

Diagnosing Maharashtra's Water Crisis

A. Narayanamoorthy

Maharashtra state has the largest irrigation sector in the country, but it had faced one of the worst ever water crises during 2012-13. With about 20 percent reduction in rainfall during the year 2012, nobody would have expected that the state would reach such an unprecedented water crisis. While the farmers had faced serious problems in protecting their standing crops due to water scarcity, most villages in the state had not even received minimum drinking water supply. This is something unusual for a state which has the largest irrigation sector in the country in terms of number of large dams and the live storage capacity. What could be the reasons for this crisis? Can we blame the reduced rainfall for this? What is to be done to stop the recurrence of water crisis in the future? In this note, an attempt is made to answer these questions utilising the available secondary information.

Water related problems are not new to the state, but its face has been changing very fast in the recent years. Maharashtra's water sector has been facing quite a few strange problems for some time now (see, Rath, 1997; Narayanamoorthy, 2007; Deshpande and Narayanamoorthy, 2001). With 35 percent of India's

total number of large dams and the largest live storage capacity, Maharashtra's coverage of irrigation is only around 18 percent of gross cropped area (GCA) as of today, which is one of the lowest among the states in the country. Data released by the Central Water Commission shows that the efficiency of water utilisation (ratio of water utilized to potential created) under major and medium irrigation (MMI) sector has also been very poor in the state as compared to the national average (see, Planning Commission, 2005).

Core Reasons for Water Crisis:

Monsoon failures alone cannot be the sole reason for the crisis. It is the result of several old and new problems. One of the age old reasons is the undesirable cropping pattern followed in the state for a long time. In spite of water scarcity, the area under sugarcane has been consistently increasing in the state because of aggressive campaign of sugar industries which are controlled by powerful politicians. For instance, the area under sugarcane has increased almost six times in Maharashtra between 1971-72 and 2011-12, whereas it increased only by 1.78 times (from 2.84 to 5.09 million

Table 1:

**Water Requirement for Production of One Kg of Sugar in Major Sugar Producing States:
Maharashtra and Uttar Pradesh**

Sl. No.	Parameters	Maharashtra	Uttar Pradesh
1	Land productivity (quintal/ha)	800.97	595.83
2	Average recovery rate (%)	11.32	9.16
3	Average number of irrigation per ha	25.00	7.60
4	Average in height of water (in cms.) per irrigation	7.50	7.50
5	Average water required (in lakh liters) for one irrigation of 1 cm height per ha.	1.00	1.00
6	Average water requirement (lakh liters) per ha for entire sugar season [row (3)*row (4)* row (5)]	187.50	57.00
7	Production of sugar (quintal/ha) [row (1)*row(2)/100]	90.67	54.58
8	Water requirement for production of one quintal of sugar (lakh litres) [row (6)/ row (7)]	2.07	1.04
9	Water requirement for production of one kg of sugar (litres) [row (8)*100000/100]	2068	1044

Source: CACP (2012).

hectares) at the national level during the same time. Many reports including the World Bank (2002) study on "Maharashtra: Reorienting Government to Facilitate Growth and Reduce Poverty" suggest that the water has been used most inefficiently for cultivating sugarcane. Some credible estimate suggest that because of inefficient cultivation of sugarcane under conventional flood method of irrigation, sugarcane crop which accounts barely 3.5 percent of cropped area consumes close to 60 percent of irrigation water in the state. The Commission for Agricultural Costs and Prices in its sugarcane report of 2013-14 (CACP, 2012) also underlined that Uttar Pradesh is 106 percent more efficient than Maharashtra in terms of water productivity. Maharashtra consumes an additional 1000 liters of water over and above the consumption of Uttar Pradesh for producing every kilogram of sugar (see, Table 1). Although the Second Maharashtra Water and Irrigation Commission (GoM, 1999) and the Godbole Committee (GoM, 1999a) on sick sugar industries suggested various measures to control sugarcane induced water scarcity problems, none of the governments ruled in the state made any effective effort to implement their recommendations.

Along with the old problems, the newly originated problem of massive transfer of water from irrigation to non-irrigation purposes (domestic and industrial use) has further compounded the water scarcity problem (Narayanamoorthy and Venkatachalam, 2011). Unlike other states, most big cities are located very close to large irrigation dams in Maharashtra, which provide easy access to the municipal corporation and other state agencies to withdraw large quantity of water from the dams which are originally allocated for irrigation purpose. Some two decades back, Pune city was withdrawing an amount of about four TMC of water from Khadakwasala dam, but the withdrawal level reportedly have increased over five times now. A research study carried out by a well known Pune based research institute Prayas found that as much as 40 to 80 percent of water from 23 projects had been diverted to industries during the period between 2003 and 2011 (cited in Times of India, April 10, 2013). This kind of transfer is not experienced in any other states, which is the core reason for today's water crisis.

The transfer of water has been done without even consulting the farmers who have been traditionally using this water for cultivating crops, rearing livestock and

domestic purposes. Will this increased diversion of water from irrigation to non-irrigation purpose not create devastating impact on agriculture and rural development? Increased diversion of water has many ramifications. Diversion of one TMC of water will not only cut down an amount of 6000-8000 hectares of irrigated area, but will also reduce the recharging of irrigation wells, drinking water facility for villages and livestock. Therefore, diversion of water from irrigation to other sectors has to be done more judiciously with proper compensation to the farmers as has been followed in USA.

Averting Water Crisis in the Future:

With increased urbanization and industrial activity, the competition for water will only intensify even in normal monsoon years. As per the projection of the Second Maharashtra Water and Irrigation Commission (1999), there will be a huge supply-demand gap particularly in three major basins namely Godavari, Tapi and Krishna by 2030. Measures need to be introduced both for improving the existing water use efficiency and augmenting the water supply to avert water crisis in the future.

Many research studies suggest that the extensive cultivation of sugarcane under conventional flood method (FMI) of irrigation is one of the major villains for the crisis. With the assured market and other incentives given to sugarcane, one cannot stop the farmers from cultivating sugarcane. A new irrigation method such as drip irrigation has proved to be a viable method of cultivating sugarcane with substantial saving of water (see, Narayanamoorthy, 1996; 1997; 2004; 2005). Farm level research studies carried out in Pune and Ahmednagar districts under the initiatives of the Ministry of Agriculture, Government of India emphatically proved that drip method of irrigation can save about 40 percent of water over the method of conventional irrigation, besides improving productivity and saving electricity. The state must make all out efforts to bring all suitable areas under the method of drip irrigation jointly with the support of sugar industries.

While making effort to improve the water use efficiency, strategies should also be designed to augment the supply of water wherever feasible. Similar to the tanks located in southern India, there are about 7,000 irrigation tanks (popularly known as malgajari tanks) with the irrigation potential of about 1.25 lakh hectares

located in the water scarced Vidarbha region in Maharashtra. These tanks are in very pathetic conditions, many are defunct as well. The state government has not made any serious effort to revitalize these tanks. Besides increasing the irrigation coverage of water deficit Vidarbha region, recharging of groundwater and drinking water facility for villages can be improved by revitalizing these tanks.

Maharashtra's dubious distinction is that despite having the large number of irrigation dams, almost 80 percent of its cultivated area is rainfed even today. According to the estimate of the Maharashtra Water and Irrigation Commission (1999), water available from both surface and groundwater can irrigate at the most only about 60 percent of the cultivated area. Watershed development programme, a proven rainfed area intervention programme, has proved that it can regenerate the water resources, improve recharging of wells and moisture availability in different places in the state. Therefore, Government must give increased attention for watershed development programme (WDP). Although government had reportedly spent Rs.60,000 crore on account of WDP during the last 10 years period, it has not made any visible impact in the state except in a few places. If WDP are not benefitting the farmers/villages during below monsoon years, then what is the purpose of implementing watershed programme? Government departments are not making any serious effort to implement the watershed programme in a real spirit to benefit the farmers. The government must rethink about the implementation of the programme keeping Panchayat in the centre stage as followed in the Indo-German Watershed Development Programme, which has community participation and transparency.

Projection indicates that there is going to be a huge demand-supply gap of water in all the major river basins by 2030 (GoM, 1999). This gap is also expected to aggravate in the future because of climate change. Of the total water available for planned use in the state, about 52 percent are available only from west flowing rivers in konkan (WFRK) basin. A large part of water available in this basin are unutilized because of high cost reasons. Concerted efforts should be taken to transfer the surplus water from WFRK to Godavari and Krishna to redistribute the water to the water starved regions of Maharashtra. There are controversies about the statistics on transfer of water from agriculture to non-

agricultural purposes especially in the recent years, which need to be cleared by implementing a systematic water accounting system in all the river basins in the state. As there is no substitute for water, the state's policy makers must make swift actions to solve the manmade water crisis before it gets further deteriorated.

References:

- CACP, (2012), *Price Policy for Sugarcane: The 2013-14 Sugar Season*, Commission for Agricultural Costs and Prices, Ministry of Agriculture, Government of India, New Delhi.
- Deshpande R. S. and A. Narayanamoorthy (2001) "Issues before the Second Irrigation Commission of Maharashtra", *Economic and Political Weekly*, 36(12), 1034-1043.
- GoM (1999), *Maharashtra Water & Irrigation Commission Report*, Government of Maharashtra, Mumbai.
- GoM (1999a), *Report of the Committee on Cooperative Sugar Factories in Maharashtra*, Government of Maharashtra, Mumbai.
- Narayanamoorthy, A (1996), *Evaluation of Drip Irrigation System in Maharashtra*, Mimeograph Series No. 42, Gokhale Institute of Politics and Economics, Pune, Maharashtra.
- Narayanamoorthy, A (1997), "Economic Viability of Drip Irrigation: An Empirical Analysis from Maharashtra", *Indian Journal of Agricultural Economics*, 52 (4), 728-739.
- Narayanamoorthy, A. (2004), "Impact Assessment of Drip Irrigation in India: The Case of Sugarcane", *Development Policy Review*, Vol. 22, No. 4, pp. 443-462.
- Narayanamoorthy, A. (2005), *Efficiency of Irrigation: A Case of Drip Irrigation*, Occasional Paper: 45, Department of Economic Analysis and Research, National Bank for Agriculture and Rural Development, Mumbai, India.
- Narayanamoorthy, A. (2007), "Turnaround in Financial Recovery in Maharashtra's Irrigation Sector", *Economic and Political Weekly*, Vol. 42, No. 26, June 30, pp. 2679-85.
- Narayanamoorthy, A. and L. Venkatachalam (2011), "Farmers' Right to Water", *The Hindu Business Line*, September 7, p. 15.
- Planning Commission (2005), *"Irrigation"*, Maharashtra State Development Report, Planning Commission, Government of India, New Delhi and Oxford Publication, Delhi, pp. 81-102.
- Rath, Nilakantha (1997), *A Note on Approach to Irrigation in Maharashtra*, paper presented at the Workshop on Economic Problems of Water, organised by the Second Irrigation Commission of Maharashtra and Marathi Economic Association, Sangli, Maharashtra, May 14-15.
- World Bank (2002), *INDIA, Maharashtra: Reorienting Government to Facilitate Growth and Reduce Poverty*, Vol. I and II, Report No. 25053-IN, Poverty Reduction and Economic Management Unit, South Asia Region, USA.