

Rainfall Fluctuations and Depleting Water Levels In Alwar City

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ABSTRACT:

Water is the key to life. It is one of the basic needs for us to survive. Alwar had water resources in abundance but in recent years , it experienced a huge depletion in water levels that it even reaches to dark zone. Rainfall fluctuation is one of the major causes of it. In the last decade , the average rainfall of alwar decreased at a sharp rate, that in 2010-2011 it was about 64cm but in 2016-2017 it has reached to 55cm(approx.) on an average. Such a decrease results in rapid ground water depletion in alwar. Previously, the rate of ground water depletion was about 0.30 m per annum but now it has reached to approximately 1m per annum. The adversely affected areas of alwar are Behror and Neemrana blocks where the water level has reached to the depth of more than 40m .The major cause of rainfall fluctuation in recent year is seasonal shift due to increasing global warming worldwide. Now its high time to take this problem seriously. In all , we could recover water depletion to a extent by rainwater harvesting and other management techniques , so that the levels will improve to a bit.

Keywords: Dark zone, Global warming, Rainfall harvesting, Rainfall fluctuation, Seasonal shift

INTRODUCTION

Water is one of the most valuable natural resource on earth without which mankind cannot survive and rainfall is the major source of it. Rain water's most well known and most important effect is providing you with water to drink. According to the United states groundwater survey, rainwater seeps into the ground by a process called infiltration. Some of the water seeps deep beneath the top layers of soil where it fill up the space between subsurface rocks – it becomes groundwater , also called the water table. Less than 2% of the water present on earth is groundwater. Groundwater is a dynamic natural resource that can be recharge most during the rainy season by the rainwater for the rest of the year. Now a days , there is high fluctuation is seen in rainfall due to increasing levels of deforestation, global warming , urbanization etc. which are adversely affecting the levels of groundwater.

OBJECTIVES

1. How rainfall fluctuation is declining groundwater levels.
2. To find out the causes of fluctuation.

3. To find out the sources to recover the problem.

METHODOLOGY

The present paper is based mainly on the secondary type of data , obtained from a variety of authentic government sources such as , central ground water board , phed , etc. Some of the data were available in published form while the remaining were noted down from the files of the government offices. The data is presented with the help of tables, maps and diagrams to make it easy to read and analyse.

THE STUDY REGION

Alwar District is situated in the north eastern part of Rajasthan , 27degree 4minutes to 28degree 4minutes north latitude and 76degree 7minutes to 77degree 12minutes east longitude. The maximum length from south to north is 137 km and breadth from east to west is about 110km. Alwar city is the largest urban centre located between Delhi and Jaipur connected by national highway no. 8 and western railways. The city is near quadrilateral in shape. The Aravalli ranges are a conspicuous feature. The hills occupy a total areas of about 1554 sq. km and run parallel for most of the

parts from SW and NE. The hills decrease in size from south to north and west to east.

Alwar district has 16 tehsils Alwar, Bansur, Behror, Govindgarh, Katumar, Krishangarh, Kotkasim, Laxmangarh, Mundawar, Rajgarh, Thanagazi, Tijara, Neemrana, Reni, Malakhera.

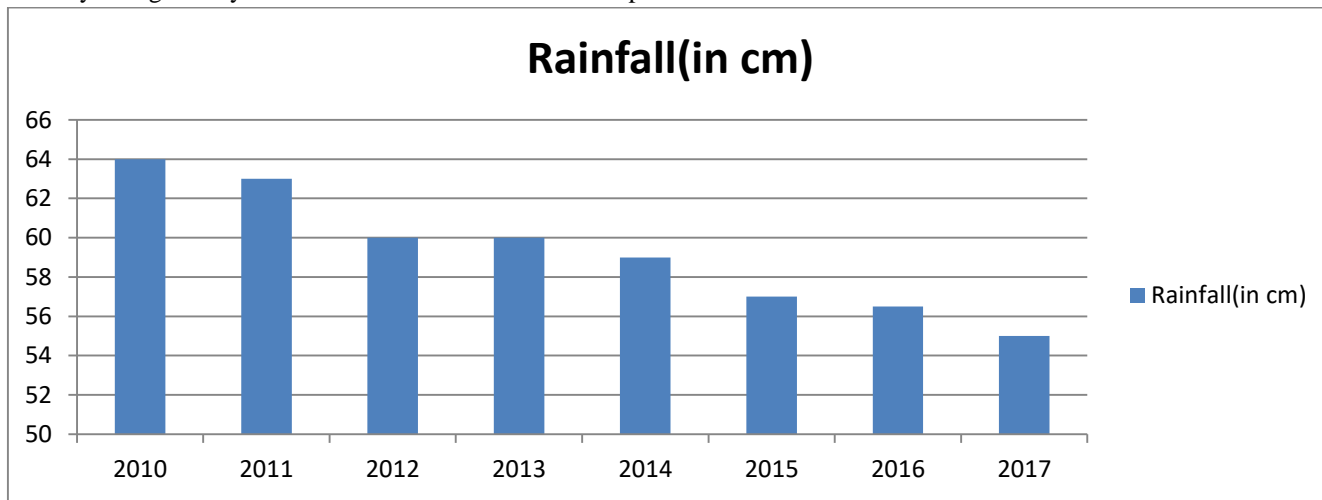
RAINFALL FLUCTUATION AS PER PASSING YEAR IN ALWAR

Alwar receives 90% of its rainfall from SW monsoon from June to September, the winter rainfall is merge. Climate of the city is semi-arid. Heterogeneous changes in global tropospheric temperatures from last few years are observed to make spatio-temporal changes in global rainfall distribution and impacts are also seen in alwar. As per the table below the average annual rainfall of alwar is continuously decreasing since 2010, it was 64cm in 2010 and with each passing year it is constantly decreasing and reached to only 55cm in 2017. The figures are really concerning as the rate of decline is very sharp. The major



causes of rainfall fluctuation is climate change and seasonal shift due to increasing levels of global warming across world. The hydrological cycle has been affected due to rapid

industrialization, modernization and urbanization which has results in high scarcity of water.



RAINFALL FLUCTUATION IN ALWAR (GRAPH)

Groundwater Depletion In Alwar

The groundwater is the major source of drinking water. The water resource of any area largely depends on rain which is stored in wells and tanks. Alwar doesn't have any perennial river, it has seasonal streams that carry water during rains. They are the Sahibi river at Sodawas and the

arvari river. Several small check dams have been built on these streams to collect rainwater. According to the map below, most of the blocks in the district fall under the “over exploited” category indicating that the ground water is under stress and exploited rates exceeding recharge. Two blocks Behror and Neemrana have been put to “notified” category which implies a severely stressed ground water situation.

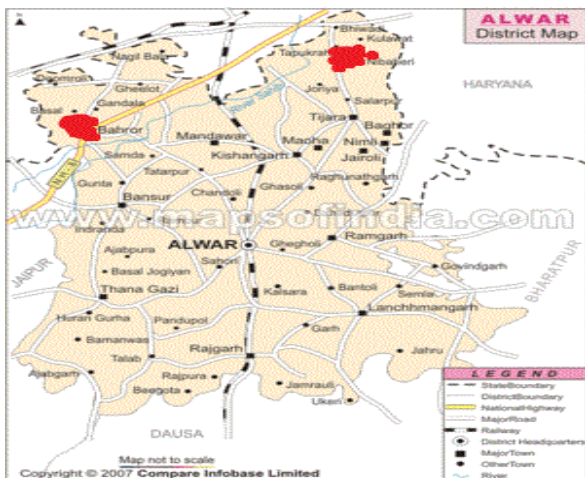
NOTIFIED BLOCKS IN THE CITY(RED)

According to central ground water department shallow water levels less than 10m is observed in parts of rajgarh, laxmangarh blocks whereas deepest water level that is more than 40m is noticed in behror and neemrana blocks. In most parts of the district depth to water level varied from 10m to 40m. The overexploited rates of groundwater in alwar has make it to come in dark zone.

COMPARISION OT THE ABOVE DATA AND MANAGEMENT TECHNIQUES

The above facts reveals that rainfall fluctuation is the major cause of groundwater depletion in alwar. The rainfall variability caused by climate change brought about prolonged droughts and low recharge in the area. As per passing year the high rate of variability is seen the average annual rainfall of alwar. According to the whole study, it shows that the rate of explosion is far high than rate of recharge.

We could recover water depletion by using efficient management techniques. Rainwater harvesting and



sustainable use of water are the better options for it. Rainwater harvesting is defined as a method for inducing collecting, storing and conserving local surface runoff. We should make people aware towards this problem after all public awareness is the relevant solution of any problem. We could control the water depletion by active participation in management strategies.

CONCLUSION

All the above discussions have concluded to the point that rainfall fluctuation and water depletion go hand in hand. Rainfall has great impact on water level as it is the only source of its recharge. Both rainfall and water level data are really threatening and concerning. Now it's high time to recover this problem otherwise the results will be disastrous. Above paper clearly shows how with passing year, the conditions are getting worse and rainfall fluctuation affecting water levels of alwar at a high rate.

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