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Geographical Assessment of Water Resources in Solapur District, Maharashtra State

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Abstract

Water is at the core of sustainable development and is critical for socio-economic development healthy ecosystems and for human survival. Availability of data for hydrological and water management analyses is a point of concern, especially in developing countries due to the lack of resource allocations. Solapur district faces water scarcity problem for maximum part of the year. It is necessary to prepare a management plan for the development of water resources to reduce water scarcity.

Keywords : Water resources, water scarcity, and CGWB

Introduction

Water scarcity which is broadly understood as the lack of access to adequate quantity of water for human and environmental uses , is considered to be one of the most important global risk for society global water demand are expected to increase in the future because of increasing population , urbanization ,and industrialization in addition , aspect of climate change and anticipated increases in extreme weather events are expected to contribute to increase in the frequency, severity and duration of drought which ca n exacerbate water availability problem. Acute drought conditions and dwindling natural water resources are focusing more attention on what continues to be a worldwide problem: a lack of access to fresh, potable water. Water scarcity can be defined as a lack of sufficient water, or not having access to safe water supplies. Water is a pressing need in many areas of the world. That scarcity is spreading as water is needed to grow and process food, create energy, and serve industry for a continually growing population. Climate change is a key contributing factor. Clean water is an essential ingredient of a healthy human life

Objectives :

- To understand problem of drought in future.
- To analyze the reason behind the water Scarcity condition in study area.

Database and Methodology (Rainfall Analysis , CGWB data)

The present paper both secondary data used only It is include book , journal and topic related census, Govt. Report.

Study Area

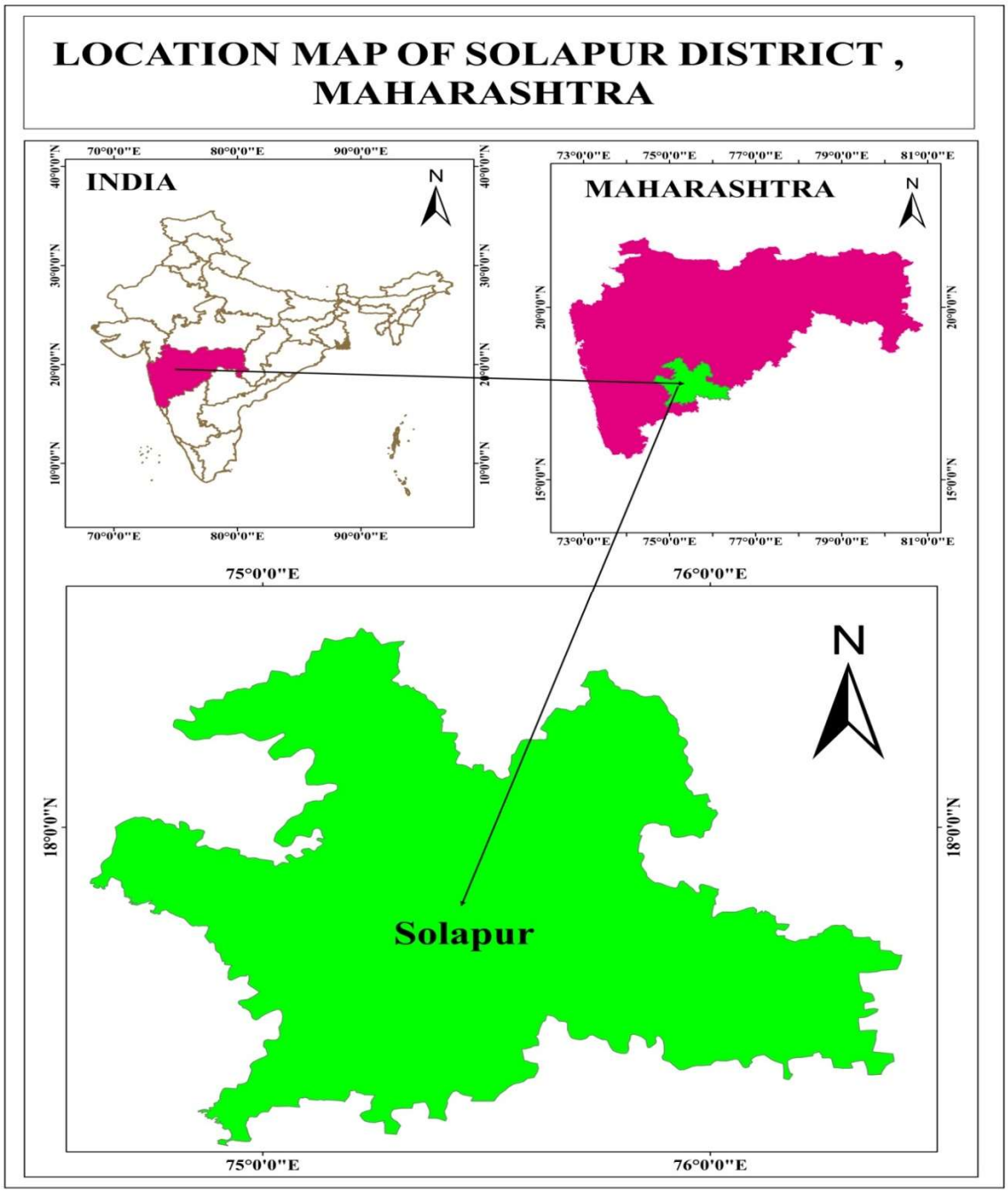
Solapur district is one of the four districts that form the region of Western Maharashtra. It is the fourth largest district in Maharashtra in terms of land area and seventh largest in terms of population. The district lies between 17°21′N 75°10′E / 17.35°N 75.16°E - 18°19′N 76°09′E / 18.32°N 76.15°E. The city of Solapur is the district headquarters. In 2011, Solapur district had population of 4,315,527 of which male and female were 2,233,778 and 2,081,749. Respectively The district has the largest industry in Maharashtra for Beedi production. Solapur is also known for its oilseed-market. Solapur is situated on Deccan plateau. It has an average elevation of 458 metres. The district is spread over an area of around 14,895 square kilometers. It is located on the south east edge of the state and lies entirely in the Bhima and Seena basins. The entire district is drained by the Bhima River.

Solapur district has one of the largest area covered under DPAP (Drought Prone Area Program) in Maharashtra, with ten blocks covering about 13730sqkm area. As per the National Agricultural Research Project (NARP) classification of agro-climatic zones of the country, Solapur falls under the scarcity zone (MH-6 scarcity zone). The solution to water scarcity problem lies within the laid down Standard Operating Procedures (SOPs) and existing laws, which we have been trying in Solapur, a perennially scarcity-prone district. Solapur lies in the rain shadow region of western Maharashtra and gets rain from the returning monsoon in September-November. The average precipitation in Solapur is roughly 488mm (June to September).

In 2015-16 the average rainfall has been 186mm (June to September) and if we take into account the rainfall up to November, it goes to 252mm, which is less than western Rajasthan. The rainfall pattern and its utilization have created a vicious cycle of depleting water resources. We have lost sight of the correlation between rainfall, runoff, recharge and usage of water. The dire need of the day is to convert this vicious cycle into a virtuous one by applying the techniques of in situ soil and water conservation measures. It is therefore imperative to understand the steps taken in Solapur - both short-term, in terms of scarcity management for the current year, and long-term in terms of implementing soil and water conservation measures in the district.

Why scarcity?

Water scarcity has been a recurrent phenomenon throughout the state and especially in Solapur. We took a holistic view of the crisis to analyze the reasons behind it: 1. Non-availability of water sources: Many times the accurate number of public water sources is not known. Finding them and updating the number is a crucial task. 2. Non availability of water in the sources 3. Transportation 5. Quality etc,.



Salient Features of Rainfall Analysis in Solapur District

S.N	Station	No. of years data	Normal Annual Rainfall (mm)	Coefficient of variation (%)	Less than normal RF (Y/%)	Moderate drought (Y/%)	Severe Drought (Y/%	Acute Drought (Y/%)	More than normal RF (Y/%	Excess RF (Y/%	RF trend (mm/Yr.)
1	Solapur	103	704.0	31	53/51	21/20	3/3	0/0	50/49	20/19	0.6
2	Pandharpur	101	619.9	34	52/51	21/21	3/3	1/1	49/49	19/19	0.4
3	Akkalkot	93	706.6	33	47/51	20/22	3/3	0/0	46/49	21/23	-0.5
4	Malsiras	99	524.4	42	52/53	19/19	7/7	1/1	47/47	19/19	0.9
5	Madhya	90	592.3	32	47/52	20/22	1/1	1/1	43/48	18/20	0.3
6	Barshi	101	653.7	30	49/49	19/19	5/5	0/0	52/51	21/21	-0.5
7	Karmala	102	574.0	37	48/47	15/15	11/11	0/0	54/53	21/21	0.7

Result and Discussion

Rainfall all over the district is uncertain and scanty with an annual average of 625 mm. Only in Barshi taluka which is nearer to Balaghat range it averages to 725 mm. The district gets rain from south-west as well as from north-east monsoon. The main precipitation during June to August is rather precarious. The normal rainfall for the monsoon 8 period, June-September is 425.9 mm. which is 73.6 per cent of the total annual rainfall. The farming practices are adjusted according to the normal character of the rainy season. It is the minimum in the North – Western part of the district around Malsiras (524mm). It increases towards southeast and attains a maximum around Akkalkot (707 mm). The coefficient of variation of the annual rainfall from the normal ranges from 30% at Barshi to 42% at Malsiras. This suggests a high fluctuation in annual rainfall over the district. The percentage probability of receiving excess rainfall (that is 25% or more in excess of the normal) varies from 19% to 23% It is the minimum around Malsiras, Pandharpur and Solapur (19%) and maximum around Akkalkot (23%). the probabilities of occurrence of moderate drought ranges from 15% at Karmala to 22% at Madha and Akkalkot (Table 1).Severe drought conditions were experienced at all station for 1% to 11% of the years. Acute drought condition was experienced for 1% of the years only at Pardharpur, Malsiras and Madha. As every station of the district experienced moderate, severe and acute drought condition for more than 20% of the years, the entire district can be classified as “Drought Area”

Conclusion

Study of the above data analysis we have seen rainfall condition not same in all area but some area of land have sufficient rainfall. The conclusion is rainy session is the most key of the reduce water scarcity, and also human participation is very need for elimination of water scarcity because implementation for water saving and harvesting, recharging land very well by artificial recharge structure. then we can save from drought condition. Water scarcity can be a result of two mechanisms: physical (absolute) water scarcity and economic water scarcity, where physical water scarcity is a result of inadequate natural water resources to supply a region's demand, and economic water scarcity is a result of poor management of the sufficient available water ...and need for reducing water scarcity elimination.

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