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“GROUND WATER DEPLETION: ENVIRONMENTAL ISSUE OF SOLAPUR DISTRICT”



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ABSTRACT :

Groundwater depletion is the major threat to environment among the other threats in the present century. Water plays an important role in human life as the human body and the earth is made up of water. Moreover, water has an important role in the formation of Oceans, Seas, Lakes, Ponds, Rivers, etc. on the surface of the earth. It is easily available everywhere on the earth in various forms but it is not always safe to drink and also difficult to filter. In such cases, groundwater is the only source of filtered water which is available on the surface of the earth. Water from the seas, lakes, ponds etc. cannot be consumed. Hence groundwater has a significant value from the point of view of human consumptions.

The present paper analyzes that how the groundwater depth is increased in Solapur district. There is an increase of 1.51 meters change in the groundwater depletion in 2010-11as compared to 1990-91in the district. The high meters depth in water depletion change is found in Barshi, Pandharpur and Mangalwedh tehsils i. e. above 1.57 meters. And it is affected negatively on the environmental issues in Solapur district.

KEYWORDS : Groundwater depletion, environmental issues.

INTRODUCTION:

One of the important threats to environment is a gradual depletion of groundwater in the present century. Science has proved that the human body and the Earth are made up of water and further the flowing water on the surface of the earth has played a significant role in the formation of the Oceans, Seas, Lakes, Ponds, Rivers etc. Although water has an important place in the life of human beings but it is not safe to consume water as it is from the Ponds, Lakes etc. and also not easy to filter it immediately to drink it. In such cases groundwater is the only source of filtered water to consume it by the humans and available on consume. Therefore the groundwater on the surface of the Earth has a special value from the human consumption point of view.

Since the human body is made up of water and other elements, water is an essential part of human body and all the available water cannot be consumed due to various reasons and the only source of water is the groundwater which is not needed to filter and use for human beings. Apart from the human beings, animals also need water in order to survive because all living and non-living things on the Earth could not survive without water. It is also necessary for the growth of crops, powering the equipment as well as supporting the smooth functioning of human body which further result into making our life more comfortable and luxurious. The clean groundwater is very essential for the society in the world, however, we know that the shortage of ground water is now-a-days a serious issues because of various environmental issues. Hence we should know the process of how water finds its natural way into the aquifers that we extract it from for our daily survival.

Groundwater that we get it is to survive through a natural and unique process. Its process is that the

water on the surface of the earth is heated by the sunlight and then through evaporation goes into the atmosphere. Then the next process is that water vapor creates precipitation and it is in the form of rain and snow, water falls from the sky on the surface of the earth. The water that falls from the sky in the form of rain and snow later absorbed into the earth through natural process. It is thus this water which is absorbed into the earth is stored as groundwater in the form of aquifers and consumed by human being through different sources.

CAUSES OF GROUNDWATER DEPLETION

There are various causes of groundwater depletion and some of them are follows:

1. One of the first reasons of groundwater depletion is the constant pumping of water from the earth's surface. The continuous growing population in the world, their need of water is simultaneously growing, and hence to provide their need, the ground water is being pumped faster than the earlier process of pumping water from the Earth's surface. However, this is very much hazardous from the human beings and animals as well as other non-livings survival point of view. Therefore it is more difficult for the groundwater to supply large amount of water that the growing population is demanding in the world.
2. The constant pumping of groundwater is to be replenished naturally within specific duration which is required but this does not happen in the areas where this type of water is continuously pumped. The reservoirs in the underground have their own process of reserving water that it absorbs and holds it in the forms of aquifers. And if we continuously pump the water from the underground, it doesn't quickly recollect as it has a process through which it recollects water as we know about it. Hence, the continuous pumping of groundwater is one of the reasons of the depletion of it.
3. The groundwater is rapidly depleting because it is highly pumping for agriculture development on the one side, and on the other side, it is continuously pumping for the support of growing population, for personal lifestyles, domestic use, construction of houses and for industrial purposes.
4. The depletion of groundwater is further take place naturally. There can be a shortage of groundwater which is naturally filtered and available on the earth's surface. It can also result into several critical problems in the life of human beings. Although in some extent human activities are responsible for the decrease of the groundwater but it also take place because of the climatic changes in the atmosphere which will speed up the process of groundwater depletion in the nearest future.

EFFECTS OF GROUNDWATER DEPLETION

Groundwater depletion has serious consequences on the human beings, animals, environment etc. Some of the effects of groundwater depletion are as follows.

1. The depletion of groundwater is resulting into pumping water and over use of water from the deeper part of the Earth's surface. The more we extract groundwater from the Earth's surface; we come to know that there is less water available in the deeper side of the surface of the Earth. Therefore, we need to find and develop other alternative methods of reach into the Earth's surface to get a freshwater for human survival.
2. The over use of water from the ground may result into decrease of fresh groundwater supply from the Earth's surface of underground aquifer. Apart from this, saltwater contamination may also take place because of the continuous pumping of groundwater and the mixing of freshwater with the saltwater if we go deep into the surface to pump water.
3. If a large number of aquifers are depleted due to pumping of water from the underground could affect on the supply of food, people, animals and other living things which are dependent on the water.
4. There is possibility that overuse of groundwater can decrease the supply of water to the lakes, ponds, rivers and streams because these are connected with the underground and surface water on the Earth's surface. For instance, in Solapur district most of the rivers, streams and lakes surface water level is very low and dry.

Present paper analyzed that the ground water depth is increase in Solapur district. District has increased i. e. 1.51 meters change in groundwater depletion in 2010-11 as compared to the 1990-91 year. The high meters depth in water depletion change is found in Barshi, Pandharpur and Mangalwedh tehsils i. e. above 1.57 meters. And which impact negatively on environment issues in Solapur district.

STUDY REGION:

The Solapur district is one of the most important districts of Maharashtra. The Solapur district lies entirely in the Bhima-Sina-Man basins. The Solapur district is located between 17° 34’0’’ North latitudes and 18° 48’40’’ North latitudes and 74° 34’0’’ East longitudes and 76° 19’0’’ East longitudes. The average height of Solapur district from Mean Sea Level (MSL) varies from 500 meter to 800 meter. The Solapur district has an irregular shape.

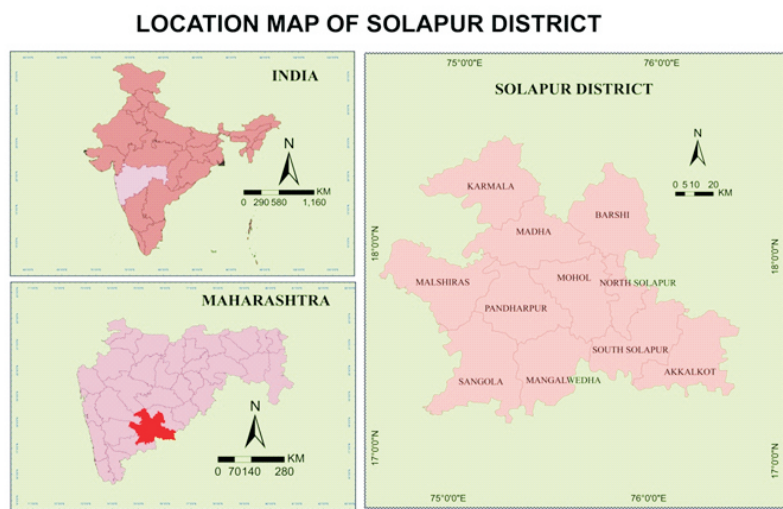


Fig. 1

The total Geographical area of the Solapur district as per 2011 census is 14895.40 sq.kms out of which 348.80 sq.kms. (2.34%) is urban and 14546.60sq.kms (97.66%) is rural. The East-West length of the district is about 200 km. and North-South is about 150 km. Its proportion as compared with Maharashtra state area is about 4.84 percent. Within the region under study, Malshiras is the largest tehsil in area and the lowest is North Solapur tehsil. (Socio-economic review and District Statistical abstract 2010-11).

OBJECTIVE:

The present study has following specific objective.

1. To study and assess ground water depletion the environmental issues of Solapur district.

DATA COLLECTION AND METHODOLOGY:

The proposed research paper is based on secondary data. The secondary data is collected from Socio-Economic Review of Solapur district and Senior Geologist, Groundwater Survey and Development Agency Office Solapur district etc. The data collection period is i.e. 1990-91 and 2010-11. The data processed and analyzed by using different cartographic techniques, statistical and quantitative techniques, etc.

INTERPRETATION AND ANALYSIS:

Ground water depletion of Solapur district in 1990-91

Table 1 and Figure 2 A indicates that during 1990-91, the district as a whole has 6.84 meters ground water depletion. But the spatial distribution varies from tehsil to tehsil ranging in between 3.89 to 8.94 meters. In the tehsils of Madha, N. Solapur and Akkalkot, high meters water depletion is noted i.e. above 7.42 meters. Madha (8.94 meter), N. Solapur (8.46 meter) and Akkalkot (8.07 meter) water depletion is indicated respectively in the district.

The moderate ground water depletion is recorded in the tehsils of Karmala, Barshi, Mohol, Sangola and S. Solapur ranging in between 5.61 meters to 7.42 meters. Whereas low depletion in the tehsils of Malshiras,

Pandharpur and Mangalwedha i. e. below 5.61 meters. The reasons for low depletion of water in these tehsils are the development of canal and irrigation facilities.

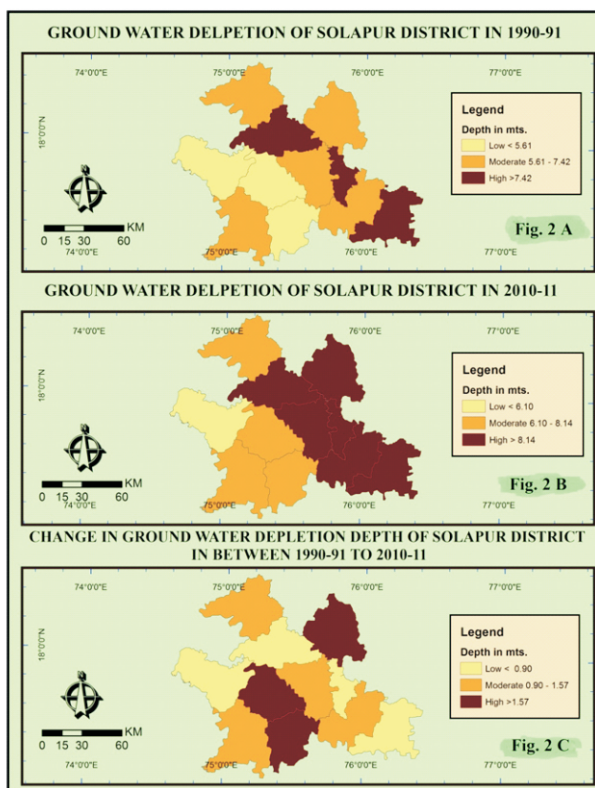
Ground water depletion of Solapur district in 2010-11

The table 1 and figure 2 B shows that the whole district has 8.35 meters of water depletion. High ground water depletion is found in Madha, Barshi, Mohol, N. Solapur, S. Solapur and Akkalkot tehsils i.e. above 8.14 meters because of many farmers are growing sugarcane and other cash crops. The moderate ground water depletion is recorded in the tehsils of Karmala, Pandharpur, Sangola and Mangalwedha ranging in between 6.10 meters to 8.14 meters. The underground water is highly used for farming such wells, Tube wells etc. in these tehsils. Whereas low water depletion in the Malshiras tehsil i. e. below 6.10 meters.

Table 1 Ground water depletion of Solapur district (Depth in mts.) 1990-91 to 2010-11

Sr. No.	Tehsil Name	1990-91	2010-11	Change
1	Karmala	6.90	8.14	1.24
2	Madha	8.94	9.20	0.26
3	Barshi	6.26	8.82	2.56
4	N. Solapur	8.46	9.11	0.65
5	Mohal	7.27	8.75	1.48
6	Pandharpur	5.61	7.93	2.32
7	Malsiras	5.57	6.10	0.53
8	Sangola	6.84	7.97	1.13
9	Magalweda	3.89	7.85	3.96
10	S. Solapur	7.42	8.99	1.57
11	Akkalkot	8.07	8.97	0.9
	Total	6.84	8.35	1.51

Source: Compiled by researcher {Senior Geologist, Groundwater Survey and Development Agency Office Solapur district 1990-91 to 2010-11.



Change in Ground water depletion of Solapur district in 1990-91 to 2010-11:

The table 1 and figure 2 C displays that the whole district has increased i. e. 1.51 meters change in ground water depletion. The high meters depth in water depletion change is found in Barshi, Pandharpur and Mangalwedh tehsils i. e. above 1.57 meters. The moderate meters change is noted in Karmala, Sangola, Mohol and S. Solapur tehsils in between 0.90 to 1.57 meters. Whereas low meters change is found in Malshiras, Madha, N. Solapur and Akkalkot tehsils i. e. below 0.90 meters.

In Solapur district ground water depletion is rapidly increasing because this district is located in the draught prone area region and the average rainfall is annually recorded very low i. e. 65 to 70 cms. The rainfall in the undertaken study region is not properly distributed. The rainy days are always irregular and have been changing from year to year in the district. Hence the rain water flows faster instead of percolating the soil.

CONCLUSION:

In this study region ground water depletion is rapidly increasing because this area is located in rain shadow region and agricultural practices are day by day developing. So the underground water is being highly used in agriculture sector.

In this district, on the other side, agriculture practices and cropping patterns are rapidly changing. Many farmers are growing sugarcane, banana, grapes, vegetables etc., and because of this there is high demand of water supply from wells, tube wells and canals. The water supply in this district is provided through high power electrical pumps which are resulting into high level depletion of water day by day in the district. The high meters depth in water depletion change is found in Barshi, Pandharpur and Mangalwedh tehsils i. e. above 1.57 meters. And which impact negatively on environment issues in Solapur district.

REFERENCES

1. Ali, Kahraman (2011): Effects of Agricultural Practices on Environment, International Conference on Biology, Environment and Chemistry IPCBEE vol.24 (2011) IACSIT Press, Singapore, pp.12-18.
2. Singh, Savindra. (2005): "Environmental Geography", Prayag Pustak Bhavan: Allahabad, p.339.
3. Wagh, A.S. (2009), "Irrigation and its impact on cultivated area-A case study of Satara District". Unpublished M. Phil. dissertation Submitted to Tilak Maharashtra university .Pune, pp.54-55.

1. Websites:

- i. www.encyclopedia.environmentalissues.com
- ii. www.soilsalinity.in
- iii. www.soilalkalinity.in
- iv. www.groundwaterdepletion.com
- v. www.environmentalproblem.in

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