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DAILY EDITORIAL ANALYSIS

TOPIC

INDIA'S WATER CRISIS & WATER RESOURCES GOVERNANCE

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Context

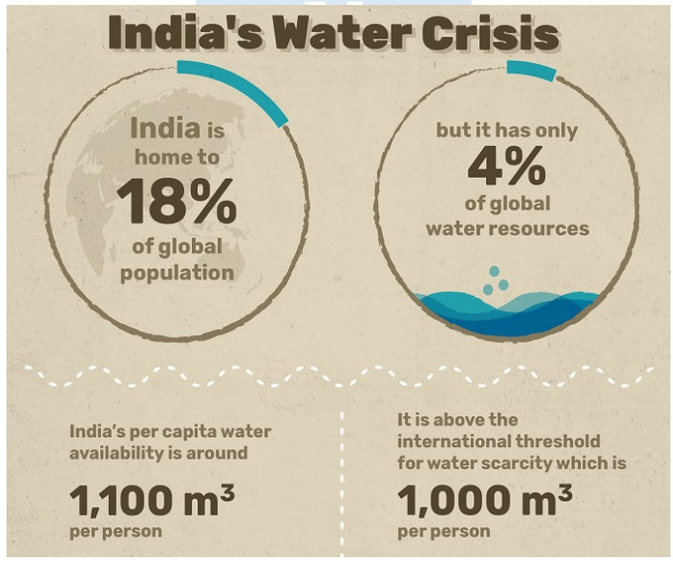
- As India aims to achieve **SDG-6 (Clean Water and Sanitation)** and realise its vision of becoming a **developed nation by 2047**, strengthening water governance will be critical for economic growth, food security, and social stability.

About India's Water Paradox: Abundance Amid Scarcity

- India supports nearly **18% of the global population** but possesses only about **4% of the world's freshwater resources**. According to the **NITI Aayog Composite Water Management Index (2018)**:
  - Around **600 million Indians** face high to extreme water stress.
  - Nearly **21 major cities** risk groundwater depletion.
  - Water demand is projected to exceed supply by 2030.
- At the same time, India receives substantial rainfall annually, nearly **4,000 billion cubic metres (BCM)**.
  - But only around **1,100 BCM** is considered utilisable because of inadequate storage infrastructure, uneven geographical distribution of rainfall, seasonal concentration of monsoon rains, and ecological and environmental limitations.
- Thus, the crisis is less about availability and more about efficient management.

Declining Per Capita Water Availability

- **Growing Stress on Water Resources:** India's per capita water availability has sharply declined: above 5,000 cubic metres (1951); and around 1,400 cubic metres (present).



  - This decline is driven by population growth, urbanisation, industrialisation, and climate variability.
  - India is approaching the threshold of **water stress** (1,700 cubic metres) and may soon enter the category of **water scarcity** (below 1,000 cubic metres).
- **Crisis Related To Groundwater:** India is the **largest user of groundwater globally**, accounting for nearly **25% of global extraction**.
  - Groundwater has enabled Green Revolution-led agricultural expansion, rural drinking water supply, and livelihood security.
  - However, over-extraction has resulted in falling water tables, drying wells, land subsidence, and water quality deterioration.
  - States such as Punjab, Haryana, Rajasthan, and parts of Karnataka face severe groundwater depletion.
  - It highlights that India's water challenge is fundamentally an **institutional and governance crisis**.

Institutional Architecture of Water Governance in India

- **Constitutional and Federal Structure:** Water is primarily a **State subject** under the **Schedule VII of the Constitution.** However, the Union government plays a coordinating and policy-support role.
- **Key Institutions:**
  - **Ministry of Jal Shakti:** Nodal ministry for water resources, drinking water, and sanitation. It was formed by merging ministries dealing with water resources and drinking water.
  - **Central Water Commission (CWC):** It focuses on surface water management, flood control, river basin planning, and dam safety.
  - **Central Ground Water Board (CGWB):** It assesses groundwater resources, and provides scientific inputs for aquifer management.
  - **NITI Aayog:** It introduced the **Composite Water Management Index (CWMI)** to promote competitive and cooperative federalism in water governance.

Major Government Initiatives

- **Jal Jeevan Mission (JJM):** It was launched in 2019 to provide **functional household tap connections (FHTCs)** to rural households.
  - It enhances rural health and sanitation, reduces burden on women, and strengthens decentralised water management.
  - The mission has now been extended till **2028**.
- **Atal Bhujal Yojana (ATAL JAL):** It focuses on sustainable groundwater management in water-stressed regions. Its key **features** include community participation, water budgeting, aquifer mapping, and behavioural change.
  - It marks a shift from supply-side to demand-side management.
- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY): Its** objective is 'Per Drop More Crop'. Its **components** are micro-irrigation, drip and sprinkler systems, and water-efficient agriculture.
  - Irrigation efficiency is vital since agriculture consumes nearly **80% of India's freshwater.**
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Mission:** It aims to improve urban water supply, develop sewage treatment systems, and promote wastewater reuse.
  - Urban India faces increasing pressure from rapid population growth and pollution.
- **Namami Gange Programme:** Integrated river rejuvenation programme focusing on pollution control, sewage treatment, biodiversity conservation, and riverfront development.
  - It reflects a basin-based approach to river governance.

Challenges in Water Governance

- **Institutional Fragmentation:** Multiple agencies handle irrigation, drinking water, groundwater, sanitation, and urban water supply.
  - It creates policy overlaps, coordination failures, and weak accountability.
- **Interstate Water Disputes:** Conflicts such as Cauvery dispute, Krishna water dispute, and Ravi-Beas conflict show the limitations of cooperative federalism in water sharing.
- **Climate Change:** Changing rainfall patterns are increasing floods, droughts, and extreme weather events. It necessitates climate-resilient water governance.
- **Pollution and Water Quality:** According to CPCB reports, rivers are heavily polluted due to untreated sewage and industrial discharge; and groundwater contamination by arsenic and fluoride affects several States.

Way Forward: Towards a Circular Water Economy

- **Need for Integrated Water Resource Management (IWRM):** India needs to transition from a linear "use and discard" model to a circular water economy.

- **Key measures include:**
  - **Wastewater Recycling:** Reuse treated wastewater in industry and agriculture; and reduce freshwater demand.
  - **Efficient Irrigation:** Crop diversification, water-efficient crops, and precision agriculture.
  - **Rainwater Harvesting:** Urban rooftop systems, and revival of traditional tanks and ponds.
  - **Technological Innovation:** Smart metering, GIS mapping, IoT-based monitoring, and aquifer mapping.
  - **Community Participation:** Panchayat-led water governance, local water budgeting, and participatory groundwater management.
- India's water future depends not merely on rainfall but on governance reforms. The following steps are essential:
  - Strengthening river basin management authorities
  - Enhancing Centre-State coordination
  - Promoting data-driven policymaking
  - Encouraging behavioural change in water use
  - Integrating climate adaptation into water planning
  - Expanding wastewater reuse and recycling
  - Improving urban water infrastructure
- A sustainable and equitable water governance framework is indispensable for achieving SDG-6, food security, public health, economic resilience, and environmental sustainability.

Daily Mains Practice Question

[Q] Discuss the major issues associated with water resources governance in India. Examine the effectiveness of recent government initiatives in ensuring sustainable and equitable water management.

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