the Delhi administration discontinued large demonstrations at the Boat Club lawns. By 1993, the police had begun directing protests to Jantar Mantar, justifying the move on the grounds of traffic management and crowd control.

However, there was no statute or formal government notification designating Jantar Mantar as Delhi's official protest site. Instead, the venue acquired that status through consistent executive practice, before being formally regulated under Delhi Police Standing Orders in the following decade.

In 2003, the Delhi Police issued Standing Order 309, mentioning Jantar Mantar and the 15-acre venue Ramlika Maidan as the official places for protests, rallies, and processions. Rajan Bhagat, former Deputy Commissioner of Police, said, "The number decided the protest site. If it was less than 5,000, Jantar Mantar could be the site. If it was more than 5,000 but less than 50,000, protesters had to be guided towards Ramlika Maidan for their demonstrations. If the footfall was to be greater than 50,000, Buzar grounds was to be the site. If it was even bigger, protesters were guided towards Narela."

Mr. Bhagat said Jantar Mantar has, over the years, become synonymous with peaceful public demonstrations, including the Anna Hazare-led anti-corruption movement in 2011-12, the Nirbhaya protests in 2012, protests by ex-servicemen demanding One Rank One Pension, and by farmers' groups, students, women's rights groups, government employees, disability rights campaigners, and other civil society organisations. "For many organisations,

gathering at Jantar Mantar has become an established way of taking grievances directly to the nation's policymakers," Mr. Bhagat said.

Why did it become contentious?

While its central location – less than 3 kilometres from Parliament – has made Jantar Mantar a symbolic substitute for the erstwhile marches to Parliament (which were banned in 1966 following agitations against Indra Gandhi's anti-cow slaughter law), it has also been a source of contention for residents living nearby.

In 2017, the National Green Tribunal (NGT) directed that protests be stopped at Jantar Mantar after residents raised concerns over noise, traffic congestion, and prolonged sit-in demonstrations. Authorities have also cited security challenges arising from demonstrations near important government institutions.

These competing interests have fuelled a long-running debate over how best to balance citizens' constitutional right to peaceful protest with the need to maintain public order and minimise inconvenience to local residents.

What have the courts said?

In October 2017, the NGT suggested that demonstrations be shifted elsewhere. The tribunal cited three grounds while issuing these directions: there is no executive order that demarcates Jantar Mantar as a 'protest site'; that it is marked as a 'residential area' in the Delhi Master Plan; and that protests cause noise pollution. The order triggered widespread criticism from activists and civil society groups, who argued that it restricted the right to protest.

In July 2018, the Supreme Court held that public protests could not be completely banned at Jantar Mantar or the Boat Club. Instead, it directed authorities to frame guidelines that would balance the rights of protesters with those of residents. The Delhi Police then released Standing Order 10 in 2018, demarcating Jantar Mantar as a protest site for up to 1,000 people. For higher numbers, permission is to be given only for Ramlika Maidan, the order said.

What is the position today?

Jantar Mantar continues to function as Delhi's principal protest venue, though demonstrations are regulated through permissions issued by Delhi Police. Organisers must give an undertaking of compliance to guidelines related to crowd size, duration, use of loudspeakers, and security arrangements.

Mr. Mishra said Ramlika Maidan (run by the North Delhi Municipal Corporation) is an "ideal venue" as it has separate gates for VIP movement and for participants.

"It is an enclosed space which establishes an overall security architecture," he said.

Ramlika Maidan, continues to be available for protests or any large gatherings or events, but the cost is around ₹50,000 a day, while Jantar Mantar is available free of cost.



A cleanliness drive at the protest site of Jantar Mantar in New Delhi. PTI

2. How does the SC handbook rethink gender sensitivity?(THE HINDU PAGE NO 8)

1. **GS II** (Social Justice/Polity) & **GS I** (Indian Society)
2. **Topics:** Judiciary; Mechanisms, laws, institutions for vulnerable sections; Role of women.
3. **Concepts:** Combating gender stereotypes in judicial writing, trauma-informed courtroom practices, closed-door proceedings for sexual offences.

How does the SC handbook rethink gender sensitivity?

How does the 2026 handbook differ from the 2023 version on combating gender stereotypes? What does it say about the use of gender-sensitive language? In what ways does it go beyond language to talk about courtroom practices that judges should adopt proactively?

Aaratrika Bhaumik

The story so far:

A Supreme Court report published on August 3 makes recommendations aimed at enhancing gender sensitivity in how judges write judgments and conduct proceedings in cases involving sexual offences and vulnerable persons.

Who prepared the new report?

Titled 'Judgments and Gender: Sensitivity and Compassion in Writing Judgments', the report was drafted by an expert committee headed by former Supreme Court judge and Director of the National Judicial Academy (NJA) in Bhopal, Justice Aniruddha Bose. It marks a shift from the court's 2023 'Handbook on Combating Gender Stereotypes', which focused primarily on helping judges identify and avoid gender stereotypes and patriarchal language.

The new report, which will replace the earlier handbook, broadens that approach by recommending practical reforms spanning courtroom management, victim protection, judicial reasoning, and trauma-informed adjudication. Before formulating its recommendations, it examined 125 trial court judgments from across the country with the assistance of State Judicial Academies.

What prompted this intervention?

The need for a new handbook arose from the

The 2026 report focuses on problematic expressions that frequently appear in trial court judgments, particularly in sexual offence cases

Supreme Court's February 10, 2026, judgment setting aside an Allahabad High Court ruling that had held that allegations of grabbing a 14-year-old girl's breasts, dragging her towards a culvert, and breaking the string of her lower garment amounted only to "preparation" to commit rape, rather than an "attempt" to rape. The apex court had taken cognisance of the ruling on its own after the High Court's distinction between preparation and attempt drew criticism for its apparent insensitivity.

During the proceedings, questions were also raised about the effectiveness of the Supreme Court's 2023 handbook, issued during the tenure of former Chief Justice of India (CJI) D.Y. Chandrachud, in preventing such flawed judicial reasoning. CJI Surya Kant remarked that the handbook was "too Harvard-oriented", suggesting that it was overly theoretical and did not adequately reflect the realities of the Indian judicial system. Justice Kant instead called for practical training. The court consequently directed the NJA in Bhopal to constitute a committee of domain experts, academics, and lawyers to formulate fresh guidelines geared towards the practical training of judges.

What does it say about gender-sensitive judicial language?

The new report cautions that judicial observations rooted in stereotypes can deter survivors from reporting offences, reinforce prejudices, and undermine confidence in the justice system. While both the 2023 handbook and the new report contain glossaries of terms that judges should avoid, they differ in focus.

The 2023 handbook largely sought to replace stereotypical, colloquial, or outdated expressions with neutral and legally appropriate terminology. For instance, it recommended "street sexual harassment" instead of "eve teasing", "homemaker" instead of "housewife", and "woman who has engaged in sexual relations outside of marriage" instead of "adulteress". It also challenged broader assumptions about women, including the stereotype that they are inherently emotional.

The 2026 report, on the other hand, focuses on problematic expressions that frequently appear in trial court judgments, particularly in

sexual offence cases. It recommends replacing "prosecutrix" with "victim", "survivor" or "complainant", noting that the former is essentially a procedural label, while the alternatives better acknowledge the lived realities of those approaching the justice system.

The report also seeks to move judicial writing away from language that views sexual violence through the prism of morality, chastity, or honour. Expressions suggesting that rape "destroyed the soul of a helpless woman", "ruined her life", or caused her to "lose her chastity" should be avoided. Instead, judges are encouraged to focus on the legal injury and its consequences – for instance, by stating that the survivor's bodily autonomy was violated and that the offence caused severe trauma.

The report further urges courts to use respectful and contemporary terminology when referring to people of diverse sexual orientations and gender identities, and recommends the globally recognised framework of Sexual Orientation, Gender Identity, Expression and Sex Characteristics (SOGIESC).

What changes does it recommend in courtroom practices?

Beyond judicial language, the report sets out a series of "compassionate court practices" that judges should adopt proactively. It reiterates that trials involving rape and other sexual offences should ordinarily be held in camera (in private, closed-door proceedings), as mandated under the Bharatiya Nagarik Suraksha Sanhita, 2023. It also calls for strict protection of survivors' identities, including through the use of initials or pseudonyms in court proceedings and publications.

Describing witnesses as "guests" who assist the court in arriving at the truth, the report cautions against repeated adjournments, prolonged waiting, and poor treatment. Judges are also urged to enforce provisions of the Bharatiya Sakshya Adhiniyam that prohibit indecent, scandalous, or offensive questions during cross-examination. In particular, the report reiterates that a survivor's previous sexual history is immaterial in a rape trial.

A trauma-informed approach is another recommendation. The report cautions judges against drawing adverse conclusions solely from delayed reporting, absence of physical injuries, inconsistencies in testimony, or a survivor's demeanour, noting that people respond to trauma differently. It also encourages pre-trial counselling to reduce survivors' anxiety.



The Supreme Court's 2023 handbook faced questions about its effectiveness.

3.A new triple alliance in West Asia (THE HINDU PAGE NO 9)

1. **GS II** (International Relations)
2. **Topics:** Effect of policies and politics of developed and developing countries; Bilateral, regional and global groupings.
3. **Concepts:** The Mecca Agreement, trilateral collective security framework (Saudi Arabia, Pakistan, Turkiye), shifting geopolitical sands in the Middle East.

A new triple alliance in West Asia

Mecca Agreement

Confronting a diminished American strategic presence, oil-rich Saudi Arabia, nuclear-armed Pakistan and NATO-ally Turkiye have formally entered a trilateral framework promising 'collective security' and 'collective deterrence' amid growing regional instability

Stanly Johny

By the time Abdullah bin Saud succeeded his father as Emir of Diriyah (the first Saudi state) in 1814, Ottoman forces, under the command of Muhammad Ali Pasha, had already launched their military campaign against the al-Saud reign. The Ottomans sought to destroy the emirate and bring the Arabian Peninsula back under their control. They entered Hejaz by the sea and then marched into the heart of Nejd. In 1818, Ibrahim Pasha, Muhammad Ali's son, reached Diriyah, the capital of the Emirate, and laid siege to the city until it surrendered. Abdullah, his three sons and two supporters were captured and taken to Cairo, before being transferred to Constantinople, where Sultan Mahmud II rejected a request for a pardon. In May 1819, the last Emir of the first Saudi state, along with his sons and supporters, was beheaded in a square near Hagia Sophia.

The Ottoman invasion, however, did not prevent the Saudis from rebuilding the state the Pashas had destroyed. They established the second Saudi state later in the 19th century and, after its defeat, founded a third in the early 20th century. The third state, with British support, expanded its authority across much of the Arabian Peninsula, eventually giving rise to modern Saudi Arabia. The Ottoman Empire collapsed after the First World War, with the Republic of Turkey emerging as its successor. After the Second World War, both Turkiye and Saudi Arabia became close allies of the U.S., but relations between the two remained strained. Their historical rivalry and contest for influence in West Asia kept them at odds.

Tensions deepened after Turkiye took an increasingly Islam turn under Recep Tayyip Erdogan in the 21st century. When Turkiye supported the Arab Spring protests of 2010-2011, Saudi Arabia viewed the uprisings as a threat to political stability. Relations deteriorated further after Jamal Khashoggi, a Saudi dissident, was killed inside the Saudi consulate in Istanbul in 2018. The kingdom and the



ILLUSTRATION: R. RAJESH

republic also found themselves on opposing sides in several regional conflicts, most notably in Libya.

But this rivalry has begun to melt away in recent years, as West Asia has witnessed a series of balance-shifting developments. On August 7, 2026, Saudi Arabia and Turkiye turned a page in their long and often fraught relationship by formally entering into a trilateral defence agreement with Pakistan. Under the Mecca Agreement, signed in the Saudi holy city by Crown Prince Mohammed bin Salman, Turkish President Erdogan and Pakistan Prime Minister Shehbaz Sharif, the three countries pledged to strengthen "collective defence" and "collective deterrence", and to treat an armed attack against any one of them as an attack against all three.

In search of strategic depth
A NATO-style collective security alliance bringing together three major Muslim-majority countries – a nuclear-armed South Asian power, an oil-rich Persian Gulf monarchy and a NATO ally that straddles West Asia and Europe – is something West Asia has not seen before. In September 2025, Pakistan and Saudi Arabia signed a

Strategic Mutual Defence Agreement committing themselves to treat any act of aggression against one as an act against both.

The Saudi-Pakistan agreement showed both Saudi Arabia's deepening strategic vulnerability and Pakistan's increasing appetite to play a larger security role in an increasingly volatile region. Now, with the addition of Turkiye, the alliance is seeking strategic depth and military muscle.

Each member of the alliance brings its own strengths and vulnerabilities. Pakistan is the Muslim world's only nuclear power, but its economy is struggling to stay afloat. Saudi Arabia, one of the world's largest oil exporters, has deep pockets but faces daunting security challenges, particularly from Iran and the Houthis. Turkiye has a rapidly expanding military industrial base, including advanced drone-production capabilities, but is worried about Israel's growing militarism in its neighbourhood.

Saudi Arabia, a close American ally since the late 1940s, relied on the U.S. for security, while, in return, promising an uninterrupted flow of oil. The foundations of this alliance have been shaken in recent years as the

U.S., faced with a rising China in East Asia, began to deprioritise West Asia. When Saudi oil facilities were attacked in 2019 by Iran-aligned Houthis, the U.S. did little in response. This prompted the kingdom to explore options beyond America's security umbrella. In 2023, Saudi Arabia reached a normalisation agreement with Iran, brokered by China.

But Saudi Arabia's security anxieties only deepened when Israel started fighting a mini-regional war after the October 7, 2023 Hamas attack. After the U.S. and Israel launched the war on Iran on February 28, 2026, Tehran repeatedly attacked all Gulf states, including Saudi Arabia. This war seems to have convinced Riyadh that the U.S. security guarantees to Arab states were not as solid as they used to be.

Turkiye, on the other hand, has long sought to play a larger security role in West Asia – the old fiefdom of Constantinople. It has cultivated strong ties with Qatar and maintains a troop presence there. An alliance with Saudi Arabia would provide Ankara with greater strategic space in the region. Turkiye also has its own security worries. As an increasingly militaristic Israel expands its territory

through air strikes and incursions, Ankara believes it should prepare for potential conflicts in the future. Although Turkiye is a member of NATO, Ankara has doubts about whether the NATO collective security guarantees would hold in the event of a conflict with Israel, America's closest ally in the region.

Pakistan, the third actor, brings to the alliance its hostility with India. In May 2025, it fought a brief aerial war with India after the Pahalgam terror attack. As India says it would hold Pakistan responsible for terror attacks on its soil, Islamabad is also trying to strengthen its deterrence through counter-alliances.

Shifting sands

The trilateral alliance and its collective security clause do not necessarily mean that Pakistan would go to war with Iran or the Houthis, or that Turkiye would join a future India-Pakistan conflict. After the Saudi-Pakistan agreement was signed in September 2025, Pakistan clashed several times with Taliban-ruled Afghanistan, while Saudi Arabia came under repeated attacks from Iran and the Houthis. But neither country intervened militarily on behalf of the other. So there will always be questions about the practical scope of the alliance's collective defence commitment.

Yet, the agreement remains significant because it brings together three major powers in a common security framework. Defence partnership and military interoperability among them could expand at a time when an overstretched U.S. is confronting the limits of its power in the region. The alliance also provides greater strategic space for Turkiye and Pakistan in West Asia. Other smaller states in the region could be tempted to join, while powers that have uneasy relations with the alliance's members, including India, the UAE, Israel and Iran, could seek their own counterbalancing arrangements.

West Asia's security architecture could therefore undergo profound changes, accelerating the region's post-American transition.

THE GIST

▼ Pakistan is the Muslim world's only nuclear power, but its economy is struggling to stay afloat

▼ Saudi Arabia, one of the world's largest oil exporters, has deep pockets but faces daunting security challenges, particularly from Iran and the Houthis

▼ Turkiye has a rapidly expanding military industrial base, but is worried about Israel's growing militarism in its neighbourhood and the credibility of NATO's guarantees

4. Traditional diets shape unique gut microbes of Indian tribes (THE HINDU PAGE NO 10)

1. **GS III** (Science & Tech)
2. **Topics:** Awareness in the fields of Bio-technology.
3. **Concepts:** Human microbiome diversity, dietary impact on gut bacteria, biobanking to preserve microbial diversity.

Traditional diets shape unique gut microbes of Indian tribes

Research on Indian tribal populations shows that traditional diets foster unique gut bacteria; the findings show an urgent need for biobanking to preserve microbial diversity and develop region-specific probiotic therapies as required

Rohini Karandikar

The gut microbiomes of eight tribal populations across India have a unique diversity shaped by their traditional diets and are distinct from those observed in industrialised settings, researchers have reported in *Gut Microbes*.

The effects of probiotics depend on a population's diet and gut composition, and the study offers a baseline for India's tribal communities. It also points to the research still needed before such interventions can be tailored effectively.

The study's authors have also stressed a need to preserve these microbiomes in biobanks before the diversity disappears.

India has a large indigenous population that follows diverse diets based on location and culture. However, they are also under-represented in global human microbiome studies, making up less than 1% of the human microbiome samples.

"The Indian microbiome is very different compared to the Western population, with an enormous diversity within India," said Dhiraj Dhotre, a scientist at the National Centre for Cell Science (NCCS), Pune, and the study's co-corresponding author. "Secondly, the entire microbiome is shaped by our long-term dietary habits."

The study was led by researchers from NCCS in collaboration with scientists from other institutions

Microbial riches

New research offers a baseline to understand the effects of probiotics in India's tribal communities

■ A study of eight Indian tribal populations reveals unique microbial diversity shaped by their traditional dietary habits

■ Indian populations remain under-represented in microbiome research, making up less than 1% of samples in international studies



A group of Balti children in 2008. MARIA LY (CC BY)

■ High dairy consumption in trans-Himalayan tribes is linked to unique bacterial strains that improve gut health

■ Tribal microbiomes differ from industrialised datasets, although globalisation is beginning to influence some specific microbial profiles

■ Scientists emphasise the importance of using biobanks to preserve indigenous microbiomes before urbanisation destroys them

■ The study also highlights the need for regional studies to develop diet-specific probiotic interventions for India

in India, Finland, and the U.S.

In the study, the team investigated the effects of dietary variation across eight tribal cultures on their gut microbiomes.

These communities were from four regions: Warli from the western coast, Madia and Gond from the northeastern Deccan plateau, Kabui from northeast India, and Brokpa, Purigpa, Balti, and Boto from the trans-Himalayas. Of these, 76 healthy adults contributed dietary data and faecal samples for study.

The team's analysis revealed that the diet of the trans-Himalayan communities mainly included a variety of grains and dairy while those of the other four tribes significantly differed, as they included home-brewed alcoholic beverages, fish, fruits, and/or greens and stems.

The gut microbiota of

the trans-Himalayan population was also more diverse and included a distinct strain of the bacterium *Bifidobacterium adolescentis*. The researchers associated this pattern with high dairy consumption.

"The dairy component in the diet has [exerted] an evolutionary selection pressure, due to which specific microbes have been established," Abhijit Kulkarni, lead co-author of the study and former PhD student at NCCS, said.

Bifidobacterium bacteria are known to improve gut health and are a major component of commercial probiotics. However, Dr. Dhotre cautioned against considering it to be a universal marker of a healthy microbiome.

"It is not that only healthy individuals have *Bifidobacterium* and others do not. Those consuming diets other than dairy and

grains may harbour different organisms that can provide similar health benefits," he said.

Among other species, *Bifidobacterium* bacteria convert dietary carbohydrates into short-chain fatty acids. In infants, the enzyme lactase converts lactose in milk to glucose and galactose. However, in adults, bacteria like *Bifidobacterium* take over and help ferment lactose. The trans-Himalayan population's microbiome showed enriched pathways of lactose and galactose metabolism and plant-degrading carbohydrate-active enzymes. The researchers also compared the microbial diversity from tribal communities with that from previously described samples from California, an industrialised setting, and found that the tribal gut microbiome was distinct.

"It becomes interesting to see how your human bi-

ological evolution, microbial presence, and cultural trait of having dairy or milk in your diet all go hand in hand to create not only human diversity but also affect the microbial diversity," Dr. Shantanu Ozarkar, a co-author and a biological anthropologist from Savitribai Phule Pune University, said.

Researchers did note that the study's sample size was small – yet they were able to identify 14 putatively novel bacterial taxa from 76 participants. The work in this study led to the conceptualisation of the Indian Human Microbiome Initiative, which concluded recently with the goal of "sampling more than 3,400 individuals across [India] from 10 endogenous and 7 tribal communities."

"The data is very robust because [the study] employs better and novel analytical, statistical, and bioinformatic tools," Moji-bur Khan, of the Institute of Advanced Studies in Science and Technology, Guwahati, and an independent expert, said.

Researchers also stressed the importance of preserving these microbial communities in biobanks.

"After a few decades, when we need them for corrective measures or for clinical applications, we will not have any representations left of these ancient microbes. This microbial biodiversity must hence be preserved."

(Rohini Karandikar works with the TNQ Foundation, and is a science communicator and educator)

5. Hold tight: how two hurricanes forced a lizard to change its grip (THE HINDU PAGE NO 10)

1. **GS III** (Environment & Ecology)
2. **Topics:** Conservation, environmental pollution and degradation.
3. **Concepts:** Climate change adaptation, rapid evolutionary biology in response to extreme weather events.

Hold tight: how two hurricanes forced a lizard to change its grip

D.P. Kasbekar

Picture a lizard the length of your finger clinging to a tree branch. The cause of its desperation is a 265 km/hr wind threatening to peel it off like a sticker.

This happened twice to a population of anoles in the Turks and Caicos Islands in September 2017. So since then, these lizards have evolved to cling harder.

Four days before Hurricane Irma made landfall,

scientists from Princeton and Harvard Universities had wrapped up a routine survey of the Turks and Caicos anole (*Anolis scriptus*) on two islands, Pine Cay and Water Cay.

They studied the limbs, toes, and toepads, collected tissue samples, and went home. They'd had no idea a hurricane was coming, let alone two. Irma arrived on September 8 with sustained winds of 265 km/hr. Maria followed on September 22 at 200 km/hr.

The storms flattened vegetation and a great many lizards.

Six weeks later, the team returned to the islands and found something peculiar about the lizards that were around. Compared to before the storm, the anoles had longer forelimbs, shorter hind legs, shorter toes on those hind legs, and larger front and back toepads.

They reported these changes in *Nature* in 2018, describing them as the

handiwork of evolution.

But one detail from that survey nagged at them: the fourth hind toe, the longest one, had actually become shorter. If longer toes mean better grip, why would evolution shorten one?

The answer has finally been reported in a new study in *Current Biology*.

On a more recent trip to Pine Cay and Water Cay, the researchers found five genes had independently – over the two islands – be-

come more frequent after the storms. All five genes are known to be involved in muscle and skeletal development.

One in particular, *hs6st1*, seemed to be responsible for the shorter fourth toe in the surviving Turks and Caicos anoles.

To confirm, the team turned to brown anoles (*Anolis sagrei*). Using CRISPR, they knocked out *hs6st1* in brown anole embryos, which were born with shorter fourth toes.

Next, they built a wind tunnel, placed brown anoles on a wooden dowel, and subjected them to winds of 118 km/hr.

The footage revealed that the lizards held on with their front legs twice as long as with their back legs, on average.

Thus, two hurricanes 14 days apart had managed to rewire the lizards' genome – an example of evolutionary biology on steroids. (The author is a retired scientist)

6. On rural jobs, the 60:40 dilemma (INDIAN EXPRESS PAGE NO 11)

1. **GS III (Economy) & GS II (Polity/Governance)**
2. **Topics:** Government policies and interventions; Functions and responsibilities of the Union and the States; Employment.
3. **Concepts:** Fiscal federalism (Centre-State funding splits), rural employment guarantee schemes, wage security and decentralized governance.

On rural jobs, the 60:40 dilemma



OFF THE RECORD

BY P. VAIDYANATHAN IYER

NO STATE likes it when the Centre asks it to share a burden it never did in the past. More so in these times, when political parties have, in a race to the bottom, made fiscally unsustainable promises to win Assembly elections.

Naturally then, states, particularly those ruled by the Opposition, threw a fit after the Centre suddenly changed the rules of the game and asked them this year to partly provide for the big-ticket National Rural Employment Guarantee Scheme. For 20 long years, all states were happy when it was fully funded by the Centre — in the first 10 years by the UPA government after it launched the scheme in 2006, and later by the NDA government.

Under the scheme, now rechristened as Viksit Bharat - Guarantee for Rozgar and Aajeevika Mission (Gramin) or VB-G RAM-G, if a state requires Rs 100 crore in a year, the Centre will give Rs 60 crore from the Union Budget, and the state will give Rs 40 crore

from the state Budget. For Himalayan and Northeastern states, the Centre-state split is 90:10; for Union Territories without legislatures, the Centre will fully fund the scheme. Earlier, the Centre provided the entire amount of wages for all states.

It is not just the Opposition, but also those where the BJP is in power, which feel the fiscal stress of the change in rules. They, too, complain, but in private, because the resource kitty is limited, significant expenditure remains sticky and inflexible, and they, too, have to make tough choices on how and where to spend the scarce revenues they earn.

The opposition to the Centre's move is not just political, but social, economic and fiscal too. Political, understandably, because this was a flagship scheme introduced by the Congress but never seen as transformative by the BJP. Social, since it offered livelihood and a minimum income security to poor farmers and labourers who could not get any other job. Economic, because the NREGA wage acted like a floor, and NREGA job card holders leveraged it to deny work offers with wages lower than this. Fiscal, because states are perpetually strapped for cash.

While the Finance Ministers of BJP states have little choice but to toe the national party line, those of Opposition states — Karnataka, Kerala, Telangana, Punjab, Tamil Nadu and Jharkhand — spoke out. In Budget speech after speech, they condemned the Centre for requiring them to take care of 40% expendi-

ture. Some wanted the Centre to uphold the principles of decentralised governance and rights of rural workers, others demanded restoration of 100% funding, and yet others threatened legal recourse.

In his March 20 Budget speech, Telangana Finance Minister Bhatti Vikramarka Mallu said: "This is not just a scheme; it is an 'employment right' provided to the common person. Over the past two decades, this scheme has brought about a silent revolution in villages." Then Karnataka CM Siddaramaiah, who also held the Finance portfolio, was more frontal in his attack. "Our Government remains committed to pursuing all appropriate recourse, including legal measures, to safeguard the rights of rural workers and uphold the principles of decentralised governance," he said in his March 6 Budget speech. Every other Opposition state i.e., Tamil Nadu, Himachal Pradesh, Jharkhand, Punjab and Kerala, said the rule change is not right, and hurts rural worker's interests.

All this makes for good optics in the political theatre. But despite the restrictions and new funding pattern, Opposition states have embraced realpolitik, and for good reasons. This shows in their budget allocation for VB-G RAM-G scheme in this financial year. In his Budget speech on August 5, Tamil Nadu Finance Minister N. Marie Wilson said the state has made an "unprecedented" contribution of Rs 5,057 crore. This translates to exactly 40% of the total VB-G

RAM-G budget of Rs 12,642 crore for the state in 2026-27. Three other states provided 40% of their share: Karnataka Rs 3,806.61 crore (40% of Rs 9,516 crore), Telangana Rs 2,550.21 crore (40% of Rs 6,375 crore) and Jharkhand Rs 1,853 crore (40% of Rs 4,558 crore). Tamil Nadu, in fact, went a step ahead and said it will provide 150 days employment (25 days more than the VB-G RAM-G scheme) by bearing an extra expenditure of Rs 100 crore.

Kerala Chief Minister V.D. Satheesan said he has allocated Rs 1,422 crore; this is just 27% of the Rs 5,226 crore VB-G RAM-G total estimated budget for the state in the first phase, Punjab Rs 608 crore (27% of Rs 2,218 crore total estimated budget), and Himachal Rs 509.4 crore (4% of Rs 1,337 crore as against the required 10%). It is pretty certain states will provide fully for it during the course of the year.

Given such strident opposition, why would all states do it? One, they have little choice. But more importantly, it is true the scheme has transformed the way the rural economy works, providing not just employment security, but wage security too. Nobody quite bothers about the Minimum Wages Act. But for this scheme, rural wages in states will collapse. States are, at the end of the day, putting their money where their mouth is.

The writer is Managing Editor, The Indian Express. Off the Record is a fortnightly column.

Given the states' opposition to the funding pattern of VB-G RAM-G, why would they make budget allocations? One, they have little choice. But more importantly, it is true the scheme has transformed the way the rural economy works

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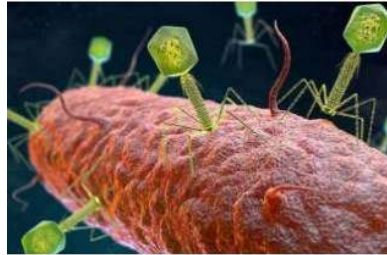
Records reveal engineering's effect on Yangtze floods

Human engineering and land-use changes have intensified flood risks on the Yangtze river in the last 500 years. Scientists found that while flood frequency peaked during the Little Ice Age (1500-1850), human interventions have made recent floods more severe. Embankments increased the intensity of "100-year floods" by 18% and lake reclamation by 8%. The findings show how engineering projects intended to control floods have worsened their impact.



Snails tweak one ingredient for five mucus recipes

Cepaea nemoralis snails produce five types of mucus for different tasks, such as crawling, sticking to surfaces, and defence, 'tuning' the properties using calcium. Most animal mucus is slippery but snail mucus is versatile. Scientists found that it contains collagen VI as the building block, with the snails secreting calcium carbonate granules to adjust thickness and stickiness. This simple adjustment creates anything from a lubricant to a protective barrier, and could inspire new materials in medicine.



Scientists use AI to design viruses to kill hardy bacteria

Scientists have used AI to design entire genomes for bacteriophages, viruses that infect and kill bacteria. Using 'genome language models', they generated thousands of new DNA sequences, then used them with a well-studied virus called X174 as a template to yield 16 functional viruses. These phages were different from any found in nature, and could together successfully kill bacteria known to resist natural viruses. The work offers a path to create treatments to fight drug-resistant bacteria.