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**EDITORIAL ANALYSIS**

# Water at the Core — India Must Build Climate Resilience from the Ground Up

THE HINDU

17 March 2026

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## CURATED &amp; WRITTEN BY

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# Water at the Core — India Must Build Climate Resilience from the Ground Up

 The Hindu

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GS3

GS2

 The Hindu

MAINS RELEVANCE:

GS Paper 3

GS Paper 2



## INTERVIEW ANGLE

*"India signed up to the Belém Adaptation Indicators at COP30, committing to measurable water security benchmarks. But India's water governance remains fragmented between multiple ministries and State governments. How should India restructure its water institutions to meet the climate adaptation challenge by 2030?"*

## WHY IN NEWS

India endorsed the 59 Belém Adaptation Indicators framework at COP30 (Belém, Brazil, November 2025), committing to measurable benchmarks on water security, flood and drought resilience, and sanitation. With COP30 commitments now requiring domestic follow-through, The Hindu's editorial argues that water security must become the central pillar of India's climate adaptation strategy — not a footnote in environmental policy.

## THE EDITORIAL ARGUMENT

Climate change is, at its most fundamental level, a water crisis. Floods, droughts, glacial retreat, saline intrusion into coastal aquifers, erratic monsoons — every major climate impact on India is a water impact. Yet India's climate adaptation architecture remains fragmented: water governance is split between the **Ministry of Jal Shakti**, the **Ministry of Environment, Forest and Climate Change (MoEFCC)**, state irrigation departments, river basin authorities, and the National Disaster Management Authority (NDMA). The editorial calls for water security to be elevated to a national climate priority, operationalised through the Belém framework's measurable indicators and backed by dedicated adaptation financing.

## INDIA'S WATER STRESS REALITY

India holds **4% of the world's freshwater resources** but supports **18% of the world's population**. The water crisis is not uniform — it is spatially and temporally uneven:

**Peninsular India** (Maharashtra’s Vidarbha, parts of Andhra Pradesh, Karnataka, Tamil Nadu): Chronic water scarcity, recurring droughts, farmer distress

**Northeast India and Himalayan foothills:** Excess water — floods, cloudbursts, glacial lake outburst floods (GLOFs)

**Indo-Gangetic Plain:** Groundwater depletion from agricultural over-extraction (Punjab, Haryana, western UP)

**Coastal zones** (Sunderbans, Kerala backwaters, Odisha coast): Saline intrusion into freshwater aquifers from sea level rise

ISRO’s study (released in early 2026) documented that the **August 2025 Dharali flash flood** in Uttarakhand was triggered by the collapse of an ice patch from the **Srikanta Glacier** — a GLOF event. Himalayan glaciers are losing approximately **0.5 metres of vertical height annually** since 2000. The Hindu Kush Himalaya (HKH) region is warming **twice as fast** as the global average. If current trends continue, **75% of Himalayan glacier volume** could be lost by 2100, threatening the water security of **1.3 billion people** who depend on rivers fed by these glaciers.

## THE COP30 BELÉM FRAMEWORK: WHAT INDIA COMMITTED TO

**COP30** was held in **Belém, Brazil** in November 2025 — significant because it was the first COP in the Amazon region, keeping biodiversity and water under the spotlight. The negotiations produced the **UAE Framework for Global Climate Resilience (UFGCR)** target update, introducing **59 Belém Adaptation Indicators** — measurable benchmarks that countries must report progress against.

Key indicators relevant to India:

Indicator Category	Target
Reducing water scarcity	Measurable reductions in water-stressed populations
Flood and drought resilience	Climate-resilient infrastructure in flood/drought-prone areas
Safe drinking water access	Universal access metrics
Climate-resilient sanitation	WASH systems resilient to climate shocks
Multi-hazard early warning systems	Universal coverage target: <b>2027</b>
National vulnerability assessments	Updated assessments: <b>2030</b>
Adaptation financing	Global target: <b>\$1.3 trillion/year by 2035</b>

The Belém indicators shift the global climate discourse from ambition to **accountability** — countries must now report measurable progress, not just policy intent. For India, this creates both an obligation and an opportunity to reform its water governance architecture.

## INDIA'S EXISTING WATER GOVERNANCE ARCHITECTURE

India has built significant institutional infrastructure for water management:

### **MINISTRY OF JAL SHAKTI (CREATED 2019)**

Formed by merging the Ministry of Water Resources, River Development & Ganga Rejuvenation with the Ministry of Drinking Water and Sanitation. This merger was designed to address the fragmentation between irrigation/river policy and drinking water/sanitation policy — but inter-ministerial coordination gaps persist at the state level.

### **JAL JEEVAN MISSION (JJM)**

Launched 2019. Target: Tap water connections to all 190 million rural households by 2024 (since extended). As of 2026, over 80% of rural households have functional tap connections — a major achievement. However, **water quality** (contamination from arsenic, fluoride, nitrates) and **functional reliability** of supply remain challenges.

### **NATIONAL MISSION FOR CLEAN GANGA (NMCG) / NAMAMI GANGE**

₹20,000 crore programme for Ganga rejuvenation — covering sewage treatment, industrial effluent control, afforestation of Ganga floodplains, and biodiversity restoration. The Ganga is both India's holiest river and an ecological crisis zone.

### **NATIONAL AQUIFER MAPPING AND MANAGEMENT PROGRAMME (NAQUIM) 2.0**

**NAQUIM** maps aquifer geometry, capacity, recharge rates, and quality across India. Version 2.0 (2024 onwards) focuses on translating mapping data into **Aquifer Management Plans (AMPs)** — community-level groundwater governance frameworks. The editorial notes that data collection has outpaced implementation: India has excellent aquifer maps but inadequate governance structures to act on them.

### **WATER VISION 2047**

India's long-term water policy framework, aligned with the **Amrit Kaal Vision 2047**, integrating water security with economic development goals.

## THE IMPLEMENTATION GAPS

The editorial identifies four critical gaps between India's policy ambitions and on-the-ground reality:

**1. Data fragmentation:** India's hydrological data exists in silos — Central Water Commission data, state irrigation department data, groundwater board data, ISRO satellite data — with minimal integration and real-time synthesis. AI-powered water management systems require unified data pipelines that do not yet exist.

**2. Financing uncertainty:** Climate adaptation financing is globally uncertain. The \$1.3 trillion/year target (by 2035) agreed in Paris Agreement updates is far from mobilised. India's own National Adaptation Fund is underfinanced relative to the scale of climate vulnerability. Green Climate Fund allocations to India have been modest.

**3. Centre-State coordination failure:** Water is a **State subject** under India's constitutional federal structure (Entry 17 of State List). The Centre can only nudge through conditional grants and flagship schemes — it cannot mandate state-level water governance reforms. This creates a patchwork of varying quality across 28 states.

**4. Urban water invisibility:** India's focus on rural drinking water (JJM) has left urban water governance — affecting 500+ million urban residents — without an equivalent nationwide reform programme. Urban water utilities are financially weak, loss-making, and unable to invest in climate-resilient infrastructure.

## THE 360-DEGREE VIEW: IS WATER-CENTRIC CLIMATE POLICY SUFFICIENT?

### The case for this approach:

Water systems are the most direct transmission mechanism of climate change — making them the logical focus of adaptation

India's constitutional and demographic reality makes a water-focused, decentralised approach more politically feasible than top-down emission reductions

The Belém indicators provide accountability — India needs measurable benchmarks, not aspirational goals

Water security and development are inseparable: agricultural productivity, public health, urban growth, and industrial activity all depend on water

### Limitations and alternative perspectives:

Water security alone cannot address climate change — India must also decarbonise its economy (coal accounts for ~75% of electricity generation; transport emissions are rising rapidly)

Climate adaptation without mitigation is a losing battle — adaptation buys time but does not solve the problem

The \$1.3 trillion global adaptation finance target has no credible mobilisation pathway — developing countries cannot wait for promised Northern financing

**Justice dimension:** Climate-vulnerable communities (Adivasi forest communities, small farmers, coastal fisherfolk) must be centred in adaptation planning, not treated as passive beneficiaries

## THE WAY FORWARD

The editorial recommends:

**Appoint a National Chief Water Officer** — a single institutional anchor for India’s water security strategy, cutting across the Jal Shakti, Environment, Agriculture, and Urban Development ministries

**Real-time integrated hydrological data platform** — merge CWC, CGWB, ISRO, and state data into a single dashboard for anticipatory water management

**Urban Water Jeevan Mission** — equivalent to JJM for urban areas: universal metering, 24x7 supply, sewage treatment

**Community-level Aquifer Management Plans (AMPs)** — operationalise NAQUIM 2.0 data through gram panchayat-level water governance committees

**Dedicated Climate Adaptation Finance** — create a Green Bond framework for water infrastructure; leverage the Sovereign Green Bond framework (India issued first in 2023) for water adaptation projects

**Early warning integration** — connect India’s DAMINI lightning app, IMD forecasts, CWC flood monitoring, and ISRO satellite systems into a single community-accessible multi-hazard early warning platform

#### UPSC RELEVANCE

Belém Adaptation Indicators (59; COP30, 2025, Belém Brazil); UAE Framework for Global Climate Resilience; Ministry of Jal Shakti (created 2019, merger of two ministries); Jal Jeevan Mission (2019, 190 million rural households); NAQUIM 2.0 (aquifer mapping); Water Vision 2047; GLOF (Glacial Lake Outburst Flood); Dharali flash flood (Aug 2025, Srikanta Glacier); Himalayan glacier loss rate (0.5m/year); COP30 held in Belém, Brazil; IEA standard for water reporting.

#### MAINS GS3:

India’s water security challenges; climate change and water — floods, droughts, glacial retreat; India’s water governance institutions; COP30 and Belém framework; climate adaptation financing; NAQUIM and groundwater governance.

#### MAINS GS2:

Water as a State subject; Centre-State coordination in water management; federalism and national missions; constitutional basis of Centre’s role in water policy.

## ★ FACTS CORNER — KNOWLEDGEPEDIA

### INDIA'S WATER STRESS:

- India's share of global freshwater: **4%**; global population share: **18%**
- Himalayan glaciers: losing **~0.5m vertical height/year** since 2000
- HKH warming rate: **2x the global average**
- 75% glacier volume loss projected by 2100 if trends continue
- People dependent on Himalayan rivers: **1.3 billion**
- Dharali flash flood (Aug 2025): triggered by Srikanta Glacier ice patch collapse (ISRO study 2026)

### COP30 — BELÉM FRAMEWORK:

- COP30: November 2025, **Belém, Brazil** (first COP in Amazon)
- UAE Framework for Global Climate Resilience: introduced 59 Belém Adaptation Indicators
- Multi-hazard early warning systems: universal coverage target **2027**
- National vulnerability assessments: updated by **2030**
- Global adaptation finance target: **\$1.3 trillion/year by 2035**

### INDIA'S WATER INSTITUTIONS:

- Ministry of Jal Shakti: created **2019** (merged Ministry of Water Resources + Ministry of Drinking Water & Sanitation)
- Jal Jeevan Mission: launched 2019; target: tap water to 190 million rural HHs; 80%+ achieved (2026)
- NAQUIM 2.0: National Aquifer Mapping and Management Programme; translates maps → Aquifer Management Plans (AMPs)
- Water Vision 2047: India's long-term water security framework
- NMCG / Namami Gange: ₹20,000 crore; Ganga rejuvenation
- India's first Sovereign Green Bond: issued **2023**; framework covers water adaptation projects

### OTHER RELEVANT FACTS:

- Water: Entry 17 of **State List** (7th Schedule, Indian Constitution) — Centre cannot mandate state water governance
- CWC = Central Water Commission (nodal body for water resources, under Jal Shakti)
- CGWB = Central Ground Water Board (regulation and management of groundwater)
- GLOF = Glacial Lake Outburst Flood; India's Hindu Kush Himalayan glaciers are among world's most GLOF-vulnerable
- Global climate-vulnerable countries: India ranks among top 10 (ND-GAIN Country Index)

Sources: The Hindu, Vajiramandravi, ISRO, COP30/UNFCCC

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