EDITORIAL ANALYSIS

Time: 10 min **Date: 01-11-2023**

Groundwater Extraction: Every Drop Counts

Syllabus: GS3/ Agriculture

Context

- A recent report published by United Nations University shows that 78 percent of the wells in the state are overexploited.

Groundwater extraction in India

- **About:**
  - India pumps up the most groundwater globally — more than China and the US combined.
  - According to the Central Ground Water Board, about 70 percent of the water used in the country is from groundwater sources.
- **Causes of groundwater depletion:**
  - **Green revolution:** While the expansion in groundwater-based irrigation helped meet the rising food demands of a large population of India, it has resulted in several environmental implications.
  - **Groundwater pumping for irrigation:** It remains the primary driver of groundwater depletion, which can further affect food and water security in India under climate change.
  - **Pumping groundwater from aquifers:** Water flows freely through the saturated rocks known as aquifers. There are large and small aquifers, and they are the underground water reserves that absorb water and hold it, enabling us to pump it for use.
  - **Climate change:** The activities that lead to groundwater depletion come mostly from humans, but a portion of it also comes from changes in our climate and can speed up the process.

Issues & challenges

- **Lack of institutional innovations:**
  - The emphasis on the use of tubewells and borewells played an important role in ensuring food security.
  - In 2016, the Mihir Shah Committee pointed out, there has been little emphasis on institutional innovations in the water sector.
- **Mismanagement of groundwater:**
  - The link between power subsidies and the falling water table in states such as Punjab has been long apparent.

    - Yet, addressing demand-side management remains a complex problem.
- **Reports on groundwater depletion:**
    - A report published by **United Nations University** has warned that 27 of the 31 aquifers in the country are depleting faster than they can be replenished.
        - The report shows that 78 percent of the wells in the state are overexploited.
    - Several other reports, including those commissioned by the **Niti Aayog and the Central Water Commission**, have underlined the poor state of the country's aquifers.
- **Potential of climate crisis:**
    - In recent years, researchers have joined the dots between **groundwater extraction and the climate crisis**.
    - The problem could become acute in the country's **southwest**, where **aquifers of hard rock** already impose limits on **recharging**.
    - **Hotter temperatures** could leave less moisture to soak in the soil and replenish groundwater sources.

<u>Government initiatives for groundwater conservation</u>

- **Atal Bhujal Yojana:**
    - The Union Jal Shakti Ministry initiated the Atal Bhujal Yojana in 78 water-stressed districts.
    - The programme, which commenced in 2020, aims to bring about behavioural changes at the community level in seven states.
    - Ministry data does show that groundwater extraction for irrigation, domestic and industrial uses came down by about 6 billion cubic metres in 2022 from 2020.
- **Central Ground Water Board (CGWB):**
    - It is the apex organisation of the ministry of jal shakti in dealing with groundwater and related issues.
- **Jal Shakti Abhiyan:**
    - The government launched Jal Shakti Abhiyan (JSA) in 2019 in 256 water stressed districts in the country in collaboration with states to improve water availability, including groundwater conditions in the country.
- **National Water Policy:**
    - It has been formulated which advocates rainwater harvesting and conservation of water and highlights the need for augmenting the availability of water through direct use of rainfall.
- **National Aquifer Mapping and Management programme (NAQUIM):**

    - NAQUIM is being implemented by CGWB as part of Ground Water Management and Regulation (GWM&R) scheme which is a Central Sector scheme.

Suggestions

- **Individual-centric conservation:**
    - Reducing water consumption for luxury purposes, such as **decorative water features**, and unnecessary **outdoor water use like swimming pools**.
    - Conserving water by **turning off faucets**, limiting appliance usage, and **avoiding wasteful practices** at home can save substantial amounts of water.
- **Individual monitoring of groundwater:**
    - To prevent excessive use, it is crucial to have a thorough understanding of our groundwater resources.
    - The use of technologies that **allow people to monitor the water available** in their borewells could be the first step to nudge them to manage aquifers responsibly.
    - These could be the catalyst for bringing about behavioural changes.
- **Managing water pollution:**
    - Chemicals from **businesses and residential areas** often end up in water systems, **polluting** larger bodies of water and infiltrating the ground.
    - By using fewer chemicals and ensuring their proper disposal, we can prevent toxic substances from contaminating our water supply.
- **Need of 'Regulations' & 'research and funding':**
    - Adequate funding should be allocated to research and monitoring efforts, allowing us to set limits and adopt sustainable practices that ensure responsible use of groundwater.
    - Stricter regulations should be implemented to govern groundwater pumping, with specific guidelines and enforcement.
- **Exploring alternative water sources:**
    - By utilizing alternative methods, we can reduce the reliance on groundwater and allow aquifers to replenish naturally.
    - This approach also provides the **opportunity to develop sustainable practices** and **technologies** that minimize water usage.
- **Management of agricultural practices:**
    - Adoption of water-saving technologies like a sprinkler, drip irrigation and maybe switching to less water-intensive crops may help use the limited groundwater resources more effectively.
    - In recent years, the Centre has been trying to promote less thirsty crops like millets and the use of efficient watering techniques.

Way ahead

- The gravity of the crisis is such that **much more is required** from the Centre and the states.
- We need coordinated efforts to solve this water availability and food security issue, which should be supported by science-led policy decisions on what strategies and technology solutions to scale out to improve irrigation efficiency.

Daily Mains Question

[Q] Examine the connection between groundwater extraction and the climate crisis. Suggest policy measures to manage the challenge of water availability and food security in India.