

Excessive Use of Ground Water and Its Impact on Water Level

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Introduction:

In the last few decades, more attractiveness of farmers towards the crops produced in those seasons, the Green Revolution has increased the need for irrigation for cultivation of the production wheat and other crops has much increased the use of water for irrigation and for the supply of food grains to the growing population. Farmers have started growing crops even in dry season by using underground water.

There is limited rainfall in various places, out in these areas on canals, wells and use of ground water. But in areas where irrigation is not possible from canal or well all the time and the farmer depends on ground water only. This is the reason that in a country like India, which plays an important role in the field of agriculture, there is more disparity in the use of ground water moreover, Use of water is increasing rapidly. This is also affecting the water level. In places where there is some more rainfall or the area of effect area of effect Perennaial rivers, the level of ground water is not much affected, but in the area with limited rainfall or limited canal, the water level is excessively uses and ground water is more affected.

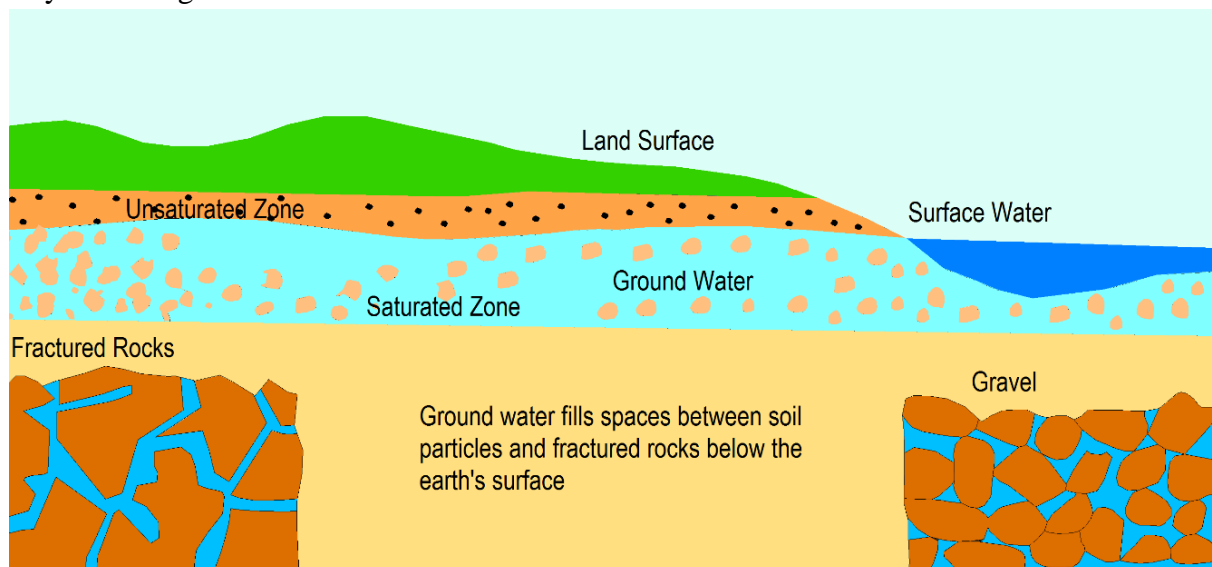


Fig. 1: Graphical representation of ground water and associated terms

Sources: Central Ground Water Board; PRS.

Research Objectives:

In the present research, the regional disparities in water level in different parts of India have to be assessed special affection will be provided in areas with limited rainfall, especially in western Uttar Pradesh, Punjab, Haryana, Rajasthan etc., where there has been more awareness in the field of agriculture and underground water is being more exploited a little more. How much ground water is being used in the plains of eastern Uttar Pradesh, Bihar, Bengal as compared to the areas with less rainfall. In other parts of India, especially in the areas of Gujarat, Maharashtra, peninsular India, in what proportion the exploitation of ground water and changes in water level will be taken care of and studied by assessing and managing.

Research Hypothesis:

1. In highly developed agricultural areas, the ground water table has been affected more.
2. Water level has been affected more in areas of high production of Rabi and vegetables.

Study Area:

Although the area-specific is not mentioned in the present research work, but the study of ground water use of whole India and the effect on water level due to it is impossible due to limited time and limited resources. From this point of view, special emphasis has been laid on the study of limited area of India. In the last few decades, farmers in the middle Gangetic plain have started paying more attention to the cultivation of wheat and the cultivation of greens vegetables and seasonal fruits for earning more income throughout the year. Due to this, tube wells are being developed in government and private sector. The policy of Bihar Agriculture Roadmap has accelerated this further.

Research Methodology:

In the present research, conserving number of tubewells and the area irrigated have been collected from the government offices out field observation. The analysis of ground water data of the last two decades has been made.

Importance of Research:

In developing countries, where people's dependence on agriculture is still high, attention becomes necessary for the development of agriculture, and the development of agriculture is not possible without water management. Therefore, in the present research, the use of excessive ground water and its management has been studied. This will give a new message especially among government water policy makers and farmers.

Research Analysis:

Structural features, Physiography, dsainage and rainfall and there features have influenced variation in ground water. There are wide variation in the ground water level in the Ganges-Sutlej, Brahmaputra plains of India. The water level in Brahmaputra valley is very different as compared to western part i.e. West Uttar Pradesh or Punjab, Rajasthan, Gujarat. Similarly, the water level is not very low in Tamil Nadu, Odisha and other coastal plains. But in the plains of the North-Western part, the ground water level is very low. This water level rises during the rainy season, but starts running down during irrigation. In the last two decades, the decline in ground water level has been more in

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the better cultivated areas. The speed with which the ground water level is declining, it is likely to become a serious problem in near future and it is necessary to draw attention to water management. Some scholars also believe that if water harvesting measures are not discovered in time, then the next world war may be for water. It is from this perspective that international conferences draw attention to water management and can be the basis of sustainable development. About 40 billion cubic liters of water is obtained from all natural sources in this country. Most of it evaporates as vapor and a large part goes into the ocean unutilized. Only a limited part is received as replenishment of ground water. Rain water harvesting is not done properly. At present, India needs about 552 billion cubic liters of water and more water will be required in the coming years. Hence water harvesting is necessary. That is why it is necessary to develop groundwater resources, water storage can be done well in stony stony land for groundwater collection, but some people have started using concrete more for personal selfishness and carelessness. Due to which the rain water is not getting to the land. According to the latest report of the Government of India, due to this concretion soil in Chennai city and its surrounding area, ground water has almost been exhausted.

The mountain structure of India is such that a large area becomes a region with low rainfall. At present, the country's water requirement is 552 billion cubic meters. Which will require 1530 billion cubic meters by 2025. Whereas only 1140 billion cubic meters of water will be available i.e. 390 billion cubic meters of water will be less supplied every year. To contain this much water, 7200 big dams would have to be built which seems impossible. Therefore, it is necessary to develop the groundwater resource, for groundwater collection, water collection can be facilitated in stony stony land. At present, more than 200 countries of the world are dependent on the ground water source for their water needs. At present, water is not available as per the requirement even in big cities. Against the daily requirement of 715 million gallons of the capital New Delhi, it gets only 450 million gallons of water.

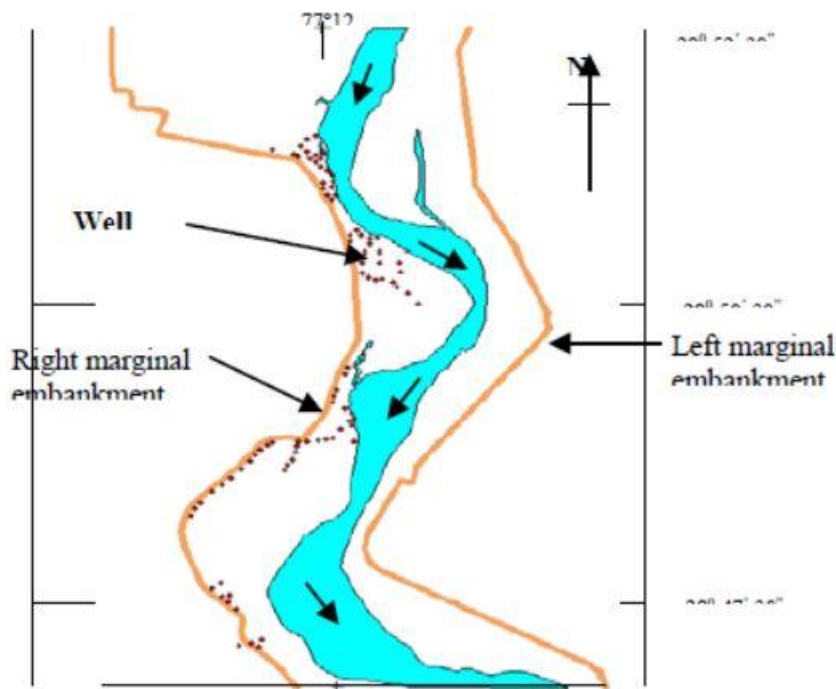


Fig. 2: Ground Water Development in Yamuna flood plain, Palla sector, Delhi.

Source: Research Paper of Central Ground Water Board

While Mumbai, the financial capital of India, requires about 900 million gallons of water, it gets only about 600 million gallons. Chennai's requirement is 100 million gallons, where only half is met. Similar is the situation in Hyderabad, Ahmedabad and Kolkata. The above situation usually prevails in the main cities of the country during summers. This is the reason that in different parts of the country, city or village, water conflict persists. Most of the water on Earth is supplied by underground water. At present, ground water is being used for irrigation in different countries of the world and in India. In dry and humid areas where there is a shortage of surface water resources, the importance of ground water is more.

60% of India's agricultural area is irrigated by ground water. Due to over-exploitation of ground water, adverse ecological consequences are visible in many areas. Other side effects are being manifested by ingress of salty water, depression of the surface etc. Ground water reserves can be recharged. Most of the wells were used on a large scale in India from 1934 onwards. Whereas irrigation from groundwater started from the 1960s. More than half of the irrigation in the country starts from ground water. For the first time in India, the people of Saurashtra collected rain water and tried to recharge the ground water. The whole of India started following it further. Half of the ground water is recharged by rain water. In countries with a population of 137 crores like India, till date, storage places with water storage capacity of about 2200 billion cubic meters have been constructed. Water storage areas mean the entire area in which rainwater can exit through a single outlet. This concept is applicable to the river system and its reservoirs. Catchment area management is developing as a unique method for maintaining balance in the environment and proper use of ground water and water resources. In this, the arrangement of rain water is done in the same way as nature itself does from the forests covered with vegetation. If seen from a scientific point of view, water catchment area management becomes a useful process. In which groundwater level is raised by rainwater harvesting and local water storage areas, storage and drainage of solid water is done through protective methods. In areas of India with an average annual rainfall of 800 mm, even if 50% of the water reading in catchment areas 30 times larger than the size of the pond is handled and the annual 2 m evaporation erosion is accounted for, even then 10 m depth ponds are filled stay. If 9 crore hectare meter of rainwater is collected in India with this system, then it will be about 25% of the rainfall read in our country. In recent years, under the Rajiv Gandhi Drinking Water Mission scheme, there is a plan to provide drinking water to every village having more than one hundred population. If it is not taken care of properly, then there will be negative impact on the ground water level. Bihar's scheme Har Ghar Jal Nal is also a similar scheme. In which the wastage of ground water can be clearly seen in the village.

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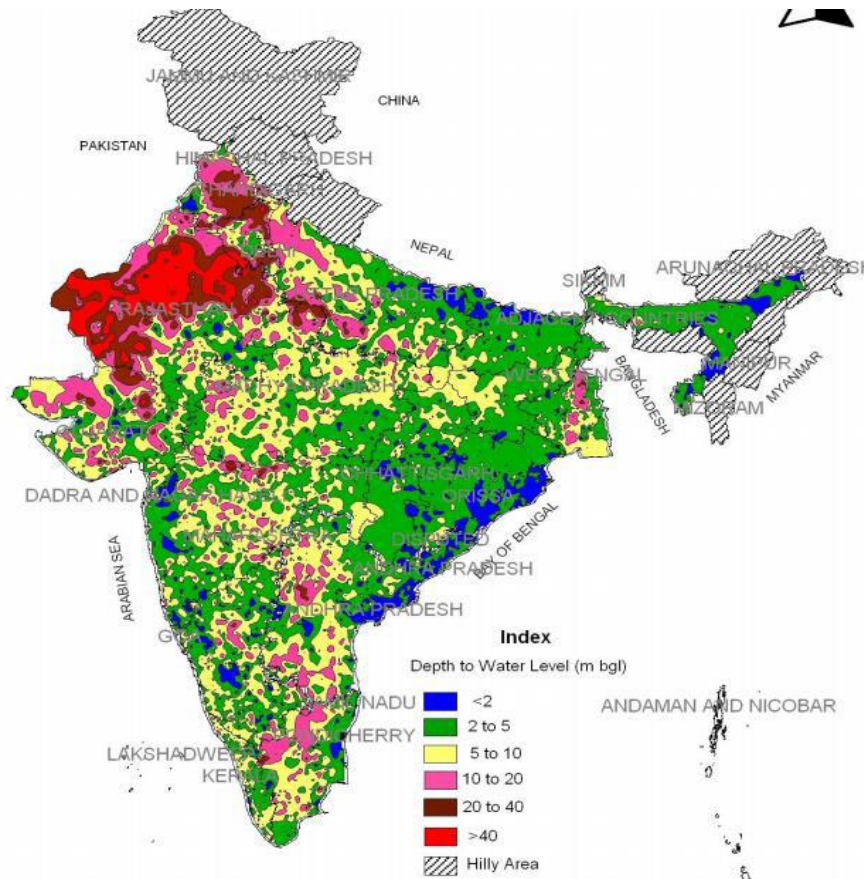


Fig. 3: Depth to water level (pre-monsoon, 2014)

Sources: Central Ground Water Board; PRS.

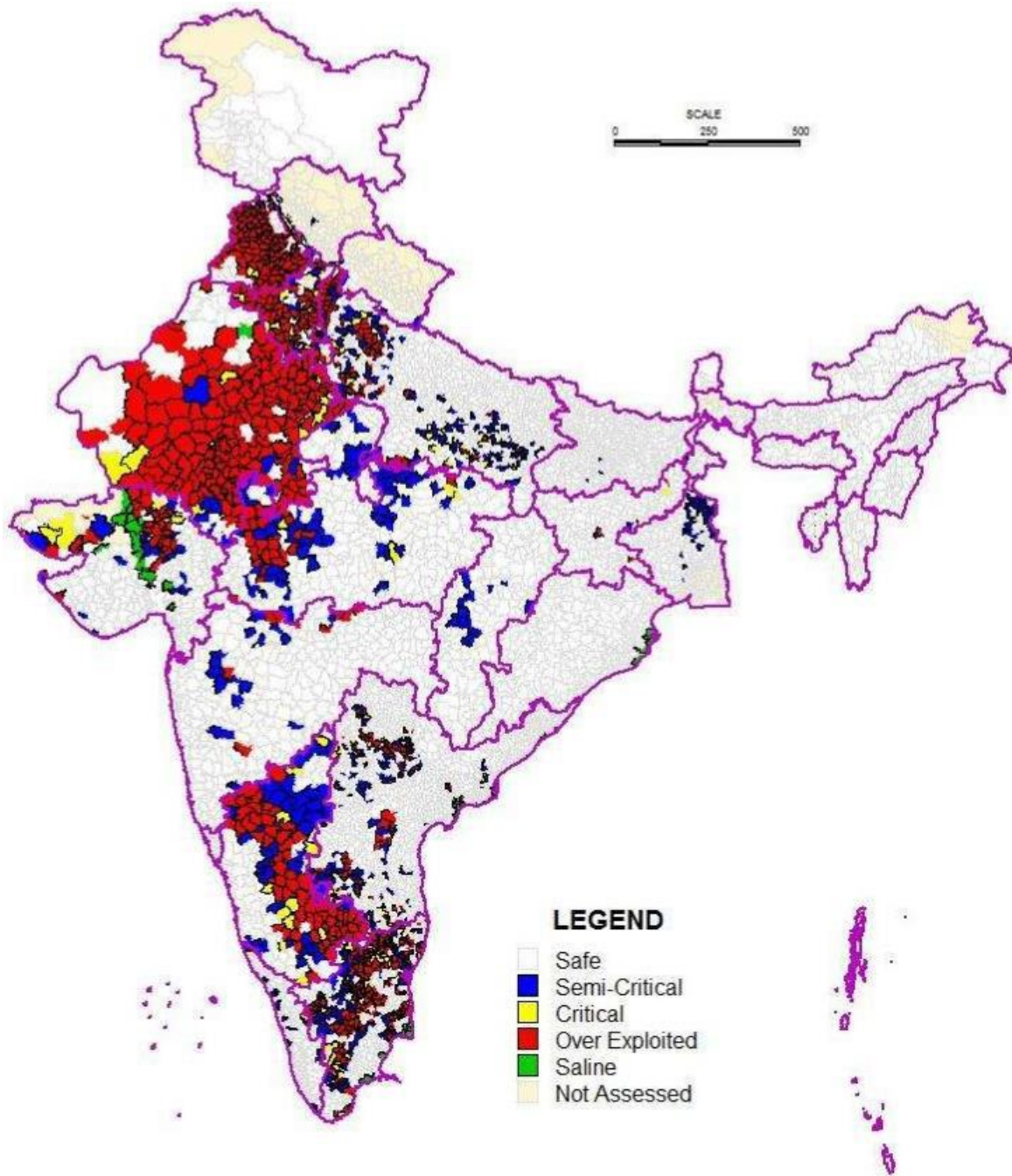


Fig. 4: Categorization of ground water assessment units

Sources: Ground water scenario in India, November 2014, Central Ground Water Board; PRS.

Evaluation:

The method by which a new form of agriculture is being adopted in the plains of the Middle Ganges. The need for irrigation is likely to be high and the shortage cannot be addressed by simply increasing the use of ground water. Therefore, it is necessary that more attention should be paid to water management, because in this area, especially in the northern part, the water received by the SadaVahini (Perennial) rivers flows into the sea without use, it is necessary that the rain water should be stored in the flood water. All the old abandoned rivers should be desilted and water should be stored and their connectivity with rivers should be established. This work has been started under India's river linking policy i.e. Amrit Kranti Yojana, but the pace is slow. In the 1970s, the

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Government of India had a plan to fill river sand specials to fill the gaps in the mining sector. which was ignored. Silt increased in the abandoned river and the problem of landslides increased in the mining area. Had this plan been taken care of, the water crisis in the mining sector today would not have happened. Whereas the water crisis can also be overcome by renovating the rural Ahar pan pond in the southern part of the middle Ganges and building a dam on it as per local requirement.

References:

1. Prof. Sinha V.N.P (2020), Geography of Bihar, Rajesh Publication, New Delhi.
2. Dr. Namrata Anand (2020), Ganga Life Line of India, Sambodhi Patrika, June 2020 UGC Care List Magazine.
3. Prof. Rashmi, Dr. Anil Kumar (2019), Agricultural Geography of Modern Bihar, Rajesh Publication, New Delhi.
4. Prof. Rashmi (2020), Water Management, Purvakal Patrika, UGC Care Listed May.
5. Water Resources Department, Government of India.
6. India Water Commission.