

Groundwater Recharge

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Water is the basis need for all living organisms in the earth. Water are in many form, one of that is groundwater. Now a days groundwater needs to be increase.

Groundwater recharge is natural process, where water moves downwards from surface water to groundwater to increase the water table.

Groundwater is a vital water supply for humanity. It provides drinking water entirely or in part for as much as 50% of the global population and accounts for 43% of all of water used for irrigation. Worldwide 2.5 billion people depend solely on groundwater resources to satisfy their basic daily water needs.

In India, groundwater is the backbone of india's agriculture and drinking water security in rural and urban area, meeting nearly 80% of the country's drinking water and two thirds of its irrigation needs.

How groundwater is recharges

Natural groundwater recharge occurs as precipitation fall on the land surface, infiltrate into soils and moves through pore spaces down to the water table . Also recharge can occur a surface water leakage from river, stream and lakes.

India groundwater

Groundwater in India is a critical resource however, an increasing number of aquifers are reaching unsustainable level of exploitation.

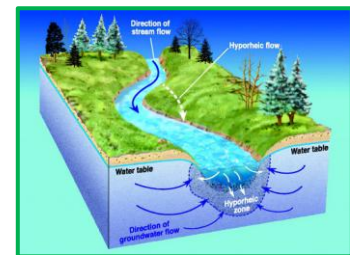
If current trends continue, in 20 years about 60% of all india's aquifer will be in a critical condition says a world band reports.

India is the largest user of groundwater in the world. It uses an estimated 230cubic kilometer of groundwater per year over a quarter of the global total.

Groundwater acts a critical buffer against the variability of monsoon rains, for example a rainfall deficit in 1963 -66 decreased India's food production by 20% but a similar drought in 1987 -88 how very small impact on food production largely due to the widespread used of groundwater by the time. Climate change will futher strain groundwater resource

This will have serious implication for the sustainability of agriculture, long term food security livelihood and economic growth. It estimated that over a quartar of the country's harvest will be at risk.

Reduce water availability in indue due to groundwater depletion and climate change could threaten the livelihood of more than one third of the country's 1.4 billion residents and global implication.



Effect of groundwater depletion

Pumping groundwater at the faster rate than it can be recharge can have some negative effect on the environment and people who make use of the water.

Land subsidence: In punjab for instance 76% of groundwater block are over exploited. In chandigarh it is 64% and about 50% of Delhi. This means that more groundwater than can be recharge is extracted.

Over time when the underlying aquifer aren't recharged thwy run dry and the layers of soil and rock above them start to sink, prof. Dhara kumar of the Indian Institute of Technology Dhanbad said.



The link between excessive groundwater extraction and land subsidence it detect the data from the GRACE (Gravity Recovery and Climate Experiment) satellites that could measure minute change in gravity on different parts of the earth's surface. V. K Gahlaut, chief scientist, National Geophysical Research Institute (NGRI), hyderabad, said.

Instances of structural damage were noted in Dera Bassi, Landran, Singhpura in Punjab and Ambala in Haryana according to a study published in 2021 by scientist at India Institute of Remote sensing, Dehradun who reported land subsidence of nearly 7-12cm per year and groundwater extraction rate of 46cm to 236cm annually.

The rate of groundwater depletion could triple by 2080, if India farmers continued to draw groundwater at the current rate, which could threaten the country's food and water security according to a new study.

Warming climate has compelled farmers in India to adopt by intensifying the withdrawal of groundwater used for irrigation, the study led by the University of Michigan U. S found.

As a result, the reduced water availability could endanger the livelihood of northern one third of the country's 1.4 billion residents and thus, could have global implications, the study published in the journal science advances said.

Groundwater recharge method

The artificial recharge project is being implement in collaboration with Netherlands, according to the department of water resource river development and Ganga rejuvenation under the Jal Shakti ministry.

The pilot project being implement in the doab of araniyar and koratlailaiyar river in TamilNadu is an innovative solutions, the department said. Doab refer to the alluvial land between two converging rivers.

Central government support the state government by providing technical and financial support. The government has taken various steps for the conservation of water in the country. In order to boost effect for water conservation and fight water crisis Ministry of Jal Shakti has taken up a nationwide campaign Jal Shakti Abhigam since 2019.

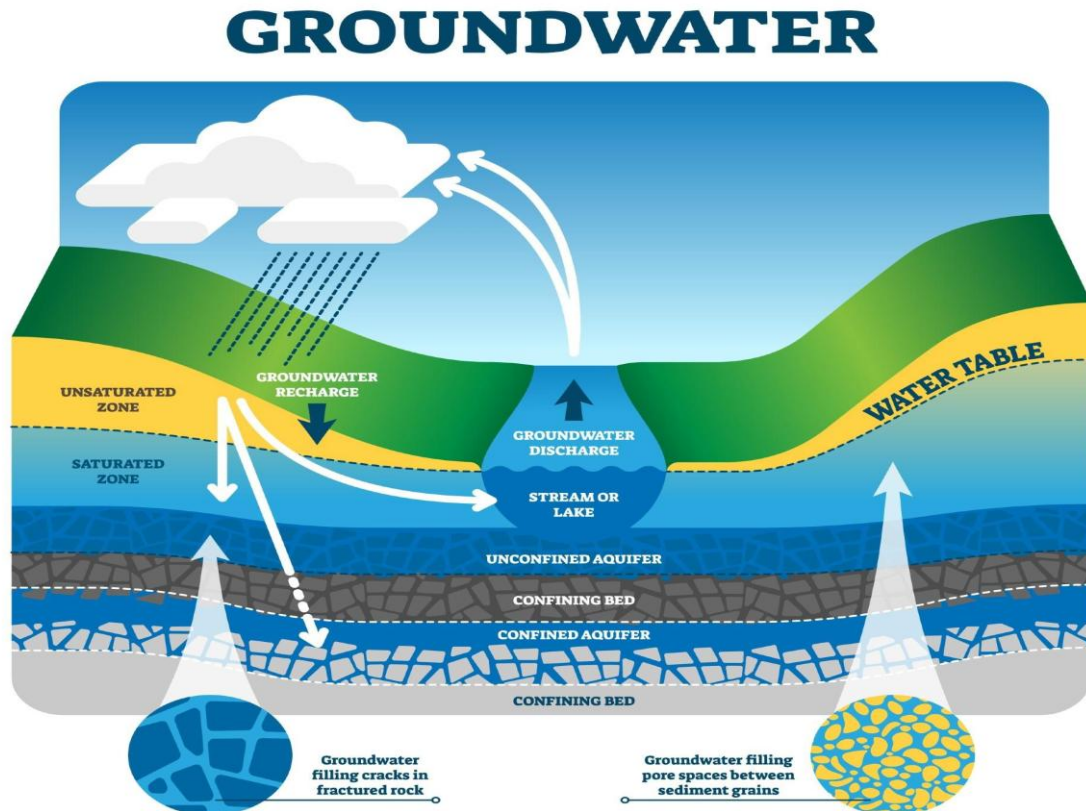
Jal Shakti Abhigam catch the rain active in 2021 JSR:CTR 4th series 2023 has now been launched on 4:3:2023 by handle president of India.

Master plan for Artificial recharge to groundwater 2021 has been prepared with respective state counter parts. The master plan includes artificial recharge in both rural and urban area including water scare cities

Central Ground Water Board (CGWD) has taken up national aquifer mapping and management (NAQUIM) programme under groundwater management and regulations scheme with objectives to delineate the aquifers characterize them and prepare management plans.

Central Government is implementing Atal Bhujal Yojana, in collaboration with States, in certain water stressed areas of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. The primary aim of the scheme is demand side

management through scientific means involving the local communities at village levels leading to sustainable groundwater management in the targeted areas.



Conclusion

Artificial recharge is a method used to replenish groundwater by diverting surface water or treated wastewater into the ground. It helps in restoring groundwater levels and improving water availability. It's a great way to manage water resources sustainably.

References

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