

## **Bengaluru's Water Crisis: A Wake-Up Call for India**

Bengaluru is facing a worsening water crisis, leading to significant shortages in various areas. According to the reports, 223 of the 236 talukas in Karnataka are affected by drought, including Mandya and Mysuru districts, the sources of Bengaluru's water. As summer intensifies, about 7,082 villages across Karnataka are at risk of witnessing a drinking water crisis in the coming months.

### **Reasons behind Bengaluru's Severe Water Scarcity:**

- **Reduced Rainfall and Empty Water Reservoirs:**
  - ❖ The city has witnessed insufficient rainfall in the past couple of monsoons. This has significantly impacted the Cauvery River, a primary source of water for the city. Lower river levels mean less water for drinking and agriculture.
  - ❖ Karnataka received a 38% deficit in north-east Monsoon showers from October to December. The State received a 25% deficit in southwest monsoon rain from June to September.
  - ❖ As per information from the Karnataka State Natural Disaster Management Centre (KSNDMC), the water levels in Cauvery Basin reservoirs like Harangi, Hemavathi, and Kabini are at 39% of their total capacity as of 2024.
- **Depletion of Groundwater Sources:**
  - ❖ Bengaluru's explosive growth has resulted in the concretisation of natural landscapes that used to absorb rainwater. This reduces groundwater recharge and increases surface runoff, leading to less water percolation.
  - ❖ Residents rely on borewells to supplement the water supply. However, with falling rain and excessive extraction, groundwater levels are rapidly declining, causing many borewells to dry up.
- **Inadequate Infrastructure:**
  - ❖ The city's infrastructure, including water supply systems and sewage networks, has not kept pace with its rapid growth. This inadequacy exacerbates the challenges of distributing water efficiently to meet the demands of the expanding population.
  - ❖ The anticipated completion of Phase-5 of the Cauvery project, designed to provide 110 litres of drinking water daily to 12 lakh people, is expected by May 2024.
- **Climate Change:**

- ❖ Changing weather patterns, including erratic rainfall and prolonged droughts, attributed to climate change, have reduced the availability of water in Bengaluru's reservoirs and natural water bodies.
- ❖ The Indian Meteorological Department attributes the region's poor rainfall to the El Niño phenomenon.
- Pollution of Water Bodies:
  - ❖ Pollution from industrial discharge, untreated sewage, and solid waste dumping has contaminated water sources, rendering them unfit for consumption and further reducing the available water supply.
  - ❖ A study conducted by the Environmental Management & Policy Research Institute (EMPRI) states that about 85% of Bengaluru's water bodies are polluted by industrial effluents, sewage, and solid waste dumping.
- Mismanagement and Inequitable Distribution:
  - ❖ Inefficient water management practices, including wastage, leakage, and unequal distribution of water resources, contribute to the severity of the water scarcity crisis, with some areas receiving inadequate or irregular water supply.
- Legal and Political Challenges:
  - ❖ Disputes over water sharing between Karnataka and neighbouring states, particularly with regard to rivers like the Cauvery, further complicate efforts to manage and secure water resources for Bengaluru's residents.
  - ❖ There is an ongoing tussle between the central and state governments concerning the distribution and allocation of funds aimed at addressing the drought situation in Karnataka.

### **Current Status of the Groundwater Crisis in India:**

- Lack of Water Availability:
  - ❖ Despite supporting 17% of the world's population, India possesses only 4% of the world's freshwater resources, making it challenging to meet the water needs of its vast populace.
  - ❖ A report titled "Composite Water Management Index (CWMI)", published by NITI Aayog in June 2018, mentioned that India was undergoing the worst water crisis in its history; that

nearly 600 million people were facing high to extreme water stress; and about 200,000 people were dying every year due to inadequate access to safe water.

- Groundwater Overuse or Overexploitation:
  - ❖ India is the largest groundwater user in the world, with an estimated usage of around 251 bcm per year, more than a quarter of the global total.
  - ❖ With more than 60% of irrigated agriculture and 85% of drinking water supplies dependent on it, and growing industrial/urban usage, groundwater is a vital resource.
  - ❖ It is projected that the per capita water availability will dip to around 1400 m<sup>3</sup> in 2025, and further down to 1250 m<sup>3</sup> by 2050.
- Groundwater Contamination:
  - ❖ Groundwater contamination is the presence of pollutants such as bacteria, phosphates, and heavy metals from human activities including domestic sewage.
  - ❖ The NITI Aayog report mentioned that India was placed at the rank of 120 amongst 122 countries in the water quality index, with nearly 70% of water being contaminated.
  - ❖ In parts of India, high levels of arsenic, fluoride, nitrate, and iron are also naturally occurring in groundwater, with concentrations likely to rise as water tables fall.
- Lack of Access to Safe Drinking Water:
  - ❖ Millions of Indians lack access to safe drinking water and improved sanitation, leading to a high incidence of waterborne diseases.
  - ❖ The water crisis in India is compounded by a growing demand for clean water, particularly from a fast-growing middle class, and widespread practices of open defecation, leading to health-related concerns.

### **Steps Should Be Taken to Address the Water Crisis in India:**

- Interlinking of Rivers:
  - ❖ The national interlinking of rivers (ILR) is the idea that rivers should be interconnected, so that water from the surplus rivers and regions could be transferred to deficient regions and rivers to address the issue of water scarcity.
- Promote Water Conservation:
  - ❖ Implementing water conservation measures at individual, community, and national levels is crucial.
  - ❖ This includes promoting rainwater harvesting, efficient irrigation techniques, and minimising water wastage in domestic, industrial, and agricultural sectors.
- Invest in Infrastructure:
  - ❖ Allocate adequate financial resources for water infrastructure development, maintenance, and rehabilitation.

- ❖ Explore innovative financing mechanisms such as public-private partnerships, water tariffs, and user fees to mobilise funding for water projects.
- Promote Sustainable Agriculture:
  - ❖ Encourage farmers to adopt water-efficient farming practices such as drip irrigation, precision agriculture, crop rotation, and agroforestry.
  - ❖ Providing incentives and subsidies for implementing water-saving technologies can facilitate this transition.
  - ❖ As per the MS Swaminathan committee report on 'More Crop and Income Per Drop of Water' (2006), drip and sprinkler irrigation can save around 50% of water in crop cultivation and increase the yield of crops by 40-60%.
- Address Pollution:
  - ❖ Combat water pollution by enforcing strict regulations on industrial discharge, sewage treatment, and agricultural runoff.
  - ❖ Implementing wastewater treatment plants and adopting eco-friendly practices can help reduce pollution levels in rivers, lakes, and groundwater sources.
- Legislation and Governance:
  - ❖ Strengthen water governance frameworks by enacting and enforcing water-related legislation, policies, and regulatory mechanisms.
  - ❖ Establishing local, regional, and national water management authorities can facilitate coordinated decision-making and implementation of water management strategies.
  - ❖ Introducing minimum support policies for less water-intensive crops can reduce the pressure on agricultural water use.
- Community Participation:
  - ❖ Strengthening community participation and rights in groundwater governance can improve groundwater management.
  - ❖ World Bank projects for groundwater governance in peninsular India were successful on several fronts by implementing the Participatory Groundwater Management approach (PGM).
- Adopt One Water Approach:
  - ❖ One Water Approach, also referred to as Integrated Water Resources Management (IWRM), is the recognition that all water has value, regardless of its source.
  - ❖ It includes managing that source in an integrated, inclusive and sustainable manner by including the community, business leaders, industries, farmers, conservationists, policymakers, academics and others for ecological and economic benefits.

**References:**

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