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A distant Pacific pattern may be drying north India: study

Semi-arid areas expanding in northwest India as oceanic phenomenon affects flow of moisture; this can dent food supply and cause displacement of people, say scientists from IMD and IITM

Jacob Koshy
NEW DELHI

Rising temperatures and falling rainfall driven by a lesser-known oceanic phenomenon are causing climatic shifts in several parts of India, says a research paper by scientists at the India Meteorological Department (IMD) and the Indian Institute of Tropical Meteorology (IITM), published this month.

The study found that in northwest India, the hot, semi-arid steppe zone grew from 25.7% of the region's area in 1951-80 to 33.1% in 1991-2020, while the milder temperate zone shrank from 25.8% to 18.7%. The steppe zone's eastern edge moved from west Uttar Pradesh to eastern part of the State.

In the northeast, tropical savannah (warm) zone fell from 18.4% to 11.8%, while 'temperate' rose from 74.8% to 82.5%. Gangetic West Bengal also moved from savannah to temperate.

Steppe zone is dry – but not desert – with limited rainfall and an average annual temperature of 18°C or more. Besides Uttar Pradesh, the paper places West Vidarbha and Marathwada in this class in 1991-2020, when they had earlier been mostly savannah. Western Saurashtra and



Extended summers: Residents of Latur in Marathwada region of Maharashtra wait for water supply. FILE PHOTO

Kutch, by contrast, moved from fully arid to semi-arid. 'Temperate' is a milder zone, where the coldest month averages between 0°C and 18°C. Tropical savannah is a warm zone, with the coldest month at 18°C or above and a clear dry season, with rain falling mainly in the monsoon months.

The authors attribute the changes to a phenomenon in the Pacific Ocean, called the 'Victoria Mode' (VM). The VM is a recurring pattern of warm and cool surface water in the North Pacific, separate from the better-known Pacific Decadal Oscillation (PDO).

Future concerns

The drying in northern India, covering west and east Uttar Pradesh, Bihar and

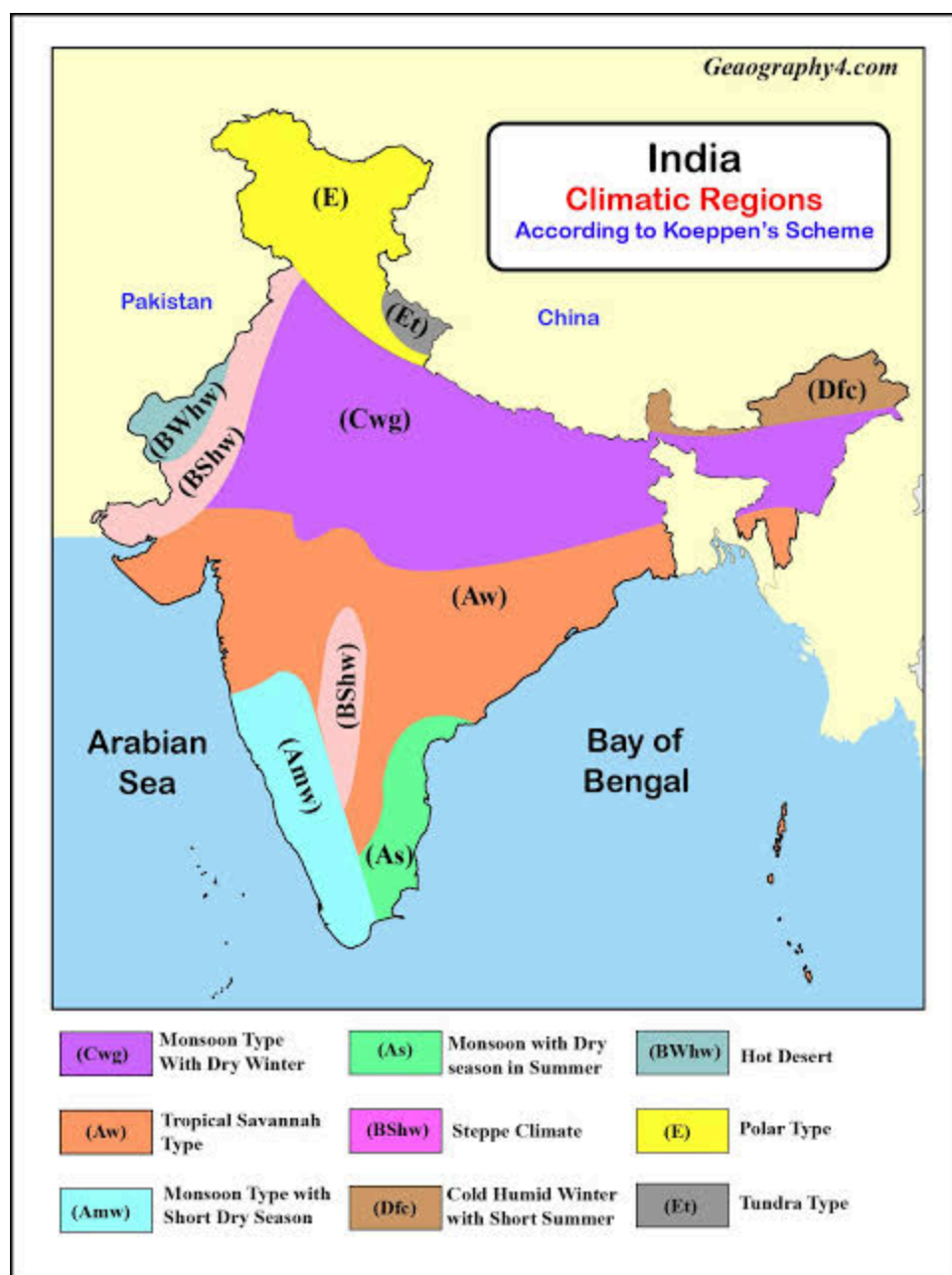
Gangetic West Bengal, is attributed to the negative phase of the VM, which they say reduced the moisture flow. The continuing shrinkage, and eventual disappearance of the tropical savannah and temperate zones "will cause numerous problems related to food safety [security] and local population displacement," the paper notes.

In peninsular India, the hot semi-arid steppe zone fell from 30.3% of the region's area in 1951-80 to 16.4% in 1991-2020. Tropical savannah rose from 61.6% to 75.7%. Konkan and Goa, coastal Karnataka, and Kerala saw their tropical monsoon zones expand, as per the paper, published in the latest edition of *MAUSAM*, the in-house journal of the IMD.

While the Indian sub-continent is used to the effects of El Niño – a warming of the Central Pacific and linked to the shrinking of the southwest monsoon – previous studies have found that most VM events were followed by El Niño events. The *MAUSAM* study, however, doesn't explicitly link the VM to El Niño.

The PDO correlates negatively with Indian monsoon rainfall, like the El Niño-La Niña cycle. Studies have shown that when the El Niño Southern Oscillation and the PDO are in phase, they reinforce the usual El Niño-monsoon link, and when out of phase, they offset each other. The globe is currently in the grip of one of the strongest El Niños in history and it has shrunk India's monsoon rainfall this year by 12%.

For the study, the scientists first sorted India into climate types, applied them to IMD's gridded records on 0.25-degree squares, roughly 25 km across. They repeated this for five 30-year windows, each starting a decade after the last, and tracked how the map changed. To look for a cause, they compared North Pacific sea-surface temperatures with rainfall over the northern plains from 1981 to 2020 and examined how moisture moves across region.



1. A Distant Pacific Pattern May Be Drying North India

Source: The Hindu

GS Paper I – Geography | GS Paper III – Environment and Climate Change

Context: A study by the India Meteorological Department (IMD) and the Indian Institute of Tropical Meteorology (IITM), published in

MAUSAM, examines shifts in India's climate zones over seven decades and the possible influence of the Pacific's Victoria Mode on rainfall.

1. Köppen Climate Classification: Major Types

The Köppen system classifies climates primarily on the basis of temperature and precipitation. It has **five principal groups (A–E)**, each with distinct subtypes.

1. **A – Tropical:** Hot throughout the year; includes rainforest (Af), monsoon (Am) and savannah (Aw). Found in parts of the Western Ghats, northeastern India and the tropical peninsula.
2. **B – Dry:** Low precipitation; includes desert (BW) and steppe (BS), subdivided into hot and cold types. Found in western Rajasthan and semi-arid regions.
3. **C – Temperate:** Moderate temperatures; includes humid subtropical (Cwa/Cfa) and Mediterranean-type (Cs) climates. Found in parts of the Himalayan foothills and other temperate regions.
4. **D – Continental:** Cold winters and substantial seasonal temperature differences; characteristic mainly of higher-latitude continental interiors and not a major climate group in India.
5. **E – Polar:** Extremely cold climates, including tundra (ET) and ice cap (EF). These occur primarily in polar regions.

Indian Mountain Regions: High-altitude Himalayan areas have distinct alpine and cold conditions, which are important in regional climate studies.

2. Major Findings: Climate-Zone Shifts (1951–80 to 1991–2020)

1. **Northwest India:** The hot semi-arid steppe zone expanded from **25.7% to 33.1%**, while the temperate zone declined from **25.8% to 18.7%**.

2. **Uttar Pradesh:** The eastern boundary of the steppe zone shifted towards eastern Uttar Pradesh, indicating an expansion of drier conditions.
3. **Northeast India:** Tropical savannah declined from **18.4% to 11.8%**, while the temperate zone increased from **74.8% to 82.5%**.
4. **Peninsular India:** The steppe zone contracted from **30.3% to 16.4%**, while tropical savannah expanded from **61.6% to 75.7%**.
5. **Other Regions:** Marathwada and West Vidarbha shifted towards semi-arid conditions, while tropical monsoon zones expanded along parts of the western coast.

3. Victoria Mode (VM): Meaning and Link to Indian Rainfall

1. **Definition:** A recurring pattern of warm and cool sea-surface temperatures in the North Pacific Ocean.
2. **Negative Phase:** The study associates this phase with reduced moisture transport towards northern India.
3. **Rainfall Connection:** Changes in Pacific sea-surface temperatures can influence atmospheric circulation and may contribute to declining rainfall in parts of Uttar Pradesh, Bihar and Gangetic West Bengal.

4. Major Implications

1. **Agriculture:** Shifting climate zones may alter crop suitability, sowing schedules and irrigation requirements.
2. **Food Security:** Reduced rainfall in agricultural regions can threaten crop yields and food availability.
3. **Water Stress:** Increasing aridity can intensify groundwater depletion and dependence on irrigation.
4. **Rural Livelihoods:** Water scarcity and crop losses can reduce farm incomes and increase economic vulnerability.

5. **Migration:** Persistent environmental stress may increase migration from affected regions.

11 crore farmers get digital ID to access public schemes

The Hindu Bureau

NEW DELHI

The Union Agriculture Ministry had created 11 crore unique digital identity cards for farmers as on Friday, five months ahead of a deadline set for March 31, 2027. The IDs are expected to enable “transparent, efficient and timely” access for farmers to government schemes, bank credit, crop insurance, and disaster relief. It will also reduce paperwork and repeated verification, according to the government.

The milestone has been achieved under the Digital Agriculture Mission implemented by the Ministry of Agriculture and Farmers’



Shivraj Singh Chouhan

Chouhan said, congratulating farmers across the country. The Minister described the Farmer ID as their own digital identity, and an important step towards making agriculture more efficient, transparent and prosperous through modern technology.

“Earlier, farmers often

2. Farmer IDs: 11 Crore Digital Identities Created

Source: The Hindu

GS Paper II – Governance | GS Paper III – Agriculture

Context: India created 11 crore Farmer IDs by October 23, 2026, five months ahead of the March 31, 2027 deadline.

1. Digital Agriculture Mission (DAM)

Launched by the **Ministry of Agriculture and Farmers' Welfare**, the mission was approved in September 2024 with an outlay of ₹2,817 crore to develop digital infrastructure for agriculture.

2. Major Components

1. **AgriStack:** Three digital registries—Farmers' Registry (unique Farmer IDs), Geo-referenced Village Maps (digital land mapping) and Crop Sown Registry (records of crops cultivated).
2. **Krishi Decision Support System (KDSS):** Integrates satellite, weather, soil and water-resource data for agricultural planning and crop monitoring.
3. **Soil Profile Mapping:** Provides detailed soil information to support soil assessment and crop selection.
4. **Digital General Crop Estimation Survey (DGCES):** Improves crop-yield estimates using scientific crop-cutting experiments.

3. Benefits of Farmer IDs

1. **Scheme Access:** Simplifies identification and verification for government benefits.
2. **Agricultural Credit:** Facilitates access to bank loans and Kisan Credit Card services.
3. **Crop Insurance:** Supports verification and delivery of insurance benefits.

4. **Disaster Relief:** Helps identify eligible farmers affected by crop losses.
5. **MSP Procurement:** Supports farmer verification during Minimum Support Price procurement.
6. **Reduced Paperwork:** Minimises repeated documentation and verification.
7. **Better Targeting:** Helps reduce duplicate records and improve delivery of benefits.

‘India will hammer drug cartels’: Shah hails Op Trident that unearthed hawala network

Express News Service
New Delhi, October 25

SIMULTANEOUS RAIDS across Assam, Mizoram and Manipur have led to the arrest of 18 people and the freezing of 1,424 bank accounts, exposing hawala transactions worth Rs 100 crore and rupturing the finances of a narcotics cartel led by a Myanmar-based drug lord arrested earlier this year, Union Home Minister Amit Shah said on Sunday.

In a post on X, Shah said Operation Trident was carried out on October 23 to dismantle an international narcotics cartel operating across India, Myanmar and Bangladesh. “The operation unearthed hawala transactions worth Rs 100 crore, led to the attachment of properties worth Rs 17.82 crore and resulted in the seizure of 500 detonators and Rs 12 lakh in cash,” he said.

Shah said the network trafficked narcotics across the borders of India, Myanmar and Bangladesh through the “Death Triangle Corridor”.



Union Home Minister Amit Shah

Congratulating the anti-narcotics team drawn from central agencies and the police forces of the three states, Shah said the operation reflected the government's resolve to eradicate every drug network by December 31, 2029. “India will hammer until the last nail is driven into the coffin of drug cartels,” he said in the post.

Under “Operation Trident”, the Narcotics Control Bureau, with 38 teams, raided 38 locations simultaneously across the three states, Assam, Mizoram, and Manipur against transnational narco-financial syndi-

cates, aiming to dismantle the operational and financial backbone of the cartel.

The raids followed days of covert intelligence fusion, joint target-mapping and high-level tactical briefings among central and state agencies, a government statement said, and were designed to strike the syndicates logistics nodes and illicit financial arteries at the same time.

The multi-state operation followed intelligence-led investigations by the NCB, Mizoram Police and Enforcement Directorate, tracing backward and forward links in cases selected for a 360-degree probe, it said.

“The cartel was led by Myanmar-based kingpin Thangcintuang alias Chintuang alias Tluanga who orchestrated the cross-border routing of methamphetamine and heroin across Myanmar-Mizoram-Manipur-Assam-Tripura corridor into mainland India and Bangladesh. He was arrested in May this year,” it said.

Acting under a unified com-

mand structure, 38 multi-agency composite teams were mobilised concurrently across 38 pre-identified locations in the three states. “The strikes covered key urban hubs and sensitive border corridors, including Aizawl, Champhai and the Indo-Myanmar border trading town of Zokhawthar in Mizoram, along with linked operative bases in Churachandpur, Manipur, and the Cachar transit corridor in Assam,” it said.

Despite challenging terrain and vast geographical spread, exceptional inter-departmental coordination ensured all searches, enquiries, and financial audits were executed simultaneously, preventing the flight of suspects or concealment of illicit assets, the statement said.

“Earlier phases of the probe dismantled key parts of the cartel, including kingpin Thangcintuang, alias Chintuang or Tluanga, who was arrested in Delhi after inter-state surveillance and intelligence-led operations,” the statement said.

3. Operation Trident: Cross-Border Drug Trafficking and Internal Security

GS Paper III – Internal Security

Context: Coordinated raids across Assam, Mizoram and Manipur targeted an alleged international drug cartel and its hawala network.

1. Operation Trident: Key Findings

1. **Enforcement:** 18 people arrested; 38 teams conducted simultaneous raids at 38 locations.
2. **Financial Action:** 1,424 bank accounts frozen, hawala transactions worth ₹100 crore uncovered and properties worth ₹17.82 crore attached.
3. **Seizures:** 500 detonators and ₹12 lakh in cash recovered.
4. **Alleged Cartel Leader:** The report identifies Myanmar-based Thangcintuang, also known as Chintuang or Tluanga, as the alleged leader.

2. Drug Trafficking in India: Sources and Routes

India's location between major drug-producing regions makes it both a destination and a transit country for illicit narcotics.

1. **Golden Crescent:** Afghanistan, Pakistan and Iran; associated particularly with heroin trafficking routes affecting northwestern India.
2. **Golden Triangle:** Myanmar, Laos and Thailand; a major source of heroin and synthetic drugs, with cross-border trafficking affecting Manipur and Mizoram.
3. **Routes of Entry:** Porous land borders, maritime routes, ports, airports and courier networks.
4. **Domestic Distribution:** Trafficking networks use intermediaries and local distributors to supply markets across India.

3. How Drug Cartels Operate

1. **Narcotics Trafficking:** Transport and distribution of heroin, methamphetamine and other illicit substances.

2. **Hawala Financing:** Informal money transfers conceal financial flows between suppliers and distributors.
3. **Money Laundering:** Criminal proceeds are channelled through financial transactions, businesses and assets to disguise their origin.
4. **Criminal Networks:** Drug trafficking may intersect with arms smuggling, corruption and organised crime; specific links require investigation.

4. Implications for India

1. **Internal Security:** Illicit profits can finance organised crime and undermine border security.
2. **Public Health:** Substance dependence harms individuals, families and communities.
3. **Economic Costs:** Addiction reduces productivity and increases healthcare and rehabilitation burdens.
4. **Border Management:** Difficult terrain and transnational networks complicate surveillance and enforcement.

5. Legal and Institutional Framework

1. **Narcotics Control Bureau (NCB):** Coordinates intelligence and enforcement against drug trafficking.
2. **NDPS Act, 1985:** The Narcotic Drugs and Psychotropic Substances Act provides the principal legal framework for controlling illicit drugs.
3. **Financial Investigation:** Account freezing, asset attachment and tracing illicit financial flows help disrupt cartel operations.

6. Way Forward

1. **Integrated Enforcement:** Strengthen coordination among the NCB, State police, customs and border-security agencies.

2. **Border Surveillance:** Improve monitoring of vulnerable land borders, ports, airports and coastal routes.
3. **Financial Disruption:** Investigate hawala networks, money laundering and proceeds of crime.
4. **Synthetic Drug Control:** Monitor precursor chemicals, clandestine laboratories and online drug markets.
5. **Demand Reduction:** Expand public awareness, early intervention and community-based prevention.
6. **Rehabilitation:** Improve access to evidence-based de-addiction and counselling services.
7. **International Cooperation:** Strengthen intelligence-sharing and joint investigations with neighbouring countries.

Where should judicial restraint begin?

Justice Ujjal Bhuyan's remarks on voter deletions have revived debate over judicial propriety and comments on pending cases; while his emphasis on voting rights and procedural safeguards aligns with existing rulings, his statement against mass disenfranchisement raises questions about limits of judicial speech

LETTER & SPIRIT

V. Venkatesan

In July 2018, Justice Ranjan Gogoi, months before becoming Chief Justice of India, said democracy sometimes needed “noisy judges”, alongside independent journalists. Eight years later, that judicial voice has become contentious.

On October 4, Justice Ujjal Bhuyan, delivering the valedictory address at a moot court competition at NALSAR University of Law, said the right to vote was constitutional and integral to the basic structure. A process disenfranchising millions, he said, would be intrinsically arbitrary and violate Articles 14 and 326; Article 326 “cannot be tinkered with”, and “no court can condone” mass disenfranchisement. Citing Section 22 of the Representation of the People Act, 1950, he stressed the need for notice and a hearing before deletion, except in the case of death.

Former Chief Justice of India B.R. Gavai objected that “judicial propriety” did not permit a sitting judge to comment on a sub-judice matter. Former Delhi High Court judges S.N. Dhingra and R.S. Sodhi expressed similar concerns, with Justice Sodhi stressing the statutory framework governing voting rights.

The day after Justice Bhuyan spoke, Justice Vikram Nath, the senior-most puisne judge in the Supreme Court, delivered a lecture in Delhi. “Impartiality and indifference are not the same thing,” he said. A judge must be impartial, but need not be insensible to the human consequences of law, he observed. Where is the line between an engaged judge and one who has said too much?

What does the Indian code require?

The starting point is the Restatement of Values of Judicial Life, adopted by the Full Court of the Supreme Court on May 7, 1997. Clause 8 says a judge shall neither enter public debate nor express views on political matters “or on matters that are pending or are likely to arise for judicial determination”. Clause 1 requires conduct sustaining public faith in judicial impartiality. The Restatement carries no sanction of its own, but has been reproduced and relied upon in judicial decisions.

When Justice Bhuyan addressed NALSAR, litigation arising from the West Bengal SIR remained before the Supreme Court. More than 22 lakh deleted voters had appealed for restoration, the Election Commission of India told the court, and related matters were due on October 5. Justice Bhuyan neither named the SIR nor sat on those Benches.

But did Justice Bhuyan state something the court had not already held?

Here the criticism requires qualification. On May 27, 2026, a Bench headed by Chief Justice Surya Kant upheld the Bihar SIR in *Association for Democratic Reforms v Election Commission of India*. The court described the right to vote as constitutional, though neither absolute nor unregulated, and said Articles 325 and 326 require inclusion of eligible electors and exclusion of ineligible persons. Rule 21A of the Registration of Electors Rules, 1960, it added, requires notice, inquiry, hearing and a reasoned determination before deletion.

Justice Bhuyan was therefore on established ground in describing voting as constitutional and stressing a hearing



GETTY IMAGES

before deletion. The more debatable part was his proposition that a process disenfranchising millions would be intrinsically arbitrary and that no court could condone it. Yet the proposition was conditional and did not decide whether a particular SIR produces that result. The issue turns on how closely those words approached an answer to a live controversy.

Must judges remain silent on questions of public importance?

Comparative standards draw a more calibrated boundary. The commentary on the Bangalore Principles of Judicial Conduct recognises judicial freedom of expression on legal education, judicial independence and court administration. Principle 2.4 restrains comment that might reasonably affect a proceeding before, or capable of coming before, the judge, while Principle 4.11 allows judges to write, lecture and teach on law and the administration of justice.

The U.S. Supreme Court's 2023 Code of Conduct permits Justices to speak, write, lecture and teach, but asks them to refrain from commenting on the merits of a pending or impending matter. For scholarly or educational purposes, they may describe the issues involved. The distinction is between explaining an issue and appearing to answer it.

Justice Antonin Scalia demonstrated the risk in 2003 when he criticised a lower-court ruling on the Pledge of Allegiance. The litigant sought his recusal, and Scalia took no part when the case reached the U.S. Supreme Court, although the Court gave no reason. In Britain, Lady Hale outlined competing arguments in the pending Brexit litigation in 2016, then stopped: “the case is destined for our Court, so I must say no more”. She later sat in Miller. Justice Ruth Bader Ginsburg crossed a different boundary by criticising presidential candidate Donald Trump, then described her comments as “ill-advised”.

Indian practice also counsels against treating every public intervention as improper. At NALSAR in March 2024, Justice B.V. Nagarathna criticised Governors who withheld assent to Bills while related disputes were before the

Court. Scholars Jasmin Moran and Christopher W. Schmidt recognise apparent-bias concerns without treating judicial silence as the answer.

Is Justice Bhuyan exceptionally outspoken?

Justice Bhuyan is an unusually visible judicial speaker. A conservative open-source audit found at least 25 public-facing engagements since he joined the Supreme Court on July 14, 2023. It covered institutional archives, Bar events and contemporaneous reports, excluding courtroom remarks, internal programmes and events where only scheduled participation could be established. At least nine addresses generated news reports, seven in 2026. The figure is a minimum.

In 2026, his speeches became more pointed. He questioned executive influence in judicial transfers, cited low conviction rates while discussing overuse of the Unlawful Activities (Prevention) Act, criticised restrictive bail conditions, sought greater transparency in collegium decisions and criticised frivolous prosecutions arising from food choices, poems, protests and slogans. Most generated headlines without a comparable propriety controversy.

Two episodes stand out. After Justice Bhuyan criticised the Supreme Court's 2024 Delhi Metro arbitration ruling, retired Justice Indu Malhotra called the remarks an “indiscretion”. Former Justice Sudhanshu Dhulia, by contrast, defended another July speech on dissent and criminalisation, while cautioning that sitting judges must exercise restraint because similar issues may later come before them. Their disagreement shows why controversy alone is a poor test.

Does his High Court record bear on this?

Justice Bhuyan's Gauhati High Court record cautions against treating speeches as predictors of outcomes. In *Monowara Bewa v Union of India* (2017), his Bench upheld a Foreigners Tribunal finding and rejected a Gaon Panchayat Secretary's certificate as an NRC linkage document. The Supreme Court later set aside that broader conclusion in *Rupajan Begum v*

Union of India. In *Sirajul Hoque v State of Assam* (2019), it also reversed a 2017 decision of his Bench where variations in a family name had contributed to rejection of a citizenship claim. Yet in *Md Anwar Hussain v Union of India* (2014), Justice Bhuyan set aside a Foreigners Tribunal order for lack of sound logic and cogent reasons, remanded the case and ordered the petitioner's release from detention to argue it afresh. His record contains strict and claimant-protective strands. Extrajudicial language about citizenship, liberty or voting cannot safely predict how he would decide a properly argued case.

So, are Justice Bhuyan's critics correct?

India's Restatement uses broader language than the U.S. code. His propositions that voting is constitutional and deletion requires procedural safeguards largely track existing doctrine. The sentence that “no court can condone” mass disenfranchisement comes closer to stating a constitutional conclusion, although it was conditional and did not decide whether the SIR produces that result.

The criticism becomes weaker when enlarged into a claim that sitting judges should avoid public discussion of constitutional law, civil liberties, judicial appointments or court administration. Indian judges have long occupied that space, and international standards recognise its value. If a case presenting the precise issue on which Justice Bhuyan spoke were assigned to him, the Scalia episode shows why recusal could become a question.

Justice Gogoi's “noisy judge” and Justice Nath's formulation that impartiality need not mean indifference can coexist. The relevant measures are the subject of the speech, the specificity of the conclusion and its proximity to adjudication. Judicial speech can enrich constitutional conversation, but the lecture hall should not sound like a courtroom deciding a case before the parties are heard.

(V. Venkatesan is Contributing Editor at Supreme Court Observer. Views expressed are personal)

THE GIST

▼ The Restatement of Values of Judicial Life bars judges from commenting on pending or likely judicial matters

▼ Comparative standards allow judges to discuss legal issues but caution against remarks that could affect pending proceedings

▼ Justice Bhuyan's record includes both strict and claimant-protective rulings, showing why public speeches cannot predict judicial outcomes

4. Judicial Restraint: Importance and Constitutional Balance

GS Paper II – Indian Polity and Judiciary

Context: Justice Ujjal Bhuyan's remarks on voter deletions have revived debate over judicial propriety, public comments and judicial impartiality.

1. Meaning of Judicial Restraint

Judicial restraint means exercising judicial power within constitutional limits, respecting the separation of powers and avoiding unnecessary interference in the functions of the legislature and executive.

2. Why Is Judicial Restraint Important?

1. **Separation of Powers (Article 50):** Article 50 directs the State to separate the judiciary from the executive in public services. Judicial restraint also supports the broader constitutional principle of separation of powers.
2. **Judicial Impartiality:** Prevents prejudgment and protects fair hearings.
3. **Democratic Governance:** Respects the role of elected governments in formulating policies within constitutional limits.
4. **Public Confidence:** Measured conduct and reasoned judgments strengthen trust in the judiciary.
5. **Constitutional Balance:** Prevents judicial overreach without weakening the protection of fundamental rights.

3. Judicial Restraint in Public Comments

1. **Pending Cases:** Judges should avoid public remarks that could create an impression of prejudgment.

2. **Political Controversies:** Comments should not compromise judicial neutrality or institutional credibility.
3. **Judicial Conduct:** The Restatement of Values of Judicial Life (1997) emphasises impartiality, dignity and propriety.
4. **Constitutional Debate:** Judges can explain general legal principles while avoiding comments that may prejudice specific proceedings.

4. Judicial Restraint vs. Judicial Activism

Judicial Restraint

1. Exercises judicial power cautiously within constitutional boundaries.
2. Avoids unnecessary interference in policy-making.
3. Emphasises institutional limits and separation of powers.
4. Excessive restraint may allow injustice or rights violations to continue.

Judicial Activism

1. Uses judicial review proactively to address constitutional or rights violations.
2. Intervenes where government inaction or unconstitutional action threatens rights.
3. Emphasises effective protection of fundamental rights and constitutional values.
4. Excessive intervention may encroach upon executive or legislative functions.

Examples: *Tata Cellular v. Union of India* (1994) emphasised limits on judicial review of administrative decisions, while *Vishaka v. State of Rajasthan* (1997) illustrates proactive judicial intervention to protect fundamental rights in the absence of specific legislation.

5. Way Forward

1. **Clear Standards:** Establish consistent guidance for judges' public comments, especially on pending cases.
2. **Reasoned Judgments:** Base interventions on constitutional provisions, legal principles and evidence.
3. **Respect Institutional Boundaries:** Avoid taking over policy-making while holding the executive accountable for constitutional compliance.
4. **Protect Fundamental Rights:** Ensure restraint does not become a reason to ignore violations of liberty, equality or due process.
5. **Strengthen Public Trust:** Maintain impartiality, transparent procedures and measured judicial communication.

Lessons on the right to assembly

Lately, the streets of Delhi have been tense with protests against the Central government. The large-scale exclusion of voters in the Special Intensive Revision (SIR) has led to protesters demanding the resignation of Gyanesh Kumar, the Chief Election Commissioner. The government responded with a heavy hand, deploying police and military personnel. This has led to questions regarding suppression of protests and how it offends the constitutional rights to expression and assembly.

The right to dissent and protest is integral to any liberal democracy. Holding rallies and demonstrations have a rich legacy in India, traceable back not only to the independence movement, but also to agitations by trade unions, farmers, social activists, and many more.

Unfortunately, over the past years, one has increasingly observed the emergence of a culture of suspicion. The sentiment –popular among the right-wing – of distrusting any disagreement with the government has a pre-democratic character. The immediate questions regarding ‘permission’ for protests, or ‘funding’ of the protesters is predicated on this view. It refuses to see citizens as autonomous agents with a right to protest for what they believe in. It considers the state as the provider of resources and citizens as passive recipients. The heart of the constitutional right to protest lies in not treating protesters with suspicion.

Article 19(1)(a) guarantees all citizens the right to free speech and expression and Article 19(1)(b), the right to



Thulasi K. Raj

Lawyer at the
Supreme Court of
India

If any meaningful right to assembly is to exist, public places must be easily accessible and available. Moving protests to distant areas renders the purpose of protests meaningless

assemble peaceably without arms. Fundamental rights operate as limits on state action. In any democracy, there is tension between the exercise of rights and the state’s authority. Hence, any restriction on the right to assembly must be subject to Article 19(3). It says that the state can make a law in the interests of sovereignty and integrity or public order, and impose reasonable restrictions. Here, we see a fundamental gap between the liberal state’s constitutional spirit and an executive that constrains this right. First, there is a disproportionate invocation of preventive laws. For instance, Section 163 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023 was invoked in the capital immediately before the protests. This law is inherently problematic as it gives wide discretion to the executive to direct the removal of persons to prevent the disturbance of public tranquillity, among other grounds. This is coupled with a disproportionate use of force on peaceful protesters, long detentions without disclosing whereabouts, preventing access to lawyers or necessities, and issuance of deportation notices to Overseas Citizens of India who participate in the protest. The government routinely creates a chilling effect on freedoms of speech and assembly.

As stated by the Supreme Court in *Himmat Lal vs Commissioner of Police* (1972), reasonable regulation of assembly is different from arbitrary exclusion. While reasonable ‘time, place and manner’ restrictions can be imposed, the top court said that if the state ...“can constitutionally close both its streets and its parks entirely to public meetings, the

practical result would be that it would be impossible to hold any open-air meetings in any large city.” It cautioned that state monopoly on public places cannot defeat the right to assembly. Unfortunately, when the constitutional validity of the predecessor provision of Section 163 of the BNSS was challenged, the court in *Babulal Parate vs State of Maharashtra* (1961) refused to interfere. But it said that the provision is ‘attracted only in emergencies.’

Designating protest sites

If any meaningful right to assembly is to exist, public places must be easily accessible and available. This is why the denotification of Jantar Mantar as a protest site assumes serious relevance. Moving protests to distant areas renders the purpose of protests meaningless.

On October 9, when the top court heard petitions challenging the blanket transport ban to Delhi, the court directed that ‘suitable alternative sites’ for protest must be designated. When the Delhi High Court was met with the denotification challenge, the Additional Solicitor General informed the court that that this was pursuant to the Supreme Court’s earlier order.

Crucially, no interim orders were passed by the top court in the cases challenging denotification. Thus, Jantar Mantar remains inaccessible as a protest site. The court must reconsider extending legitimacy to a government that strips the people’s right to assembly. It must aspire to close the gap between constitutionalism that prioritises the right to assembly and conservatism which does not.

5. Right to Peaceful Assembly: Protest, Public Order and Constitutional Rights

GS Paper II – Indian Polity, Fundamental Rights and Governance

Context: Restrictions on protests in Delhi have raised concerns about the right to peaceful assembly, the use of preventive police powers and access to public protest sites.

1. Constitutional Provisions

1. **Article 19(1)(a):** Guarantees freedom of speech and expression.
2. **Article 19(1)(b):** Guarantees the right to assemble peacefully and without arms.
3. **Article 19(3):** Permits reasonable restrictions on peaceful assembly in the interests of the sovereignty and integrity of India or public order.
4. **Article 21:** Protects life and personal liberty, including protection against arbitrary state action.

2. Major Concerns

1. **Excessive Restrictions:** Repeated prohibitory orders may turn temporary restrictions into an effective ban on peaceful protests.
2. **Preventive Police Powers:** Section 163 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, permits urgent orders to prevent specified dangers or public disturbances; its use must meet legal requirements.
3. **Disproportionate Policing:** Excessive force, arbitrary detention or denial of procedural safeguards can undermine fundamental rights.
4. **Inaccessible Protest Sites:** Relocating demonstrations to distant locations may reduce public visibility and limit their practical effectiveness.

5. **Competing Rights:** Protests must be balanced with the rights of residents, commuters and other users of public spaces.

3. Important Supreme Court Judgments

1. **Himat Lal K. Shah v. Commissioner of Police (1973):** The State may regulate public meetings on streets but cannot exercise arbitrary powers to prohibit them.
2. **Mazdoor Kisan Shakti Sangathan v. Union of India (2018):** Recognised peaceful protest as a fundamental right and called for balancing protesters' rights with residents' rights through reasonable regulation rather than a blanket prohibition.
3. **Amit Sahni v. Commissioner of Police (2020):** Held that public roads cannot be occupied indefinitely for protests; the right to protest must be balanced with the rights of commuters and the general public.

4. Why Accessible Protest Sites Matter

1. **Democratic Accountability:** Allow citizens to express grievances and question government decisions.
2. **Meaningful Dissent:** Public visibility helps protests communicate demands to authorities and society.
3. **Effective Rights:** A constitutional right becomes difficult to exercise if permitted locations are practically inaccessible.
4. **Public Order:** Designated sites, clear permission procedures and crowd-management measures can accommodate protests while limiting disruption.

5. Way Forward

1. **Proportionate Restrictions:** Ensure restrictions are lawful, necessary and proportionate to the specific public-order concern.
2. **Accessible Venues:** Provide safe, reasonably accessible protest sites near relevant institutions wherever feasible.

3. **Transparent Procedures:** Establish clear rules for permissions, prohibitions and timely review of decisions.
4. **Accountable Policing:** Prioritise dialogue, minimum necessary force and safeguards against arbitrary detention.
5. **Constitutional Balance:** Protect peaceful dissent while safeguarding public safety, residents' rights and the free movement of commuters.

Theoretical physicist Ashoke Sen wins Oskar Klein Medal

Vasudevan Mukunth

Theoretical physicist Ashoke Sen has been awarded the 2026 Oskar Klein Medal, becoming the first Indian laureate to receive the honour, awarded by Stockholm University and the Nobel Committee for Physics of the Royal Swedish Academy of Sciences.

The Medal recognises significant contributions to theoretical physics. Dr. Sen is the ICTS-Infosys Madhava Chair Professor at the International Centre for Theoretical Sciences (ICTS), Bengaluru. He also delivered the memorial lecture accompanying the Medal in Stockholm on October 22, titled "Gravity from Strings and Strings from Gravity".

In his career, Dr. Sen has focused on string theory, which is the name of an attempt by physicists to describe matter and nature's fundamental forces, including gravity, within a single framework called



Ashoke Sen is the first Indian to win this award. R. RAVINDRAN

quantum gravity. Currently, they are split across two frameworks, quantum physics and relativity. String theory offers ways to reconcile them, but while it is mathematically a highly evolved theory, it has been unable to make predictions that can be confirmed with experiments using today's technologies.

In the 1980s, Dr. Sen helped establish how the equations describing hypothetical strings moving

through space could relate to the equations that describe the physical fields that surround it. In the 1990s, he helped show that two apparently different ways to describe physical forces were really equivalent, an idea called S-duality.

Sen conjectures

He also proposed three related ideas, together called the Sen conjectures, in 1999 that gave physicists

new ways to understand the behaviour of the strings of string theory. Dr. Sen graduated from Presidency College in Kolkata before going to IIT-Kanpur and thereon to earning his Ph.D. from Stony Brook University, New York, in 1982. After working at institutions including the Tata Institute of Fundamental Research (TIFR) in Mumbai and the Harish-Chandra Research Institute (HRI) in Prayagraj, he moved to ICTS in 2021.

For his work, he has won the S.S. Bhatnagar Prize (1994), the Infosys Prize (2009), the Breakthrough Prize in Fundamental Physics (2012), and the Dirac Medal (2014).

He also received the Padma Shri in 2001 and the Padma Bhushan in 2013.

The impact of Dr. Sen's contributions has exceeded their own ambit. In one 2014 interview, U.S. theoretical physicist Edward Witten – widely con-

sidered to be the greatest living mathematical physicist – called one of Dr. Sen's papers "short but brilliant" and that it "convinced me that the duality had to be right". Dr. Witten also said Dr. Sen's findings had inspired work that paved the way for more breakthroughs in understanding how subatomic particles interact with each other.

He has also done important work on black holes. Physicists had long known that these enigmatic cosmic beasts had entropy but could not explain its origins in their physical theories. Dr. Sen developed mathematical methods to make sense of a black hole's microscopic states in a way that could account for its observable, macroscopic characteristics.

Together, many physicists agree, his contributions have considerably advanced the theories physicists use to understand quantum gravity.

The Oskar Klein Medal

and the accompanying Memorial Lectures was launched in 1988 to honour the Swedish physicist Oskar Klein (1894-1977). In 1926, Klein, building on the work of German mathematician Theodor Kaluza, explored whether electromagnetism and gravity could be described in a common framework by introducing an extra dimension of space. The result, known as Kaluza-Klein theory, exerted a significant influence on later attempts by physicists – including string theory – to unify these forces.

India in particular has an influential community of string theorists, especially at TIFR Mumbai, ICTS Bengaluru, HRI Prayagraj, and the Indian Institute of Science Education Research in Pune. Aside from Dr. Sen, the community's notable members include Nabamita Banerjee, Shiraz Minwalla, Sunil Mukhi, P. Ramadevi, and Spenta Wadia.

6. Ashoke Sen Wins the 2026 Oskar Klein Medal

GS Paper III – Science and Technology

Context: Indian theoretical physicist Ashoke Sen became the first Indian recipient of the Oskar Klein Medal for his contributions to string theory and quantum gravity.

1. Oskar Klein Medal: Basics

1. **Established:** 1988, in honour of Swedish physicist Oskar Klein (1894–1977).
2. **Awarded by:** Stockholm University and the Nobel Committee for Physics of the Royal Swedish Academy of Sciences.
3. **Purpose:** Recognises outstanding contributions to theoretical physics.

2. Ashoke Sen's Scientific Contributions

1. **String Theory:** Advanced research into the idea that fundamental particles are tiny, vibrating strings, offering a framework to reconcile quantum mechanics with gravity.
2. **S-Duality:** Demonstrated mathematical relationships between strongly and weakly interacting descriptions in string theory.
3. **Black-Hole Entropy:** Helped explain the microscopic states responsible for the entropy of certain black holes.
4. **String Field Theory:** Contributed mathematical methods for understanding string interactions and dynamics.

Other Honours: Shanti Swarup Bhatnagar Prize (1994), Padma Shri (2001), Breakthrough Prize in Fundamental Physics (2012), Padma Bhushan (2013) and Dirac Medal (2014).

Free bus travel has given women more mobility

The Time Use Survey data from 2019 and 2024 show that women's travel went up in four States that offer free bus rides to women

DATA POINT

Sravani Venkatraju

Between 2021 and 2024, four States made travel in ordinary government buses free for women. Punjab and Tamil Nadu introduced the scheme in 2021, Karnataka followed in June 2023 and Telangana in December 2023. Such schemes are expected to help women reach jobs, colleges and hospitals more easily.

The National Statistics Office (NSO) has conducted two all-India Time Use Surveys, one through 2019 and another through 2024, in which about 4.5 lakh persons in each round reported how they spent every half hour of a day. The two can be compared to see whether women are now moving out of their homes more often.

Analysing movement

In the four States, the share of women aged 15-59 who made at least one trip on the survey day went up from 38.7% in 2019 to 45.3% in 2024, an increase of 6.6 percentage points, while for men the increase was 3.7 points (Table 1). In the 12 other large States that were studied, it was the other way round, as women's travel went up by 4.4 points and men's by 7.6 points.

Telangana and Andhra Pradesh, which were one State till 2014, offer a useful comparison. Telangana's Mahalakshmi scheme started in December 2023, but Andhra Pradesh's Stree Shakti scheme came only in August 2025, after the 2024 survey was over. In 2019, 43.7% of women in Telangana and 40.8% in Andhra Pradesh had made a trip on the survey day. By 2024, this had gone up to 54.6% in Telangana, while in Andhra Pradesh it stayed almost the same at 41.6%.

Since travel went up in almost every State after the pandemic years, it is more useful to check

whether women's travel grew faster than men's within the same State. This was the case in all four free-bus States (Chart 1).

In most States without free buses, including Andhra Pradesh, Maharashtra and Uttar Pradesh, women's travel grew slower than men's, and Bihar was the only clear exception.

Women's travel in the four States grew about six percentage points more than in the other States, which is well beyond the survey's margin of error.

More reason to step out

The survey also records the purpose of each trip. The share of women who travelled for paid work went up by 2.3 points in the free-bus States and by 1.2 points in the others. The biggest change was in trips more than in the other States, which was dropping children at school or taking a family member to the hospital, which nearly tripled in the free-bus States (Table 2). Trips for social, religious and leisure purposes also increased in the free-bus States, but remained the same in the others.

In the free-bus States, the share of women who were travelling went up the most around 9 a.m. and 6 p.m., but there was also an increase in the late morning and afternoon travels, which are not usual office hours and are more likely to be the time for care and household work (Chart 2).

The time of these trips tells a similar story. However, the data do not show a similar rise in paid work so far. The share of women aged 15-59 who did any paid work on the survey day rose from 30.5% to 34.4% in the free-bus States, which is about four points, but in the other States it rose slightly more, from 18.4% to 22.9%. This suggests that free buses have made it easier for women to step out of their homes, but getting a job depends on other things as well, such as whether there is work nearby, whether childcare is available and whether the journey is safe.

Going the distance

The data were sourced from the National Statistics Office's Time Use Survey for the years 2019 and 2024. The author is a II Year student of the MA in Cities and Governance programme at Tata Institute of Social Sciences, Hyderabad

Punjab, Tamil Nadu, Telangana, and Karnataka made travel free for women in select bus services between the two surveys



All aboard: Working women in the State travel free of cost in government-owned buses in Chennai.

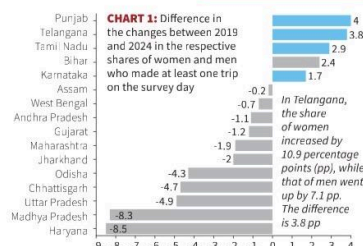


TABLE 1: Share of women aged 15-59 who made at least one trip on the survey day, and the changes for women and men

State	Free bus since	Women 2019 (%)	Women 2024 (%)	Change, women (pp)	Change, men (pp)
Telangana	Dec 2023	43.7	54.6	10.9	7.1
Tamil Nadu	2021	43.8	50.6	6.7	3.8
Karnataka	Jun 2023	36.6	41.5	5	3.2
Punjab	Apr 2021	22.5	26.6	4.1	0.1
All free-bus States	—	38.7	45.3	6.6	3.7
Andhra Pradesh	Aug 2025*	40.8	41.6	0.8	1.9
Other States**	None	23.9	28.3	4.4	7.6

**The 12 States listed in Chart 1 that were taken for comparison including Andhra Pradesh
*Andhra Pradesh's scheme began after the 2024 survey ended

CHART 2: The rise in the share of women travelling in free-bus States in each hour of the day

The share of women who were travelling went up the most around 9 a.m. and 6 p.m.

There was also an increase in the share of women during noon, which are not usual work hours

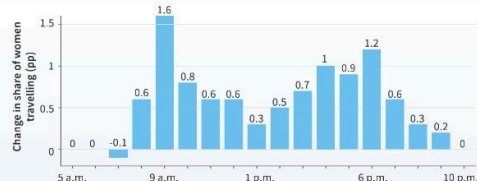


TABLE 2: Share of women aged 15-59 who made a trip for different purposes on the survey day (in %)

Purpose of trip	Free-bus States 2019	Free-bus States 2024	Other States 2019	Other States 2024
Paid work	22.4	24.7	11.7	12.9
Household errands	3.9	5.2	2.9	4.3
Care (school, hospital)	0.9	2.6	0.6	1.2
Study	7.8	8	6.3	6.8
Social, religious, leisure	6.4	7.6	4.5	4.5



7. Free Bus Travel for Women: Impact on Mobility and Employment

GS Paper II – Social Justice | GS Paper III – Indian Economy

Context: National Statistics Office (NSO) Time Use Survey data for 2019 and 2024 show that women's daily mobility increased more in States offering free bus travel.

1. Key Findings

1. **Women's Mobility:** The share of women aged 15–59 making at least one daily trip rose from 38.7% in 2019 to 45.3% in 2024 in four States offering free bus travel.
2. **Comparison:** Women's mobility increased by 4.4 percentage points in 12 other major States.
3. **State-wise Change:** The increase was 10.9 percentage points in Telangana, 6.7 in Tamil Nadu, 5 in Karnataka and 4.1 in Punjab.
4. **Purpose of Travel:** In free-bus States, women's travel for paid work increased from 22.4% to 24.7%; household errands rose from 3.9% to 5.2%, and care-related trips from 0.9% to 2.6%.
5. **Travel Timing:** Women's mobility increased during morning and evening periods and at some times outside conventional working hours.

2. Significance of Free Bus Travel

1. **Women's Empowerment:** Reduces transport expenses and supports independent mobility.
2. **Employment Access:** Improves access to workplaces, job interviews and skill-development centres.
3. **Education:** Facilitates travel to schools, colleges and training institutions.
4. **Healthcare and Care Work:** Makes hospitals, childcare facilities and essential services more accessible.
5. **Social Inclusion:** Enables greater participation in social activities and public life, particularly for women from low-income households.

3. Limitations

1. **Mobility–Employment Gap:** Increased travel does not automatically translate into higher employment or income.

2. **Safety Concerns:** Harassment, poor lighting and unsafe last-mile connectivity may restrict women's mobility.
3. **Structural Barriers:** Limited job availability, childcare responsibilities and distance from workplaces remain significant constraints.
4. **Fiscal Sustainability:** Free travel schemes require adequate funding and reliable public transport services.

4. Way Forward

1. **Improve Connectivity:** Expand bus frequency, routes and last-mile transport, especially in underserved areas.
2. **Ensure Safety:** Strengthen lighting, surveillance, complaint mechanisms and safe bus-stop access.
3. **Link Mobility with Opportunities:** Connect transport schemes with employment, education and skill-development programmes.
4. **Strengthen Public Transport:** Invest in reliable, accessible and well-maintained buses.
5. **Measure Outcomes:** Evaluate changes in women's employment, education access, travel expenditure and safety, alongside passenger numbers.