



Protecting Our Groundwater: A Priority for a Sustainable Future

This editorial is based on [“Protecting groundwater through safe sanitation”](#) which was published in The Hindu Business Line on 29/12/2022. It talks about Groundwater depletion in India and related challenges.

For Prelims: Central Ground Water Board (CGWB), Climate change, Groundwater aquifers, Deforestation, Soil erosion, saltwater intrusion, Pradhan Mantri Krishi Sinchayee Yojana, Jal Shakti Abhiyan- Catch the Rain Campaign, Atal Bhujal Yojana, Aquifer Mapping and Management Programme, Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

For Mains: Major Causes of Groundwater Depletion in India, Issues Associated with Depleting Ground Water, Government Initiatives Related to Groundwater Conservation.

[Groundwater depletion](#) in India is a major concern because it is the primary source of drinking water. Some of the main causes of groundwater depletion in India include **over-extraction of groundwater for irrigation, urbanisation, and climate change.**

According to the [Central Ground Water Board \(CGWB\)](#) of India, approximately **70% of the total water used in India is from groundwater sources.** However, the CGWB also estimates that around **25% of the country's total groundwater extraction is unsustainable,** meaning that it is being extracted at a faster rate than it can be replenished.

Overall, groundwater depletion in India is a serious problem that needs to be addressed through **sustainable water management practices, such as improved irrigation techniques** and conservation efforts.

What are the Major Causes of Groundwater Depletion in India?

- **Over-extraction of Groundwater for Irrigation:** Irrigation accounts for around **80% of total water use in India,** and much of this water is sourced from groundwater.
 - As **demand for food continues to grow,** more and more groundwater is being extracted for irrigation, leading to depletion.
- **Climate change:** Rising temperatures and [changing precipitation patterns](#) can alter the recharge rates of [groundwater aquifers,](#) making them more vulnerable to depletion.
 - **Draughts, flash floods, and disrupted monsoon events** are recent examples of climate change events that are placing pressure on India's groundwater resources.
- **Poor Water Management:** Inefficient use of **water, leaky pipes, and inadequate infrastructure** for capturing and storing rainwater can all contribute to groundwater depletion.
- **Decrease in Natural Recharge:** The natural recharge of groundwater aquifers can be decreased by factors such as [deforestation,](#) which can lead to [soil erosion](#) and **reduce the amount of water** that is able to seep into the ground and replenish the aquifers.

What are the Issues Associated with Depleting Ground Water?

- **Water Scarcity:** As groundwater levels drop, there may not be **enough water available for domestic, agricultural, and industrial use**. This can lead to water shortages and conflicts over water resources.
- **Land Subsidence:** When groundwater is extracted, the **soil can become compacted, leading to land subsidence** (the sinking or settling of the land). This can cause damage to infrastructure, such as **roads and buildings**, and can also increase the risk of flooding.
- **Environmental Degradation:** Depleting groundwater can also have negative impacts on the environment. For example, when **groundwater levels drop**, it can cause [saltwater intrusion in coastal areas](#), leading to the **contamination of freshwater resources**.
- **Economic Impacts:** Groundwater depletion can also have economic impacts, as it can lead to **reduced agricultural production** and increased costs for water treatment and pumping.
- **Lack of Depletion Data:** Indian government regulates groundwater exploitation by "notifying" highly overexploited blocks in water-stressed states.
 - However, **only about 14% of overexploited blocks** are currently notified.

What are the Government Initiatives Related to Groundwater Conservation?

- [Pradhan Mantri Krishi Sinchayee Yojana](#)
- [Jal Shakti Abhiyan- Catch the Rain Campaign](#)
- [Atal Bhujal Yojana](#)
- [Aquifer Mapping and Management Programme](#)
- [Atal Mission for Rejuvenation and Urban Transformation \(AMRUT\)](#)

What Should be the Way Forward?

- **Water Conservation:** In the urban areas (where groundwater is five-six metres below the surface), it is possible to reduce groundwater depletion by **creating [green corridors](#), mapping channels for potential recharge zones to store floodwater**, and creating artificial groundwater recharge structures.
 - The use of **dysfunctional bore wells for recharging groundwater** with clean rainwater will also be a good option.
- **Regulation of Ground Water Extraction:** Implementing regulations to control the extraction of groundwater can help to ensure that it is not being **over-exploited**.
 - The requirement for a **Water Impact Assessment** should be made mandatory for all industries, in addition to introducing a "**Blue Certification**" program which rates industries according to the **amount of water they recharge and reuse**.
- **Promoting the Use of Alternative Sources of Water:** Encouraging the use of **alternative sources of water**, such as **treated wastewater**, can help to reduce the demand for groundwater.
 - Developing a [dual sewage system](#) for **grey water and black water**, as well as promoting the reuse of recycled water in agriculture and horticulture, should be promoted.
- **Water Education and Awareness:** Raising awareness about the **importance of conserving water and the need to prevent groundwater depletion** can help to encourage individuals and communities to adopt sustainable water use practices.

Drishti Mains Question

"What are the main causes of groundwater depletion in India and what measures can be taken to prevent it? Discuss with examples."

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)**