



## Addressing the Issue of Water Scarcity

This editorial is based on [“Don’t let water scarcity boil over”](#) which was published in the Hindu BusinessLine on 24/02/2023. It discusses the Issue of Water Scarcity in India and steps need to be taken to tackle it.

**For Prelims:** World Bank, GDP, Ganga, Godavari, Krishna, Brahmaputra, National Water Policy 2012, Pradhan Mantri Krishi Sinchayee Yojana, Jal Shakti Abhiyan- Catch the Rain Campaign, Atal Bhujal Yojana

**For Mains:** Water Resources, Conservation of Resources, Reasons for the Water Scarcity in India and ways to address it.

As India’s population continues to grow and with most people still engaged in agriculture, water scarcity can be all the more debilitating. According to a report by US-based World Resources Institute (2015), **approximately 54% of people living in India are already experiencing water scarcity.**

Similarly, a [World Bank](#) report estimates that the average per capita water available will **decline from 1588 cubic meters to less than half that by 2030.** Another study on climate change and water by the World Bank in 2016 has warned that the countries with water scarcity could lose up to 6% of their [Gross Domestic Product \(GDP\)](#) by 2050.

Since irrigation has **become increasingly scarce in many parts of the country**, farmers are experiencing many difficulties cultivating crops; in some states, farmers have even committed suicide citing crop failure. Such occurrences can affect the **country’s food security.**

As the **overall economic growth of our country is still heavily dependent on the agriculture sector** — which also accounts for about 90% of the water consumed — India needs to address water scarcity more urgently than other countries.

### What are the Reasons for the Water Scarcity in India?

#### ▪ Changes in Water Storage:

- Although the **number of large irrigation dams has increased from 236 in 1960 to 5,334 in 2020**, the gross water availability of dams dwindles during summer.
- Studies show that **perennial rivers like [Ganga](#), [Godavari](#) and [Krishna](#) dry up in many places during summer.**
- It is estimated that the **level of groundwater in Ganga and [Brahmaputra](#)**, which are said to be the largest groundwater rich river basins in the world, declines by 15-20 mm per year.
- Owing to human and other interventions in the catchment area, **the sediment deposit in the water storage area of major and medium dams has increased**, which is reducing the total water storage.

- **Agricultural Demand:**
  - The Ministry of **Water Resources** has estimated that the country's total water demand may exceed the amount of water available for use by 2050, due to the rapid economic development and increasing population.
- **Cultivation of more Water-Intensive Crops:**
  - Due to income and market-related reasons, **farmers have been cultivating more water-intensive crops in recent years.**
    - For example, between 1990-91 and 2020-21, the area under water-intensive [sugarcane](#) increased by 32%, [paddy](#) by 6%, and banana by 129%.
  - This has **led to a rapid increase in the demand for water in recent times.**
- **Unequal Distribution:**
  - Unequal distribution of water resources across different regions of the country is also a major issue. Some regions have abundant water resources while others face acute shortages.
- **Over-extraction of Groundwater:**
  - Over-extraction of groundwater for agriculture, industries, and domestic purposes has led to the depletion of groundwater levels in many parts of the country.
  - This has made it **difficult for people to access water for their daily needs.**
- **Pollution:**
  - The pollution of rivers, lakes, and other water bodies has made it difficult to use water for drinking, irrigation, and other purposes.
  - Industries and urban areas discharge untreated waste into water bodies, which not only pollutes the water but also reduces its availability.

## What are the Related Steps taken?

- [National Water Policy, 2012](#)
- [Pradhan Mantri Krishi Sinchayee Yojana](#)
- [Jal Shakti Abhiyan- Catch the Rain Campaign](#)
- [Atal Bhujal Yojana](#)

## How India should Address the Issue of Water Conservation?

- **Encouraging Rainwater Harvesting:**
  - India receives a significant amount of rainfall each year, especially during the monsoon season.
    - For example, in a single day, **Mumbai received 950 mm of rainfall in 2005**, Chennai 494 mm in 2015, and Mount Abu 770 mm in 2017. In November 2022, Sirkazhi in Tamil Nadu received 420 mm of rainfall in a single day.
  - By implementing [rainwater harvesting systems](#), India can collect and store rainwater for later use. This can be done by building rainwater harvesting structures like rooftop rainwater harvesting, percolation pits, and recharge wells.
- **Maintaining Small Water Bodies:**
  - India has a vast network of small water bodies like ponds, lakes, and tanks, which play a vital role in recharging groundwater and providing water for irrigation.
    - The 5<sup>th</sup> Minor Irrigation Census mentions that **India has a total of 6.42 lakh small water bodies.** Due to lack of proper maintenance, their storage capacity has been declining.
    - As a result, the irrigated area of tanks has declined sharply from 45.61 lakh hectares in 1960-61 to 16.68 lakh hectares in 2019-20.
  - By **restoring and maintaining these small water bodies**, India can help conserve water and improve the availability of water in nearby communities.
- **Removing Silting:**
  - Silting is a significant problem in many rivers, lakes, and ponds in India.
  - Over time, sediment and debris accumulate at the bottom of water bodies, reducing their storage capacity and impairing water quality.

- By removing the silt and debris, **India can restore the storage capacity of water bodies and improve the quality of water.**
- **Implement Efficient Irrigation Methods:**
  - Agriculture is the largest consumer of water in India. Therefore, the **government should promote efficient irrigation methods such as drip irrigation and sprinkler irrigation**, which can reduce water wastage and improve crop yield.
- **Adopt Water-Efficient Technologies:**
  - The government should encourage the adoption of water-efficient technologies such as low-flow toilets, water-efficient washing machines, and dishwashers, which can significantly reduce water usage.
- **Promote Awareness:**
  - The government should conduct awareness campaigns to educate people about the importance of water conservation and the need to use water judiciously.

### **Drishti Mains Question**

Water scarcity has emerged as a critical environmental and socio-economic issue across the world. Discuss the causes and consequences of water scarcity, and suggest effective measures to address this issue in India.

## **UPSC Civil Services Examination, Previous Year Question (PYQ)**

### **Prelims**

**Q.1. Which one of the following ancient towns is well known for its elaborate system of water harvesting and management by building a series of dams and channelizing water into connected reservoirs? (2021)**

- (a) Dholavira
- (b) Kalibangan
- (c) Rakhigarhi
- (d) Ropar

**Ans: (a)**

- The city of Dholavira was located on Khadir Beyt in the Rann of Kutch, where there was fresh water and fertile soil. Unlike some of the other Harappan cities, which were divided into two parts, Dholavira was divided into three parts, and each part was surrounded with massive stone walls, with entrances through gateways.
- There was also a large open area in the settlement, where public ceremonies could be held. Other finds include large letters of the Harappan script that were carved out of white stone and perhaps inlaid in wood.
- This is a unique find as generally Harappan writing has been found on small objects such as seals.
- Being the 6th largest of more than 1,000 Harappan sites discovered so far, and occupied for over 1,500 years, Dholavira not only witnesses the entire trajectory of the rise and fall of this early civilization of humankind, but also demonstrates its multifaceted achievements in terms of urban planning, construction techniques, water management, social governance and development, art, manufacturing, trading, and belief system.
- With extremely rich artefacts, the well-preserved urban settlement of Dholavira depicts a vivid picture of a regional centre with its distinct characteristics, that also contributes significantly to the existing knowledge of Harappan Civilization as a whole.
- **Therefore, option (a) is the correct answer.**

**Q.2. With reference to 'Water Credit', consider the following statements: (2021)**

1. It puts microfinance tools to work in the water and sanitation sector.
2. It is a global initiative launched under the aegis of the World Health Organization and the World

Bank.

3. It aims to enable the poor people to meet their water needs without depending on subsidies.

**Which of the statements given above are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Ans: (c)**

- WaterCredit is a program that addresses one of the major barriers to safe water and sanitation i.e. affordable financing. WaterCredit helps bring small loans (microfinance) to those who need (poor people) access to affordable financing and expert resources to make household water and toilet solutions a reality. WaterCredit is the first to put microfinance tools to work in the water and sanitation sector. **Hence, statement 1 is correct.**
- The model empowers people to address their own water and sanitation needs in developing countries who often lack access to traditional credit markets. It eliminates the need for subsidies. **Hence, statement 3 is correct.**
- WaterCredit is a global initiative launched by Water. org, a non-profit organization working to bring water and sanitation to the world. **Hence, statement 2 is not correct. Therefore, option (c) is the correct answer.**

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### **Mains**

**Q.1** What are the salient features of the Jal Shakti Abhiyan launched by the Government of India for water conservation and water security? **(2020)**

**Q.2** Suggest measures to improve water storage and irrigation system to make its judicious use under the depleting scenario. **(2020)**