

7. Water Security in India - Geography

The global observance of World Water Day on March 22, 2026, themed "Water and Gender," has underscored the transition of water from a basic developmental utility to a critical strategic and human security priority. As India grapples with declining per capita availability and systemic mismanagement, the discourse has shifted toward a holistic "Water Security" framework.

1. Background

World Water Day

Origin - Declared by the United Nations at the 1992 Rio Earth Summit; first observed in 1993.

Objective - To advocate for the sustainable management of freshwater resources and achieve SDG 6 (Clean Water and Sanitation).

2026 Focus - The "Water and Gender" theme highlights how water scarcity disproportionately impacts women, who often serve as the primary collectors and managers of household water.

Defining Water Security

Water security is the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development.

The Paradigm Shift - Moving away from "Physical Scarcity" (just the amount of water) to "Water Insecurity" (lack of safety, reliability, equity, and governance).

2. The Four Pillars of Water Security

I. Availability (Adequacy of Resources)

Current State - India's per capita water availability has declined to ~1486 m³ (2021), pushing it into the "water-stressed" category.

Groundwater Crisis - India is the world's largest extractor (~245.64 BCM). Northwestern states like Punjab and Haryana face severe aquifer depletion.

II. Accessibility (Equity in Distribution)

Social Justice - Insecurity often stems from uneven distribution rather than absolute lack.

Gendered Burden - Women bear the "time poverty" of fetching water, which impacts their education, health, and economic participation.

Infrastructure - While the Jal Jeevan Mission has expanded tap coverage, regional disparities between urban hubs and remote hamlets persist.

III. Quality (Safety and Potability)

Contamination - Widespread presence of Arsenic, Fluoride, and Nitrates in groundwater.

Waste Management - Only 29% of urban wastewater is currently treated, leading to the "public health crisis" of water-borne diseases.

IV. Resilience (Long-term Sustainability)

Climate Shocks - Systems must withstand erratic monsoons, glacial retreats (Himalayas), and "Day Zero" risks in cities.

Ecosystem Health - Protection of wetlands and natural recharge zones is vital for disaster risk reduction.

3. Comparison - Water Scarcity vs. Water Insecurity

Feature	Water Scarcity	Water Insecurity
Focus	Physical volume/quantity of water.	Quality, reliability, and governance.
Primary Cause	Natural drought or over-extraction.	Institutional failure, pollution, and inequity.
Solution	Supply-side (Dams, Pipelines).	Demand-side (Policy, Conservation, Recycling).
Human Impact	Lack of water for crops/thirst.	Health risks, gender inequality, and social conflict.

4. Drivers and Challenges in India

Structural Pressures

Agricultural Distortion – Agriculture uses ~85% of freshwater. Policies like free electricity and MSP for water-intensive crops (Rice/Sugarcane) in arid regions (Punjab/Maharashtra) incentivize "water mining."

Urbanization – High "Non-Revenue Water" (30–50% loss due to leakages) and reliance on private "tanker mafias."

Ecological and Climate Threats

Groundwater Mining – Extraction levels in cities like Gurgaon reach 195%, far exceeding natural recharge capacity.

Climate Change – Erratic rainfall disrupts natural recharge cycles; projections suggest groundwater depletion could triple by 2080.

Case Study – The Jal Saheli Movement

In the drought-prone Bundelkhand region, women-led collectives (Jal Sahelis) have transformed from "water carriers" to "water managers."

Action – Reviving traditional ponds, check dams, and managing water budgeting.

Impact – Reduced drudgery, empowered female leadership, and significantly decreased distress migration.

5. India's Policy and Constitutional Framework

Constitutional Provisions

Fundamental Right – Derived from Article 21 (Right to Life), as affirmed in *Subhash Kumar v. State of Bihar* (1991).

State Subject – Entry 17 (List II) gives states power over water supply and irrigation.

Union List – Entry 56 (List I) allows the Centre to regulate inter-state rivers in the public interest.

Key National Initiatives

Jal Jeevan Mission – Aiming for 100% Functional Household Tap Connections (FHTCs).

Atal Bhujal Yojana – Focuses on community-led groundwater management and behavioural change.

PM-Krishi Sinchai Yojana – Focuses on "Per Drop More Crop" via micro-irrigation.

AMRUT Mission – Developing urban sewerage and water infrastructure.

6. Way Forward – Strategic Recommendations

Integrated Water Resource Management (IWRM) – Transition from fragmented administrative boundaries to River Basin and Aquifer-based management.

Demand-Side Efficiency – Shift from flood irrigation to drip systems and diversify crops away from paddy in water-scarce zones.

Circular Water Economy – Mandatory reuse of treated wastewater for industrial and cooling purposes to preserve fresh water for domestic use.

Digital Governance – Deploying IoT-based smart metering and GIS tools for real-time monitoring of extraction and leakages.

Nature-Based Solutions – Reviving traditional water harvesting systems (like the *Ahar-Pyne* of Bihar or *Stepwells* of Rajasthan) alongside modern engineering.

Source – <https://www.newsonair.gov.in/pm-modi-urges-citizens-to-conserve-water-use-it-responsibly-on-world-water-day/>