



Preserving the Precious- Groundwater

This article is based on [“Preserving the precious: On ground water use”](#) which was published in The Hindu on 14/11/2022. It talks about the depleting ground water resource in India and related challenges.

For Prelims: Groundwater Depletion, Climate change, National Water Policy, 2012 Pradhan Mantri Krishi Sinchayee Yojana, Jal Shakti Abhiyan- Catch the Rain Campaign, Atal Bhujal Yojana, Green corridors, Drip and Sprinkler irrigation, Rainwater Harvesting.

For Mains: Current State of Groundwater Extraction in India, Issues Related to Groundwater Depletion, Current Government Initiatives Related to Groundwater Management.

India is home to **17% of the world’s population**, but only holds **4% of the world’s [freshwater resources](#)**. Not only is **water scarce in India**, but the **extraction of groundwater has been on the rise for decades**.

Since the 1960s, the government’s support for the [“Green revolution”](#) to ensure food security has **increased the demand for groundwater for agriculture**.

[Groundwater pollution](#) and the effects of [climate change](#), including erratic rainfall in the drier areas, put **additional stress on groundwater resources**. Overexploitation rates pose threats to **livelihoods, [food security](#), climate-driven migration and human development**.

It is therefore necessary to devise a mechanism for **replenishing aquifers** and ensuring **sustainable use of groundwater**.

What is the Current State of Groundwater Extraction in India?

- India is the **world’s largest user of groundwater**, where groundwater contributes to more than **60% of the country’s [irrigation resources](#)**.
 - This over-extraction of groundwater is non-renewable since **recharge rates are less than extraction rates** and replenishing this resource can take thousands of years.
- The **2022 assessment of the [Ministry of Water Resources](#)** suggests that **groundwater extraction is the lowest since 2004**.
 - A decrease in groundwater extraction may indicate better water management, however, the report called the **National Compilation on Dynamic Ground Water Resources of India** also says that the **improvement is only “marginal”**.

What are the Current Government Initiatives Related to Groundwater Management?

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

What are the Issues Related to Groundwater Depletion?

- **Unregulated Pumping:** Several states affected by depletion of groundwater provide **free or heavily subsidised power** (including [solar pumps](#)) for pumping groundwater for irrigated **agriculture**. This enables overexploitation and depletion of scarce groundwater resources.
- **Preference to Water-intensive Crops:** The [minimum support price](#) for wheat and rice creates **highly skewed incentive structures** in favour of wheat and paddy, which are water intensive crops and depend heavily on ground water for their growth. This makes **groundwater a heavenly resource for their farming**.
- **Lack of Ground-Water Regulation:** The government of India regulates groundwater exploitation in water-stressed states through **“notification” of highly overexploited blocks**.
 - However, **only about 14% of the overexploited blocks in the country are currently notified**.
- **Rising Population and Urbanisation:** Rising **population and urbanisation** has increased demand for water for **domestic and industrial needs**. limited surface water resources lead to the **over-exploitation of groundwater resources**.
- **Climate Change - Sinking Water Table: Draughts, flash floods, and disrupted monsoon events** are recent examples of climate change events that are placing pressure on India's groundwater resources.
 - And since, **wells, ponds and tanks are drying up** as groundwater resources come under increasing pressure due to **over-reliance and unsustainable consumption**. This has escalated the [water crisis](#).

What Should be the Way Forward?

- **River Catchment Management:** Creation of [green corridors](#), mapping of channels for **potential recharge zones** to store floodwater and **artificial groundwater recharge structures in the urban areas** (where groundwater is five-six metres below the surface), will subsequently contribute to reducing groundwater depletion.
 - The use of **dysfunctional bore wells for recharging groundwater** with clean rainwater will also be a good option.
- **Surface Waterbody Management:** Restoration of **ponds, lakes** and other traditional water resource structures should be an **integral part of the development projects of urban and rural areas**, and it will substantially develop groundwater potential.
- **Wastewater Management:** **Dual sewage system for grey water and black water** and promoting **reuse of the recycled water** in agriculture and horticulture should be promoted.
 - Industries should also be encouraged to increase **water use efficiency, effluent treatment and zero liquid discharge**.
- **Water Efficient Agriculture:** Agriculture alone consumes more than **80% of groundwater in the Ganga basin**.
 - Water-efficient irrigation systems like [drip and sprinkler irrigation](#) should be made mandatory. Also, balanced farming of water-extensive crops and **use of treated wastewater for irrigation should be adopted**.
- **Groundwater Security Plan:** Sustainable groundwater management including initiating suitable action for **compulsory rainwater harvesting** should be taken by different state governments.
 - Further, the Central Government should promote the concept of **conjunctive use of surface and groundwater** based on the **village/gram panchayat level groundwater security plan** prepared in a scientific manner through participation of communities/stakeholders.
- **Social Regulation of Groundwater:** A **Participatory groundwater management approach**

should be followed to **empower communities in a defined aquifer area** by providing **governance rights, community awareness, capacity development, and knowledge** and motivation for **social regulation of ground water** and the implementation of coordinated actions.

Drishti Mains Question

Discuss major reasons for the sinking groundwater table in India. Also suggest measures to tackle this problem.

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)

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)

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)