

The Hindu Important News Articles For UPSC CSE

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Daily News Analysis

Page 04: GS III : Indian Economy / Preliminary Examination

The Reserve Bank of India's Monetary Policy Committee (MPC) unanimously decided to maintain the policy repo rate at **5.25%** while retaining a **neutral policy stance**. This decision highlights a balanced approach to economic management: supporting resilient domestic economic growth while keeping a cautious eye on potential inflationary pressures stemming from global energy spikes and erratic monsoon patterns.

Key Highlights of the Policy Announcement

- **Key Policy Rates Held Steady:**
 - **Repo Rate:** 5.25%
 - **Standing Deposit Facility (SDF) Rate:** 5.00%
 - **Marginal Standing Facility (MSF) & Bank Rate:** 5.50%
- **Stance:** Neutral stance continues, allowing flexibility to respond to incoming global and domestic data.
- **Upward GDP Growth Revision:** Real GDP growth for FY 2026–27 has been revised upward by 10 bps to **6.7%** (Quarterly break-up: Q1 @ 7.0%, Q2 @ 6.4%, Q3 @ 6.5%, Q4 @ 6.8%).
- **Inflation Trends:** Consumer Price Index (CPI) inflation rose to **4.4%** in June 2026 due to higher food and fuel costs, though it came in 30 bps lower than initial Q1 projections.

Drivers of Growth vs. Risk Factors

A. Growth Drivers (Domestic Resilience)

- **Private Consumption:** Robust domestic consumption continues to drive Q1 growth.
- **Investment Dynamics:** High-frequency indicators reflect sustained capital investment across construction, capital goods, and credit expansion.
- **External Sector:** A healthy recovery in merchandise exports alongside steady growth in services exports has cushioned the external trade balance.

B. Headwinds and Emerging Risks

- **El Niño & Monsoon Vulnerability:** Deficient or uneven south-west monsoons pose direct threats to agricultural output and rural purchasing power.

RBI panel keeps repo rate steady at 5.25%; real GDP growth pegged at 6.7%

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The Monetary Policy Committee (MPC) of the Reserve Bank of India (RBI) voted unanimously on Wednesday to keep the policy repo rate under the liquidity adjustment facility (LAF) unchanged at 5.25%, after a detailed assessment of the evolving macroeconomic and financial developments.

Consequently, the standing deposit facility (SDF) rate remains at 5%, and the marginal standing facility (MSF) rate and the bank rate remain at 5.5%.

The MPC also decided to continue with the neutral stance.

RBI Governor Sanjay Malhotra, in his monetary policy statement, said the Indian economy has remained resilient amid persisting global headwinds.

Robust consumption

"High-frequency indicators available so far point towards steady domestic demand in Q1: 2026-27.

Indian economy remains resilient amid persisting global headwinds, says RBI Governor

Private consumption remained robust. Investment continues to be resilient, as suggested by various indicators related to construction, capital goods and bank credit," he said.

"External demand also sustained, as healthy expansion in services exports was complemented by a rebound in merchandise exports," he stated.

Looking ahead, he said, the turbulent global economic environment would have some bearing on domestic economic activity.

"Energy prices and supply chain pressures remain elevated and uncertain. The adverse impact is being contained with various supply-side measures. Even though the situation is still evolving, a deficient and uneven south-west

monsoon amidst El Niño conditions poses some risks to the agriculture sector's outlook and rural demand," he emphasised.

Taking various factors into consideration, real GDP growth for 2026-27 is projected at 6.7% which is 10 bps higher than the earlier projection, with Q1 at 7.0%; Q2 at 6.4%; Q3 at 6.5%; and Q4 at 6.8%. Real GDP growth for Q1:2027-28 is projected at 7.3%. The risks are evenly balanced.

CPI increased to 4.4%

Mr. Malhotra said that while CPI inflation increased to 4.4% in June 2026 after remaining below the target for 16 consecutive months, it turned out to be lower by 30 basis points (bps) than what was earlier projected for Q1:2026-27.

"The increase in June was primarily due to higher food and fuel inflation. Fuel inflation also rose, driven by revision in retail prices, following the spike in international energy prices," the Governor said.

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- **Global Energy Volatility:** Spikes in international crude/energy prices have led to upward revisions in retail fuel prices.
- **Supply Chain Disruption:** Persistent geopolitical tensions continue to impact global logistics and input costs.

Detailed Analytical Insights for Mains

A. The Growth-Inflation Trade-Off

- The MPC's decision to hold rates underscores the transition from aggressive tightening/easing toward a calibrated "wait-and-watch" strategy.
- Keeping rates steady ensures that borrowing costs for private investment remain supportive without injecting excess liquidity that could fuel demand-side inflation.

B. Supply-Side vs. Demand-Side Inflation

- Current inflationary pressures are primarily **supply-driven** (volatile food prices and international energy spikes) rather than excess domestic demand.
- Monetary policy tools (like repo rate adjustments) are generally effective against demand-pull inflation; addressing cost-push supply shocks requires fiscal and administrative interventions (e.g., duty adjustments, buffer stock releases).

C. Transmission of Monetary Policy

- A neutral stance allows banks to systematically pass on past policy rate changes to retail and corporate borrowers through External Benchmark Linked Rates (EBLR).

Related Static Dimensions

- **Monetary Policy Committee (MPC):**
 - Established under Section 452B of the amended **RBI Act, 1934** (following the Urjit Patel Committee recommendations).
 - Consists of 6 members (3 from RBI, 3 appointed by the Central Government).
 - Mandated to meet at least 4 times a year to maintain price stability while keeping growth in mind.
- **Flexible Inflation Targeting (FIT):**
 - The statutory target set by the Government in consultation with RBI is **4% CPI inflation**, with a tolerance band of **+/- 2%** (2% to 6%).
- **Key Policy Instruments:**
 - **Repo Rate:** The interest rate at which RBI lends short-term funds to commercial banks against government securities.

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- **Standing Deposit Facility (SDF):** A liquidity absorption tool that allows RBI to absorb excess liquidity without requiring collateral from banks.
- **Marginal Standing Facility (MSF):** A window for banks to borrow overnight funds from the RBI at a higher rate against government securities.

Way Forward

- **Targeted Fiscal-Monetary Coordination:** Fiscal policy must complement monetary actions via supply-side management (e.g., managing agricultural buffer stocks and reducing import duties on key commodities during price spikes).
- **Agri-Climate Resiliency:** Investments in micro-irrigation, climate-resilient seed varieties, and supply-chain logistics are necessary to insulate rural demand from monsoon volatility and El Niño impacts.
- **Monitoring Secondary Effects:** The RBI must remain vigilant against food and energy inflation spilling over into core inflation and anchoring higher inflationary expectations among consumers.

Conclusion

The RBI MPC's decision reflects confidence in India's structural macroeconomic stability amidst global uncertainties. By keeping interest rates steady and raising growth projections to 6.7%, the central bank has reaffirmed that Indian domestic growth remains durable. However, sustaining this momentum will require careful navigation around climate-induced agricultural shocks and volatile international commodity prices.

UPSC Prelims Practice Questions

Question: With reference to the Monetary Policy Committee (MPC), consider the following statements:

1. The MPC was constituted under the Reserve Bank of India Act, 1934.
2. It consists of six members, with three nominated by the RBI and three appointed by the Central Government.
3. The Governor of the RBI is the ex-officio Chairperson of the MPC.

Which of the statements given above are correct?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

Ans: d)

UPSC Mains Practice Questions

Question: Discuss the limitations of monetary policy in addressing supply-side inflation. Suggest measures for effective fiscal-monetary coordination. **(10 Marks, 150 Words)**



India's maritime sector is undergoing a major digital transformation under initiatives like **Sagarmala** and **Smart Ports**, integrating automation, IoT, and interconnected networks to streamline cargo handling and logistics. However, as highlighted in the Directorate General of Maritime Administration (**DGMA**) advisory, this growing reliance on digital infrastructure exposes critical maritime assets to evolving cyber threats.

Port infrastructure forms the backbone of India's international trade—handling over **95% of trade by volume and 70% by value**. Consequently, a cyber-disruption at key ports poses not just a commercial hazard, but a significant **National Critical Information Infrastructure (NCII)** risk.

Core Takeaways from the DGMA Advisory

- **Expanded Attack Surface:** Adoption of interconnected **Information Technology (IT)** and **Operational Technology (OT)** has blurred traditional security perimeters.
- **Vulnerable Port Assets:** Key systems at risk include:
 - **Terminal Operating Systems (TOS)** (container tracking, quay crane coordination)
 - **Vessel Traffic Management Systems (VTMS)** (navigation and anchorage control)
 - Cargo handling infrastructure, access control, and physical surveillance networks.
- **Vector Profile:** Major threats stem from unauthorized access, ransomware, malware, compromised third-party vendor connections, and insecure remote access protocols.
- **Mandated Action:** Inclusion of explicit cybersecurity threat assessments into the **Port Facility Security Assessment (PFSA)** and **Port Facility Security Plan (PFSP)** as required under the **ISPS Code**.

Static & Governance Frameworks (India & Global)

A. International Frameworks

DGMA warns of rising cyberthreats as ports adopt digital technologies

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With ports increasingly adopting digital technologies and automation, cyberthreats have emerged as a potential risk to maritime security and the continuity of port operations, the Directorate General of Maritime Administration (DGMA) has cautioned in a fresh advisory.

Referring to the International Ship and Port Facility Security Code, the DGMA said the growing dependence of modern ports on interconnected information technology and operational technology systems had created new vulnerabilities that could adversely affect the safety, security and functioning of port facilities.

The advisory said terminal operating systems, cargo handling infrastructure, vessel traffic management systems, access control



Port authorities were advised to test their backup and recovery arrangements to improve resilience against cyberattacks. REUTERS

mechanisms, surveillance networks and communication systems among others were vulnerable to cyber risks.

Incidents of cyberattacks could result from unauthorised access, malware, ransomware attacks, insecure remote access arrangements, third-party access and compromise of interconnected systems, it said.

To strengthen cyberresilience, the DGMA advised

ports to incorporate cybersecurity risk assessments into their Port Facility Security Assessment.

The assessment could identify vulnerabilities, threat possibilities and the impact of cyberattacks on port security and operational continuity. The mitigation measures identified through the exercise should be integrated into the Port Facility Security

Plan. Port authorities were advised to periodically test their backup and recovery arrangements to improve resilience against cyberattacks.

Emphasising the importance of preparedness, the advisory said Port Facility Security Officers and other personnel responsible for security should be aware of cyberattacks. Officers designated for cybersecurity risk management should hold regular awareness programmes, drills, simulations and exercises to assess preparedness and improve response capabilities, it said. The DGMA urged the ports to establish clear procedures for cyberincident reporting, response, containment and recovery, while periodically reviewing and updating cybersecurity measures in line with evolving threats, technological advancements and operational requirements.

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- **ISPS Code (International Ship and Port Facility Security Code):** A mandatory standard under the **SOLAS (Safety of Life at Sea) Convention, 1974** by the International Maritime Organization (IMO). It prescribes security measures for ships and port facilities, recently expanded to mandate cyber-risk integration.
- **IMO Resolution MSC.428(98):** Requires maritime safety management systems to address cyber-risks explicitly.

B. National Regulatory & Institutional Architecture

- **National Critical Information Infrastructure Protection Centre (NCIIPC):** Designated under **Section 70A of the IT Act, 2000** to safeguard systems whose destruction would impact national security, economy, or public health. Ports are designated as critical infrastructure.
- **CERT-In (Indian Computer Emergency Response Team):** The national nodal agency for responding to cybersecurity incidents under **Section 70B of the IT Act, 2000**.
- **Directorate General of Shipping / DGMA:** The statutory body under the Ministry of Ports, Shipping and Waterways enforcing maritime safety and security compliance in Indian waters.

Key Challenges in Securing Port Infrastructure

I. IT vs. OT Convergence Risks

- **Legacy OT Systems:** Operational technology (e.g., physical cranes, valve controls, sensor arrays) was historically designed to run offline without built-in security features. Interconnecting legacy OT with modern IT networks creates exploitable backdoors.

II. Third-Party & Supply Chain Vulnerabilities

- Ports rely heavily on external vendors for software support, maintenance, logistics clearing, and tug services. A breach in a small vendor's network can compromise the primary port network.

III. Threat of Ransomware and State-Sponsored Actors

- Maritime logistics operates on strict time-bound schedules. Ransomware attacks (similar to the 2017 NotPetya attack that crippled global shipping firm Maersk) can cause severe economic losses and supply chain gridlock within hours.

IV. Skilling Deficit among Security Personnel

- Port Facility Security Officers (**PFSOs**) have traditionally been trained in physical security (picket posts, perimeter control, access cards) rather than digital forensics, network monitoring, and threat vector analysis.

Strategic Recommendations & Way Forward

- **Mandate Zero Trust Architecture (ZTA):** Implement strict air-gapping between critical Operational Technology (OT) networks and general corporate IT networks, applying strict access controls regardless of network location.

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- **Integration into PFSA and PFSP:** Formally embed cybersecurity risk mapping into legal security assessments, treating a cyberattack with the same severity as a physical terror threat.
- **Regular Red Teaming & Backup Testing:** Conduct regular simulated cyber-drills, penetration testing, and off-site immutable backup restoration tests to ensure operational resilience.
- **Supply Chain Vendor Audits:** Require mandatory security compliance certifications for all third-party contractors and vendors integrating with port data networks.
- **Establishment of a Maritime CSIRT / Sectoral CERT:** Set up a dedicated Computer Security Incident Response Team (CSIRT-Maritime) to streamline real-time threat intelligence sharing across public and private operational ports in India.
- **Capacity Building & Joint Training:** Conduct inter-agency drills involving NCIIPC, CERT-In, the Indian Coast Guard, and local Port Authorities to upskill PFSOs in cyber threat mitigation.

Conclusion

As India accelerates toward becoming a \$5 trillion economy, modernizing its port infrastructure via automation and digital connectivity is essential for global trade competitiveness. However, digital efficiency cannot come at the expense of national security. Implementing the DGMA guidelines through proactive IT-OT segregation, institutionalized threat drills, and continuous vulnerability assessments will ensure that India's maritime gateway remains both technologically advanced and resilient against dynamic cyber threats.

UPSC Prelims Practice Questions

Question: Which one of the following best describes the Zero Trust Architecture (ZTA) approach to cybersecurity?

- A. Every user and device is trusted once inside the network.
- B. Access is granted only after continuous verification, irrespective of network location.
- C. Cybersecurity is limited to external firewalls.
- D. Critical systems are permanently disconnected from the internet.

Ans:b)

UPSC Mains Practice Questions

Question: Ports constitute a vital component of India's Critical Information Infrastructure. Examine the major cyber threats facing Indian ports and evaluate the institutional mechanisms available to address them. **(10 Marks, 150 Words)**

Page 07 : GS III : Science and Tech/ Preliminary Examination

A major technological breakthrough by the **'Double Chooz' Collaboration** in France has demonstrated that subatomic particles known as **neutrinos** (often called 'ghost particles') can be measured to verify spent nuclear fuel remotely. Published in *Physical Review Letters*, this discovery offers the International Atomic Energy Agency (IAEA) a non-intrusive, remote tool to monitor reactor cores and cooling pools, preventing clandestine diversion of fissile material for nuclear weapons development.

Key Scientific Findings & Core Breakthrough

- **Detection Mechanism:** Nuclear reactors emit vast streams of **anti-neutrinos** during active fission. The study proved that even after reactor shutdown, a residual, low-intensity flux of neutrinos continues to be emitted by decaying fission isotopes such as **Praseodymium-144** (^{144}Pr) and **Rhodium-106** (^{106}Rh).
- **Experimental Proof:** Using a detector placed **400 meters** away from the offline Chooz B nuclear power plant, researchers analyzed a 2.5-week shutdown window:
 - Recorded approximately **106 neutrino candidate events**.
 - Confirmed that **56%** of the residual signal originated from offline reactor cores and **44%** from nearby spent fuel cooling pools.
- **Precision Signature:** The team mapped the distinct energy levels of neutrinos emitted by spent fuel, creating a unique "spectral signature" that serves as a fingerprint for nuclear inventory tracking.

Relevance for Nuclear Non-Proliferation & IAEA Safeguards

A. Preventing Clandestine Fuel Diversion

- **Spent Fuel Monitoring:** If a state removes spent fuel assemblies from cooling pools to reprocess and extract **Plutonium-239** (Pu-239) for weapons production, the "neutrino glow" from the pool instantly drops, alerting international inspectors remotely.
- **Real-time Core Auditing:** Neutrino flux energy profiles shift as fuel burns. By continuously measuring neutrino streams, inspectors can estimate exact plutonium buildup inside a reactor, preventing operators from swapping out fuel prematurely to harvest weapons-grade plutonium.

B. Overcoming Limitations of Legacy Safeguards

- Standard IAEA safeguards rely heavily on physical seals, video surveillance, and manual, on-site inspections.



Daily News Analysis

- Remote neutrino monitoring removes the need for physical entry into radiation-dense containment structures and operates independently of host-nation interference or camera tampering.

Static & Institutional Dimensions

I. Nuclear Physics Concepts

- **Neutrinos:** Fundamental subatomic particles with near-zero mass and no electrical charge. They interact via the **weak nuclear force**, allowing them to pass through solid matter (including shielding and earth) unimpeded.
- **Spent Fuel Pools:** Wet storage pools at nuclear plants where irradiated fuel assemblies are submerged in water to cool down and allow short-lived radioactive isotopes to decay.

II. Institutional Frameworks

- **International Atomic Energy Agency (IAEA):** Established in 1957 under the UN umbrella ("Atoms for Peace"). Implements **Safeguards Agreements** under the **Non-Proliferation Treaty (NPT)** and the **Additional Protocol** to verify that nuclear material is not diverted to military uses.
- **India and IAEA:** India signed an **India-Specific Safeguards Agreement (ISSA)** with the IAEA in 2009, placing its civilian nuclear facilities under IAEA monitoring while keeping military facilities outside its purview.

Challenges in Implementation

- **Detector Size & Shielding Requirements:** Current neutrino detectors are massive (e.g., the Double Chooz detector weighs over 500 tonnes, including 300 tonnes of shielding) to filter out background cosmic rays.
- **Lack of Portability:** Deploying compact, mobile detectors for covert or unannounced inspections at undeclared facilities remains technologically challenging.
- **Cost and Infrastructure:** High capital costs associated with constructing underground or heavily shielded detector installations near commercial reactors.

Way Forward & Strategic Implications

- **R&D in Compact Detectors:** Advance research into advanced scintillation materials and direction-sensitive detectors to drastically reduce detector payload size (as highlighted in Nature Communications studies).
- **Integration with IAEA Additional Protocol:** Incorporate remote neutrino monitoring metrics into international safeguard protocols for future advanced modular reactors (SMRs) and commercial breeder reactors.
- **India's Neutrino Research Context:** Insights from basic neutrino physics research (such as the proposed **India-based Neutrino Observatory / INO**) strengthen national expertise in advanced detector technologies, contributing to both fundamental science and practical applications in nuclear security.

Conclusion

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The breakthrough by the Double Chooz collaboration marks a paradigm shift from **reactive, physical inspection** to **proactive, physics-based verification** in nuclear non-proliferation. While engineering challenges remain in downsizing detector units, remote neutrino signature tracking provides a foolproof, tamper-evident pillar to ensure nuclear technology remains strictly dedicated to peaceful energy production.

UPSC Prelims Exam Study Questions

Question: India signed the India-Specific Safeguards Agreement (ISSA) with the IAEA primarily to:

- A. Place all nuclear facilities, including military facilities, under international safeguards.
- B. Place designated civilian nuclear facilities under IAEA safeguards while keeping strategic facilities outside the agreement.
- C. Become a member of the Nuclear Suppliers Group (NSG).
- D. Accede to the Nuclear Non-Proliferation Treaty (NPT).

Ans:b)

UPSC Mains Exam Study Questions

Question:"Advances in neutrino physics are creating new possibilities for nuclear security and non-proliferation." Discuss.(10 Marks, 150 Words)



Page 08 : GS II & III : Indian Polity and Economy/ Preliminary Examination

The Finance Commission (FC) is a constitutional body established under **Article 280** of the Indian Constitution, designed as a balancing wheel of India's fiscal federalism. It mediates vertical imbalances (between the Union and States) and horizontal imbalances (among various States).

As highlighted by K.J. Joseph, the institutional design of the Finance Commission was never meant to be a routine accounting mechanism. Rather, it acts as a corrective constitutional pillar meant to preserve the federal compact by balancing **efficiency** (incentivizing performance, fiscal discipline, and revenue generation) with **equity** (addressing structural disadvantages, historical backlogs, and regional disparities).

Fiscal federalism, efficiency versus equity concerns

The Finance Commission, an institutional innovation embedded in India's constitutional architecture, was never intended to be a routine allocator of funds. It was designed as a central pillar of India's fiscal federal compact and as a corrective institution that would mediate the inherent asymmetry between a fiscally dominant Union and structurally constrained States, while also addressing deep horizontal inequalities arising from history, geography, and institutional capacity. In a country marked by uneven development at Independence, the Commission's central mandate was to safeguard the interests of the States and thereby preserve a strong Union.

Each successive Commission, cognisant of its historical context, has interpreted this mandate in its own way, yet all have contributed to sustaining India's fiscal federal compact. The recently submitted report of the 16th Finance Commission (FC-16), chaired by Arvind Panagariya and covering the period 2026-31, marks a decisive turning point. While it retains the vertical devolution of central taxes to the States at 41%, it fundamentally re-engineers the structure of fiscal transfers, particularly grants-in-aid. In doing so, it prioritises efficiency and performance but raises serious concerns about equity and constitutional intent. At the heart of the issue lies a deeper question: has the Commission moved away from its equalising role toward one that implicitly protects the Union's fiscal primacy?

The constitutional logic of grants-in-aid
Evidently, the provision for grants-in-aid under Article 275 was not an afterthought; it was a foundational design element. In a country more diverse than any other in the world, tax devolution, however sophisticated its formula, cannot account for the diversity of State-specific needs. For instance, Kerala's "export-oriented" human capital development strategy has accounted for nearly 23% of India's total remittances, thereby strengthening the country's external sector. However, this has come at a cost to the State's fiscal health, as it has had to rely on borrowing to finance investments in education.

Similarly, Punjab has played a critical role in ensuring national food security, but at the cost of its revenue base, by focusing on the production of wheat and rice, which are non-taxable apart from paying the price of being a border State. The same is true of the hill States, which face high infrastructure costs; the north-eastern States, which grapple with connectivity constraints; and fiscally stressed States burdened by demographic pressures and social sector commitments.

Grants-in-aid were therefore conceived as instruments of equalisation, enabling targeted support for States with special needs where formula-based tax devolution falls short. The F-14



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The Sixteenth Finance Commission risks moving away from its core mandate of acting as an equalising force within the federation

and the FC-15 recognised this reality by retaining Revenue Deficit Grants (RDGs), sector-specific grants, and State-specific grants.

The FC-16 departs sharply from this tradition. It recommends grants-in-aid of ₹9.47 lakh crore, compared with ₹10.1 lakh crore under the FC-15, while their share in total Finance Commission transfers has more than halved, from 19.4% to 8.3%. By restricting grants-in-aid to local bodies and disaster management, it eliminates RDGs, sector-specific grants, and State-specific grants.

While retaining the States' share in the divisible pool at 41%, despite the demand from 18 States to raise it to 50%, the Commission presumes that improved fiscal discipline should enable States to manage their finances without additional gap-filling transfers. However, this reasoning rests on a problematic assumption: that fiscal capacity across States is sufficiently uniform for devolution to be self-equalising.

Empirically and historically, this assumption is untenable. The Commission's justification for doing away with RDGs is rooted in concerns about fiscal prudence. It argues that RDGs create moral hazard by incentivising States to underperform in revenue mobilisation or overspend in the expectation of central support.

It also points to aggregate data suggesting that the States, taken as a whole, are not in severe fiscal distress. Yet, this aggregate view masks deep inter-State disparities, with some States remaining fiscally stressed despite contributing disproportionately to national development and continuing to require fiscal assistance. The very purpose of RDGs was to recognise this heterogeneity, as a fiscal surplus in one State cannot offset a fiscal deficit in another.

More troubling is the contrast between the Commission's stance on RDGs and its treatment of cesses and surcharges. While advocating fiscal discipline for States through the withdrawal of RDGs, it stops short of recommending any binding rollback of these non-shareable union levies ignoring the demand by many States.

Dual shift

Instead, it proposes a "grand bargain", whereby the Centre would gradually merge cesses into the divisible pool in exchange for States accepting a lower devolution share. This asymmetry is difficult to overlook. RDGs are removed in the name of discipline, yet cesses – arguably a more distortionary instrument from a federal perspective – are only gently nudged toward reform. The resulting framework imposes stringency on States while preserving fiscal flexibility for the Union. This dual shift, protecting Union revenues while constraining State support, raises a fundamental concern: is the Commission inadvertently reinforcing vertical imbalance rather than correcting it?

The consequences are particularly severe for

States that already face structural disadvantages. As many as eight States, including most of the disadvantaged north-eastern States and fiscally stressed West Bengal, are set to experience a reduced share in both tax devolution and grants-in-aid, while another six States have seen a decline in their share of grants. The problem is further compounded by the reduction in the weight assigned to income distance (from 45% to 42.5%) and the introduction of a 10% weight for contribution to GDP. When combined with the removal of the RDGs, which accounted for about 20% of Finance Commission grants in 2024-25, this creates a double burden: lower tax devolution and the absence of compensatory grants. The Commission's implicit assumption that efficiency should trump equity risks widening regional disparities.

Another defining feature of the FC-16 is its emphasis on tied and performance-based grants, particularly for local governments. While the allocation of nearly ₹7.2 lakh crore to the third tier is commendable, the conditionalities attached to these grants are stringent, linking the release of funds to targets in water and sanitation, revenue mobilisation, and audited accounts. This approach promotes accountability, but it also reduces fiscal autonomy. In effect, the architecture of grants shifts from need-based equalisation to compliance-based incentivisation. Fiscal discipline, while necessary, cannot substitute for fiscal justice.

Efficiency versus equity

The FC-16's report is bold in ambition but uneven in balance. The dismantling of the RDGs and the shift toward performance-based transfers reflect a technocratic confidence in market-like incentives, even though fiscal federalism is a political and constitutional arrangement designed to manage diversity. The contrast between the Commission's strict stance on RDGs and its accommodative approach to cesses and surcharges, along with its hesitation to raise the States' share in the divisible pool to 50% despite demands from several States, reveals a deeper tension.

It suggests a framework that, intentionally or otherwise, protects the fiscal space of the Union while placing a greater adjustment burden on the States. In doing so, the Commission may have moved away from its core mandate of acting as an equalising force within the federation. If the Finance Commission is to continue playing its historic role in holding India together, future Commissions must reward high-performing States while supporting those that continue to face structural disadvantages.

For a country as diverse as India, fiscal federalism cannot be sustained on performance alone; it must be anchored in fairness.

The views expressed are personal

Key Dimensions Raised in the Article

A. The Constitutional Logic of Grants-in-Aid (Article 275)

Daily News Analysis

- **Equalisation Instrument:** Formula-based tax devolution often fails to capture State-specific, structural, or geographical handicaps. Grants-in-Aid under Article 275 bridge this gap.
- **Recognition of Uncompensated National Contributions:**
 - **Kerala:** High social sector spending in education/health created a skilled diaspora (contributing ~23% of national remittances), yet placed severe structural stress on State finances.
 - **Punjab:** Ensured national food security through intensive wheat/rice production, sacrificing long-term tax revenues and ecology.
 - **Hilly/North-Eastern States:** Suffer high capital expenditure costs due to difficult terrain and strategic border dynamics.

B. The Structural Shift in FC Architecture

- **Reduction in Grants-in-Aid:** Grants-in-Aid share in total FC transfers dropped sharply (halving from ~19.4% under FC-15 to ~8.3%).
- **Elimination of Specialised Grants:** Removal of Revenue Deficit Grants (RDGs), sector-specific grants, and State-specific grants, restricting grants predominantly to Local Bodies and Disaster Management.
- **Moral Hazard vs. Structural Heterogeneity:** While the FC argues that RDGs induce moral hazard (discouraging revenue collection), removing them assumes a level playing field across States that does not exist in reality.

C. Asymmetry in Fiscal Discipline (Cesses and Surcharges)

- **Shrinking Divisible Pool:** Non-shareable Union cesses and surcharges reduce the effective share of States in central tax revenues, even while maintaining the nominal devolution rate at 41%.
- **Unbalanced Strings:** While strict fiscal prudence is mandated for States by ending RDGs, central cesses remain uncurbed, creating an asymmetric burden on State budgets.

D. Shift Toward Performance & Market-Like Conditionalities

- **Income Distance vs. Contribution to GDP:** Assigning weight to GDP contribution alongside reducing the weight of income distance shifts the devolution matrix toward high-performing, wealthier States.
- **Tied Grants for Local Bodies:** Linking funds for urban/rural local bodies strictly to targets in sanitation, water supply, and account auditing increases compliance but reduces local fiscal autonomy.

Static & Constitutional Framework of Fiscal Federalism

I. Key Constitutional Provisions

- **Article 270:** Scheme of distribution of net proceeds of Union taxes between the Union and the States (Divisible Pool).
- **Article 275:** Parliamentary grants-in-aid to States in need of assistance, charged on the Consolidated Fund of India.
- **Article 282:** Discretionary grants made by the Union or States for public purposes (often utilized for Centrally Sponsored Schemes).

- **Article 293:** Borrowing powers and financial limitations imposed on States.

Critical Challenges & Trade-offs in Fiscal Devolution

I. Equity Concerns vs. Regional Divergence

- Prioritizing economic performance/GDP contribution over income distance risks deepening the **North-South and Coastal-Inland fiscal divide**.
- States with low historical capacities or unfavorable demographics (e.g., higher dependency ratios) face a double jeopardy of lower tax devolution and zero compensatory gap-filling grants.

II. Encroachment on State Fiscal Autonomy

- Increasing reliance on **tied grants** and **performance metrics** transforms cooperative federalism into a compliance-driven model.
- States lose the flexibility to design localized welfare programs tailored to unique socio-economic realities.

III. Persistence of Vertical Imbalance

- With cesses and surcharges remaining outside the divisible pool, the actual realized transfer to States often falls below the recommended percentage threshold, limiting overall State revenue capability.

Way Forward & Strategic Recommendations

- **Recalibrating the Equity-Efficiency Matrix:** Future policy must strike a hybrid balance where efficiency is rewarded via incentive funds, but core needs and gap-filling mechanisms (like RDGs) are preserved for structurally constrained States.
- **Capping Cesses and Surcharges:** Amend Article 270 or establish a statutory ceiling on cesses/surcharges, ensuring that revenues raised beyond a specific timeline automatically merge into the divisible pool.
- **Institutionalizing State-Specific Nuances:** Incorporate non-monetary national contributions (e.g., environmental stewardship, food security, labor export, strategic border maintenance) directly into horizontal distribution formulas.
- **Enhancing Local Body Autonomy:** Transition from rigid conditional ties to flexible outcome-based monitoring for local body grants, enabling Panchayats and Urban Local Bodies to prioritize local capital creation.

Conclusion

Fiscal federalism in a diverse democracy like India cannot function purely on technocratic market incentives or rigid compliance metrics. While fiscal prudence and revenue efficiency are paramount for macroeconomic stability, they must remain anchored in **fiscal justice and equitable growth**. Preserving the equalising mandate of the Finance Commission is vital to ensuring that no State is left behind, thereby sustaining the structural integrity of the Indian Union.

UPSC Prelims Practice Questions

Question: Grants-in-Aid under Article 275 are primarily intended to:

- A. Finance only Centrally Sponsored Schemes.
- B. Address revenue and developmental needs of States requiring assistance.
- C. Finance only disaster management activities.
- D. Provide loans to State Governments.

Ans: A)

UPSC Mains Practice Questions

Question: "The Finance Commission is the balancing wheel of India's fiscal federalism." Discuss its role in addressing vertical and horizontal fiscal imbalances. **(10 Marks, 150 Words)**



Page 10: GS III : Indian Economy/ Preliminary Examination

The Union Government introduced the **Indian Statistical Institute (ISI) Bill, 2026** in the Lok Sabha to repeal and replace the 67-year-old **Indian Statistical Institute Act, 1959**. Founded in 1931 by **P.C. Mahalanobis**, the ISI is an Institution of National Importance that laid the foundation for India's national sample surveys, economic planning models, and data analytics infrastructure.

While the government frames the Bill as a modernizing reform to align ISI's governance with premier institutes like IITs and IIMs, the proposed overhaul has sparked intense debate among faculty, academics, and policymakers regarding institutional autonomy versus central executive control.

Why is the Indian Statistical Institute Bill controversial?

What changes does the Bill propose to the governance of the ISI?

T.C.A. Sharad Raghavan

The story so far:

The government has tabled a new Bill in Parliament, called the Indian Statistical Institute Bill, 2026, which will replace its approximately 67-year-old predecessor enacted in 1959. While seemingly innocuous, several provisions of the Bill have become contentious, with many faculty members of the Indian Statistical Institute (ISI) and MPs protesting against it.

What is the ISI?

In the 1920s, India's greatest statistician P.C. Mahalanobis set up the Statistical Laboratory in the Presidency College in Kolkata. On December 17, 1931, he founded the Indian Statistical Institute as a "learned society" housed in the Statistical Laboratory. The Institute was registered on April 28, 1932, as a non-profit distributing learned society

under the Societies Registration Act of 1860 and is now registered under the West Bengal Societies Registration Act of 1961, amended in 1964. The ISI quickly became India's premier statistical organisation. It was declared an Institution of National Importance through the Indian Statistical Institute Act, 1959.

What does the Bill seek to change?

At the most basic level, the new Bill seeks to bring ISI's governance structure on par with that of other Institutions of National Importance, such as the Indian Institutes of Management (IIMs) and the Indian Institutes of Technology (IITs).

According to the government, in the IITs and IIMs, compact empowered bodies such as the Board of Governors and executives such as Directors take decisions impacting both the day-to-day functioning and long-term policies of the organisations. However, ISI continues to follow the governance model of a society,

in which significant control is exercised by a large General Body of members of the society. A key outcome of this structure is that any amendment to the regulations can only be carried out with the approval of the General Body.

The government's contention is that since the regulations are prescriptive, even small reforms require the approval of the General Body.

Therefore, the new Bill is aimed at incorporating ISI into a statutory body corporate, strengthening its legal status and providing a "more robust and contemporary governance framework".

What will the governance model be?

The new Bill provides for the creation of a compact Board of Governors that will serve as the principal policy-making executive body of the ISI and will be accountable to the government. It also provides for the creation of an Academic Council as the principal academic body. The Board of Governors will consist of

11 members. The Board will be headed by a Chairperson, who is supposed to be an eminent person "in the field of academia, industry, education, public policy, Statistical Sciences and allied sciences, or other fields" and will be nominated by the Visitor (the President of India) on the recommendation of the Centre.

The government will also nominate a government official not below the level of Joint Secretary to the Government of India. The government's representation will further include another joint secretary or additional secretary.

The Board will include four eminent persons in the field of statistical sciences and allied fields, to be nominated by the Chairperson, and four representatives of the Institute who will include two members of the Academic Council to be nominated by the Board.

The Registrar of ISI will serve as the Secretary of the Board.

What is the controversy around the governance structure?

Ever since the draft Bill was made public last year, professors and officials of ISI have been protesting it. One main contention is that the new governance structure would wrest control of ISI from the people working there and place it in the hands of the Union government. The new structure does give the government direct or indirect control of eight out of the 11 members of the Board of Governors.

Were stakeholders consulted?

The critics say that the Bill has been prepared without consultations with the ISI Society, faculty members, students, or other stakeholders.

The government has argued that as per the review framework in the existing ISI Act, four Review Committees (RCs) have examined the functioning and progress of ISI. The second, third and fourth RCs suggested the reduction in size of the ISI Council, the government said. Despite this, the size of the Council of ISI increased over this period and currently numbers 33 members.

The fourth RC also pointed to certain structural and legacy issues.

Following this, the government said a brainstorming session had been organised by the Ministry of Statistics and Programme Implementation on July 2, 2025, in collaboration with the ISI at the Jawaharlal Nehru Centre for Advanced Scientific Research in Bengaluru under the Chairpersonship of Dr. K. Radhakrishnan, the current Chairman of the ISI Governing Council. The aim was to "deliberate on pathways that can transform ISI into a world-class centre of learning and research, as it completes 100 years in 2031".

The government said, as per the pre-legislative consultation policy, comments and suggestions from the public on the draft Bill were invited and the timelines were extended in line with the requests of various stakeholders.

Key Governance Changes Proposed in the Bill

Governance Dimension	Current Framework (ISI Act, 1959 & Society Model)	Proposed Framework (ISI Bill, 2026)
Legal Status	Registered Society under the West Bengal Societies Registration Act, 1961.	Statutory Body Corporate directly governed by Parliamentary Act.

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Governance Dimension	Current Framework (ISI Act, 1959 & Society Model)	Proposed Framework (ISI Bill, 2026)
Apex Executive Body	33-member ISI Council , combining internal faculty, elected representatives, and external experts.	Compact 11-member Board of Governors (BoG) .
Institutional Head	President of India as Visitor ; BoG Chairperson nominated by Visitor on Centre's advice.	
Director's Appointment	Appointed through existing Council-led democratic processes.	Appointed by the Visitor via a government-constituted Search-cum-Selection Committee .
Academic Body	Academic Council enjoys substantial decision-making autonomy.	Academic Council primarily serves an advisory role to the Board of Governors.
Regulation Amending Power	Requires approval of the broad General Body of the ISI Society .	Vested directly in the Board of Governors , accountable to the Union Government.

Why is the ISI Bill Controversial?

I. Concentration of Executive Power & Loss of Internal Representation

- **Government Dominance on BoG:** Critics point out that out of the 11 proposed members on the Board of Governors, 8 members are directly or indirectly nominated by or affiliated with the Central Government.
- **Elimination of Elected Members:** The shift from a 33-member Council containing elected faculty/staff representatives to an entirely nominated 11-member Board weakens participatory, bottom-up decision-making.

II. Dilution of Academic Autonomy

- **Director's Accountability:** Under the new search-cum-selection process, the Director becomes accountable primarily to the central executive and the Visitor rather than the academic body.
- **Subordination of the Academic Council:** The power of full-time professors to shape institutional priorities, recruitment, and curriculum design is subordinated to an executive Board dominated by government nominees.

III. Disregard for ISI's Unique Identity

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- Critics argue that applying a one-size-fits-all "IIM/IIT model" to ISI overlooks its distinct heritage as a **pioneering research society and statistical laboratory**, where academic flexibility and collaborative research culture driven by scholars were paramount.

IV. Lack of Inclusive Stakeholder Consultation

- Faculty associations, staff unions, and student bodies allege that the draft legislation was prepared without consulting the ISI General Body or internal academic committees.

Government's Rationale & Defense

- **Administrative Modernization:** The 1959 Act is outdated and prescribes rigid administrative processes that delay structural decisions, rule updates, and infrastructure expansion.
- **Recommendations of Review Committees:** Successive Review Committees (including the 4th Review Committee chaired by Dr. R.A. Mashelkar) recommended downsizing the unwieldy 33-member Council to streamline decision-making.
- **Expanding Scope beyond Traditional Statistics:** The Bill expands ISI's remit to cover emerging quantitative disciplines like **Data Science, AI, Cryptology, Machine Learning, and Advanced Analytics** to address nationwide shortages of data talent.
- **National Standards of Accountability:** Establishes clear audit, transparency, and financial management standards expected of public funds given to Institutions of National Importance.

Way Forward & Recommendations

- **Referral to Parliamentary Standing Committee:** Send the Bill to the relevant Parliamentary Standing Committee (Finance/MoSPI) to facilitate structured, transparent consultations with ISI faculty, alumni, and statistical experts.
- **Balanced Board Composition:** Ensure the 11-member Board of Governors includes democratically elected internal peer representatives (faculty and research scientists) alongside ex-officio bureaucrats to safeguard academic independence.
- **Preserving Academic Council Supremacy:** Explicitly designate the Academic Council as the final authority on research agendas, academic appointments, and curriculum design, keeping the Board's focus strictly on administrative and financial oversight.
- **Protecting Regional & Decentred Character:** Ensure statutory recognition of ISI's historical headquarters in Kolkata while supporting its regional centres in Delhi, Bengaluru, Chennai, and Tezpur.

Conclusion

The Indian Statistical Institute Bill, 2026 reflects a broader policy dilemma in Indian higher education: balancing executive accountability and operational efficiency with institutional autonomy and academic freedom. For a foundational research body like ISI—which drives nation-building through credible data and analytical rigor—reforms must modernize governance without dismantling the peer-led democratic culture that fostered its global scientific reputation.

UPSC Mains Exam Study Questions

Ques: "Institutional autonomy and public accountability are complementary rather than competing principles." Discuss in the context of the proposed Indian Statistical Institute Bill, 2026. **(10 Marks, 150 Words)**

Page : 08 : Editorial Analysis

A climate resilience pathway between India and China

This year, El Niño delayed the monsoon in India. When the rains arrived, they were intense, with cities such as Mumbai and Surat receiving a month's rainfall in a matter of days. Regions in Assam and Odisha have experienced severe flooding, resulting in loss of life and damage to infrastructure. Similar conditions have recently affected large swathes of China's provinces, particularly Guangxi, Shaanxi and Gansu. Such extreme weather events are becoming increasingly common, threatening economic growth, food security, and public well-being in the two most populous countries.

In both cases, experts attribute these short, high-intensity bursts to climate change which is causing higher atmospheric temperatures and rapidly warming oceans. Mitigating and recovering from these frequent and large-scale events will become increasingly important for China and India to address. Given the scale of the challenge, could climate resilience become an opening for India-China cooperation?

Similar climate extremes

India and China confront remarkably similar challenges. Rapid urbanisation has replaced wetlands, forests, and permeable surfaces with concrete. Changing weather patterns, combined with outdated drainage systems, poor waste management, rapid urbanisation, and a lack of green spaces, have aggravated waterlogging and flooding. Coastal megacities face the combined risks of extreme precipitation, storm surges, and sea-level rise, while inland cities grapple with heatwaves, droughts, and flash floods occurring in quick succession. These challenges demand scientific collaboration, technological innovation, stronger local governance, and community participation. The costs of inaction include disrupted supply chains, economic losses, declining productivity, and mounting public health risks. This may be the right moment for renewed engagement between India and China. After years of strained ties, bilateral relations are showing tentative and slow signs of improvement.



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Shared climate
challenges
create
opportunities
for India-China
cooperation

In April 2026, the visit by a Chinese delegation led by China's Special Envoy for Climate Change to New Delhi suggests that climate cooperation remains a priority. Within the area of climate and clean energy, identifying key issues for engagement is important. Collaboration in areas such as green technology and critical minerals remains challenging due to economic competition and geopolitical tensions. Disaster mitigation and urban resilience could offer a relatively low-risk pathway for rebuilding trust.

Past engagement, sister city agreements

A mapping of India and China's climate engagement in a recent paper by the Centre for Social and Economic Progress (CSEP) shows that there is precedent for such engagement. Beginning from the early 1990s until 2020, there were several summit-level joint statements, agreements and Memoranda of Understanding (MoUs) calling for practical cooperation on climate change. Topics included climate-induced disasters such as floods, earthquake, droughts and extreme weather events. These MoUs promised facilitation of joint research and development, hydrological, oceanic and seismic data sharing, and exchange of governance practices. During the six Strategic Economic Dialogues, policymakers discussed sustainable urban planning, waste management, sewage treatment, water efficiency and capacity building.

Practical implementation of joint projects in these areas was formally agreed upon in the multiple sister city agreements – Delhi-Beijing, Mumbai-Shanghai, and Chennai-Chongqing. Yet, disruptions in diplomatic engagement resulted in little on-ground action.

China demonstrates the importance of embedding resilience into core urban and rural planning investment decisions. This includes using data-driven approaches to drive policies in transport, housing and drainage systems. India's strength lies in adaptive governance, spearheading community-led strategies for targeted interventions in vulnerable populations.

Successes in India have been seen in early warning systems, heat action plans, cool roofs and nature-based solutions. There has to be engagement between state and non-state actors. Officials from municipal governments can enable knowledge and policy exchanges on urban design such as sponge cities, drainage modernisation and waste management.

Beyond urban issues, rural livelihoods and resilient agricultural practices for food security become salient points for mutual learning. Joint collaboration between planning agencies and academic institutions can improve systems for hydrological modelling and integrating regional and indigenous knowledge into climate adaptation strategies. A critical aspect will be addressing challenges of the melting glacial systems in the shared Himalayan ecosystem. While India and China had agreements on shared water resources, they ceased to function in 2022.

The finance gap

A major barrier to climate adaptation remains financing, with both countries relying heavily on public funds to carry out their policies. Bridging this gap requires greater private sector participation through tools such as blended finance, municipal bonds, and credit enhancement. However, these are nascent ecosystems, constrained by limited local capacity and regulatory gaps. Evidence-based studies and knowledge exchanges between India and China on these models could provide an innovative avenue for engagement. Such cooperation would not only benefit both countries but also enable them to shape climate resilience norms across the Global South through stronger standards, metrics, and fiscal frameworks.

Climate change impacts transcend national borders, from Europe's heatwaves to Asia's heavy monsoon floods. Greater coordination and cooperation could provide India and China with a pathway for a low-risk, win-win engagement.

The views expressed are personal

GS Paper III: Environment

UPSC Mains Exam Practice Questions: Rapid urbanization has increased the frequency and intensity of urban flooding in India. Discuss the causes and suggest suitable mitigation strategies. **(10Marks, 150 Words)**

Context : The Rapid urbanization, combined with rising global temperatures and warming oceans, has accelerated extreme weather events—such as short, high-intensity rainfall bursts, urban flash floods, and severe heatwaves—across both India and China.

As highlighted by Shruti Jargad, while geopolitical friction and economic competition hinder deep bilateral engagement in high-stakes green technologies (like EVs, batteries, and critical minerals), **disaster risk mitigation and urban climate resilience** offer a low-risk, high-impact "low-politics" entry point to rebuild trust between the world's two most populous nations.

Common Climate Vulnerabilities & Shared Challenges

A. Urban Flooding & Infrastructural Stress

- **Extreme Precipitation Events:** Unprecedented cloudbursts and short-duration, high-volume rainfall overload municipal drainage systems (e.g., severe flooding in Mumbai, Surat, Guangxi, Shaanxi, and Gansu).
- **Impermeable Urban Landscapes:** Concrete expansion has encroached upon natural wetlands, floodplains, and urban forests, exacerbating the "urban heat island" effect and waterlogging risks.

B. Coastal & Inland Environmental Hazards

- **Coastal Megacities:** Face combined threats of sea-level rise, cyclone-induced storm surges, and high-tide coastal inundations (e.g., Mumbai, Chennai, Shanghai, Tianjin).
- **Inland Vulnerabilities:** Compound climate shocks involving alternating cycles of flash floods, severe heatwaves, and agricultural droughts.

C. Shared Transboundary Ecosystems

- Both nations share fragile ecology in the **Third Pole (Hindu Kush Himalayas)**. Accelerated glacial retreat threatens river basins (Brahmaputra/Yarlung Tsangpo, Indus, Mekong) that support over 1.5 billion people downstream.

3. Synergies & Lessons for Mutual Learning

I. China's Strengths: Infrastructure & Technological Planning

- **Sponge City Concept:** Integration of permeable pavements, rain gardens, constructed wetlands, and subterranean storage tanks directly into municipal zoning plans.
- **Data-Driven Urban Planning:** Application of spatial data analytics, hydrological modeling, and predictive monitoring for urban transport, drainage, and housing layout design.

II. India's Strengths: Adaptive Governance & Community Resilience

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- **Heat Action Plans (HAP):** Pioneered in Ahmedabad and replicated across several states, incorporating cool roofs, public water points, and health worker alerts.
- **Early Warning & Disaster Preparedness:** Decentralized disaster management networks (NDRF/SDRF), last-mile alerting systems, and nature-based solutions driven by community action.

Historical Precedents & Existing Obstacles

A. Past Engagement Mechanisms (1990s–2020)

- **High-Level Agreements:** Multiple bilateral MoUs and Joint Statements called for data-sharing on hydrological flows, oceanic dynamics, and seismic threats.
- **Subnational Partnerships:** Formation of **Sister City Agreements** (e.g., Delhi-Beijing, Mumbai-Shanghai, Chennai-Chongqing) and discussions within the **Strategic Economic Dialogue (SED)** on sewage, solid waste management, and urban transport.

B. Key Obstacles to Operationalization

- **Geopolitical & Strategic Trust Deficit:** Border standoffs and diplomatic friction led to the breakdown or stalling of institutionalized dialogue channels (including shared river data mechanisms).
- **The Adaptation Finance Gap:** Both countries rely overwhelmingly on public exchequers to fund climate adaptation. Nascent green finance frameworks (such as municipal bonds, credit enhancement, and blended finance) lack regulatory maturity and private sector scale.

Way Forward & Strategic Recommendations

- **Reviving "Low-Politics" Subnational Exchanges:** Reactivate **Sister City agreements** with a focused mandate on technical exchanges between urban local bodies (ULBs) regarding drainage modernization, waste treatment, and nature-based solutions.
- **Restoring Transboundary Hydrological Data Mechanisms:** Re-establish real-time hydrological data sharing for Himalayan river systems to enable effective downstream early warning and disaster mitigation.
- **Academic & Scientific Minilateralism:** Leverage regional platforms like **BRICS, SCO, ICIMOD**, and Asian Development Bank (ADB) networks to foster non-governmental academic collaboration on regional climate modeling.
- **Innovating Climate Finance Architecture:** Jointly develop and standardize green finance instruments—such as resilience bonds and blended finance guidelines—to attract global and domestic private capital.

Conclusion

Climate change does not observe sovereign borders. While strategic and economic competition will continue to shape India-China relations, climate resilience provides a pragmatic, mutually beneficial pathway. By framing urban resilience, disaster

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preparedness, and agricultural adaptation as shared non-traditional security priorities, India and China can protect vulnerable populations while establishing a model of climate leadership across the Global South.

