



## Mains Practice Question

**Q.** Evaluate the extent of the groundwater crisis in India and suggest strategies to mitigate its consequences. (250 words)

11 Mar, 2024 GS Paper 1 Geography

### Approach

- Start the answer with a discussion that sets a context for the question.
- Evaluate the extent of the groundwater crisis in India.
- Suggest strategies to mitigate its consequences
- Conclude suitably.

### Introduction

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.

### Body

#### The Current State 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.
- A few numbers from the **World Bank** highlight the plight the country is facing:
  - **163 Million Indians lack access to safe drinking water.**
  - **210 Million Indians lack access to improved sanitation.**
  - **21% of communicable diseases are linked to unsafe water.**
  - **500 children under the age of five die from diarrhoea each day in India.**
- **Future Projections:**
  - The **NITI Aayog** report projected the country's water demand to be twice the available supply by 2030, implying severe scarcity for hundreds of millions of people and an eventual loss in the country's **GDP**.
  - **The rate of depletion of groundwater in India during 2041-2080 will be thrice** the current rate with global warming, according to a new report.
  - Across climate change scenarios, the researchers found that their estimate of **Groundwater Level (GWL)** declines from 2041 to 2080 is 3.26 times current depletion rates on average (from 1.62-4.45 times) depending on the Climate model and **Representative Concentration Pathway (RCP)** scenario.

Steps Ahaed 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.

## Conclusion

By fostering inclusive participation from all stakeholders, and implementing sound policies that prioritise long-term sustainability over short-term gains, India can pave the way toward a future where every Indian has access to safe and reliable groundwater.

PDF Reference URL: <https://www.drishtias.com/mains-practice-question/question-8198/pnt>

