

Southern Economist Vol. 52 No. 1 May 2013

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Perspective of Water in Maharashtra: A Study

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India is the country with the highest water utilization country in the world because of the population explosion. The water utilized percentage of the India is 13%, America is 9%, and China having 12%, suppose the ratio will continue, water problems would be increased and have to face the inadequacy of the water in the future. This requirement has remained mismanaged under the contemporary Indian administration. It is not only that water problems are precarious in the population sector but, as a whole, the country has been facing a water crisis both for agriculture as well as for basic needs.

Maharashtra state has an average 143.3 cm precipitation, which is not equal in entire area of the state. Konkarn, Mumbai and Mahabaleshwar have highest rainfall, but in Ahmednagar, Solapur districts and various Talukas of the Maharashtra have only 30 cm rainfall. In last decade, Maharashtra Govt. spent about Rs. 70,000 crore on irrigation but irrigation ratio was increased by only one percent. Now days, irrigation ratio is around 17 percent. Furthermore there is big problem of drinking water in Maharashtra. In this research paper, researchers have tried to focus on availability, utilization and problems

of water management and suggest some suggestion to solve the problems in Maharashtra.

Objective
1. To study the availability of water in Maharashtra.
2. To assess the utilization pattern of water in Maharashtra.

On basis of this analysis researchers have come to the conclusion that to reduce the problems of water in future there is an urgent need of complete the project within time, increase the irrigation potential, efficiently use the existing potential, accept water saving models of irrigation, increase the scope of water refilling programme, implement river joint projects with due consideration to the environmental balance. Otherwise in future, the intensity of water problems will increase in Maharashtra.

3. To assess the problems of water management in Maharashtra.

Hypothesis of the Study

1. Water distribution is not equal in different regions of Maharashtra.

2. Water management is not efficient in Maharashtra.

Research Methodology
This paper purely depends on secondary data. To collect the

statistical data researchers have used various sources like Maharashtra Development Report of planning commission of GOI, Report on Benchmarking of Irrigation Projects in Maharashtra State 2007-08, Water resources reports of Maharashtra Government, research articles from e-journals, reference books, research articles from news papers and off-line journals and sources from Internet etc.

Availability of Water

As per the data of Central Water Commission, the total irrigation potential of the country is estimated to be 139.86 million hectare from all sources (MMI-Major and Medium Irrigation Projects, MIS-Minor Irrigation Surface and MIG-Minor Irrigation Ground Water). Maharashtra's total irrigation potential is estimated to be 8.96 mha (MMI = 4.10 mha, MIS = 1.20 mha and MIG = 3.65 mha). This accounts for only 6.40 percent of the country's total potential of irrigation. In Maharashtra irrigation potential is on the lower side in relation to its population and gross cropped area. Furthermore, available water in Konkarn is not used efficiently, because of unsuitable sites for construction the dams, insufficient availability of cultivable land and cost of lifting water to East of Sahyadri for drought prone area of the state.

As per the information available from CWC, 3596 large dams were completed in the country in 2002. Besides this, 695 projects were under construction. Of which 34 and

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Table-1
Distribution of Large Dams in India and Maharashtra

Sr. No.	Period	India	Maharashtra	% to India
1.	Up to 1950	293	51	17.406
2.	1951-60	234	25	10.684
3.	1961-70	461	146	31.670
4.	1971-80	1190	589	49.496
5.	1981-89	1066	324	30.394
6.	1990 and above	116	10	8.621
7.	Year not known	236	84	35.593
8.	Under Construction	695	300	43.165
Total		4291	1529	35.633

Source: Central Water Commission, 1998

Table-3
Comparative Status of an Average Ground Water Level in Maharashtra.

Sr.No.	Decline in Ground Water Level (in Mtr.)	2011 No. of Talukas	2012 No. of Talukas
1.	0	231	175
2.	0-1	84	70
3.	1-2	23	38
4.	2-3	09	39
5.	More than 3	06	51

Source: Survey on Ground Water Level, Jan, 2013.

Table-4
Relationship among Ground Water, Precipitation and Water Shortage

If Precipitation Less of Average by	Ground Water Level	Water Shortage Will Start From the Month of
More than 20 %	Decline by more than 3 Mtrs.	October
20 %	Decline by 2 -3 Mtrs.	January
Less than 20 %	Decline by less than 2 Mtrs	April

43 percent dams were in Maharashtra. Maharashtra has the distinction of having the largest number irrigation projects in the country. The Table-1 shows the picture of large dams in Maharashtra and India.

Table-1 shows that out of total large dams in India, Maharashtra accounted 35 percent, but irrigation potential is only 6.40 percent. Obviously, it shows controversy and resulted inefficiency of the irrigation construction projects.

Water Storage Availability, Irrigation & Non-irrigation Water Use & Irrigation System Performance

Table-2 presents the Maharashtra storages on an average 74 percent of the storage designed of water during 2000-01 to 2008-09. Actual storage was increased to 24803 mroun from 18847 mroun during the same period. The water using pattern as irrigation and non-irrigation was 72.68 and 27.34 percent respectively. It was not stable during the same period. In 2000-01, utilized potential of water was 35.52 percent, it was increased up to 44.41 percent in 2005-07, but after this it was declined to 40.58 percent in 2008-09. Notable fact is that during the period of nine years on an average only 37.38 percent potential was utilized. It shows the inefficiency in water using. Therefore, there is urgent need to think seriously and use our potential optimally. Table-2 shows the situation.

Decline in Ground Water Level in 2012

In 2012, out of 353 talukas in the state, 224 talukas having less rainfall than average. In 111 talukas rainfall is less by 20 percent than average. Because of less rainfall the level of ground water has declined in Maharashtra. Which is shown in the map.

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Written by Administrator

Friday, 10 May 2013 00:00 - Last Updated Monday, 03 June 2013 07:25

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Table-2

Storages of Water, Irrigation & Non-irrigation Water Use & Irrigation System Performance

Irrigation YEAR	Designed storage (Mcum)	Actual Storage (with Oct.)	% of actual storage to Design (Mcum)	Water Use For Irrigation on (Mcum)	Water Use For Non Irrigation (Mcum)	Total Water use (Mcum)	% of Total Water use actual to Actual storage	Potential Created (Mha)	Potential Utilized (Mha)	% of Utilized Potential to Total
2000-01	26748	18947	70.84	13575/78	3858/22	17433	92.01	3.706	1.298	35.02
2001-02	28062	18717	66.70	12346/76	3980/24	16326	87.23	3.789	1.25	33.17
2002-03	28715	18936	65.94	12965/75	4236/25	17201	90.84	3.812	1.318	34.58
2003-04	28840	16941	58.74	10569/69	4790/31	15359	90.72	3.863	1.244	32.20
2004-05	28889	18298	63.34	10603/69	4850/31	15453	84.51	3.913	1.257	32.12
2005-06	29110	24860	85.40	13688/74	4926/26	18616	74.88	4.003	1.617	40.39
2006-07	29531	27309	92.48	16630/85	4283/35	20913	93.02	4.132	1.835	44.41
2007-08	29116	25489	87.54	19763/75	6671/25	26435	103.71	4.331	1.897	43.80
2008-09	33071	24803	75.00	18486/73	6880/27	25366	102.27	4.486	1.825	40.68
Average	29120	21588	74.00	14291.78	4943.78	19235.56	91.02	4.002	1.51	37.38
	22	89		72.66	27.34					

Source: Irrigation Status Report, 2008-09 GOM.

Table-5

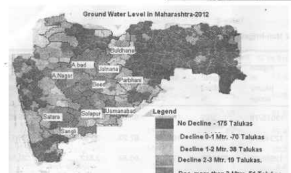
Region Wise Status of Ground Water Level and Precipitation in 2012 (with Compare to Average of Last Five Years, 2006-2011)

Region	Total No. of Blocks	Decline in Ground Water Level (in Mtr) 0-1 Mtr.	Decline in Ground Water Level (in Mtr) More than 01 Mtr.	Decline in Precipitation 0-20 %	Decline in Precipitation More than 20 %
Konkan	47	17	00	18	04
Nask	54	12	25	14	32
Pune	57	17	27	27	14
Aurangabad	76	14	44	21	49
Amravati	56	04	12	15	08
Nagpur	63	06	00	18	03
Total	353	70	108	112	111

Source: Survey on Ground Water Level, Jan, 2013.

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Comparative Status of an Average Ground Water Level in Maharashtra

Table-3 shows that the ground water situation in 51 talukas of the state is worst and it is alarming. The no. of blocks increased from 23 to 38 (Decline by 1-2 Mtr), 09 to 39 (Decline by 2-3 Mtr), and 06 to 51 (Decline by more than 03 Mtr) from 2011 to 2012.

Table-4 indicates the predictions of experts, considering the present situation. Expected period of water shortage is mentioned to highlight the bleak future.

Decline in Ground Water Level and Precipitation in 2012 with Compare to Average of Last Five Years

Table-5 shows decline in Ground Water Level and Precipitation in Maharashtra. In Aurangabad region 44 talukas show a decline in ground water more than 01 Mtr., because in 49 talukas precipitation is declined by more than 20 percent. In Nagpur and Konkan regions ground water decline is not more than 01 Mtr as decline in precipitation is comparatively less. In Pune and Nask regions also situation is worst. Its details are as following.

Problems of Water Management

1. Ground Water Level is declining
2. Less Irrigation potential (8.40 % of the country)
3. Less utilization of irrigation potential
4. Corruption in irrigation projects
5. Delay to complete the irrigation projects
6. Inefficiency in water utilization
7. Lack of proper approach of Government

Suggestions

1. Policies should design and implement with the cooperation of people for utilizing underground water.
2. Irrigation efficiency of projects should be increase.
3. Government should build the KT (Kishanpur Type) dams.
4. Farmers should accept the modern technology of irrigation. Sufficient training in these areas should be imparted to farmers by agricultural scientists
5. Programme like "Stop the Water and Soak the Water" should be properly implemented by Government and rigorously accepted by the peoples.

6. Irrigation Projects should be completed within time and without corruption.

7. River Joint Projects should be started whenever possible with paying sufficient attention on environment.

8. Wastage of water should be avoided by farmers and should use the required quantum of water for crops.

9. Government should think about supplying water from Konkan region to Eastern side of Sahyadri Mountain.

Conclusion

On basis of this analysis researchers have come to the conclusion that to reduce the problems of water in future there is an urgent need of complete the project within time, increase the irrigation potential, efficiently use the existing potential, accept water saving models of irrigation, increase the scope of water recharging programmes, implement river joint projects with due consideration to the environmental balance. Otherwise in future, the intensity of water problems will increase in Maharashtra.

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