

Groundwater Resource Management in the State of Rajasthan

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Abstract: Groundwater condition in the state is deteriorating speedily. The stage of groundwater development increased from 35.73% (1984) to 125.13% and number of over-exploited blocks from 12 (1984) to 140 (2004). Water level depletion has been reported in 212 blocks out of 237 blocks in the state.

The state government's water management policies are based on periodical assessment of the groundwater resources. Some of the salient supply side as well as demand side groundwater management options being used in the state include mandatory provision of RTRWHS in urban areas having specific roof area, construction of model designs of RTRWHS, pilot area studies for evolving community driven management options, notifying critically over-exploited areas by Central Ground Water Authority for regulating groundwater withdrawal through District Collectors and carrying out IEC activities pertaining to groundwater management. Besides this, regulation of ground water development activities through legislation is also under consideration.

Rajasthan is a water-deficient state. The state covers 10.4% area and accommodates 5.68% population of the country whereas surface and groundwater resources are only 1.16% and 1.72% of the national water resources. In the state, surfacewater resources being limited, groundwater is the main source for drinking, domestic and agricultural uses. With the increase in agricultural command and industrial and population growth, groundwater withdrawal is steadily increasing at an alarming rate. On the contrary, with the scanty and erratic rainfall and urbanisation of the area, groundwater recharge is continuously declining.

The ever-increasing gaps between water supply and demand in the State necessitate effective management of the groundwater resources without lapse of time. Ground Water Department is using various supply side and demand side management options duly supported by IEC activities. These options are being opted in harmony with the ground truth conditions, which are periodically being evaluated by the Ground Water Department.

Groundwater Resource Management Activities

Groundwater Resource Estimation: As per the recommendations of the Ground Water Estimation Committee, groundwater resources are being estimated periodically on the basis of well inventory data

of more than 7000 stations. The comparison of resource positions in 1984 and 2004 reveals that the groundwater condition is deteriorating abruptly. The stage of groundwater development computed as 35.73% in the year 1984 raised to 125.13% in 2004 and number of the over-exploited blocks increased from 12 to 140. Water level depletion, which was confined to some pockets only in 1984, has spread in 212 blocks of 28 districts in the state having 237 blocks and 32 districts.

Pilot Project Studies: The Ground Water Department has taken up three Pilot Project studies under the World Bank assisted Rajasthan Water Sector Restructuring Project (RWSRP) in Piprali block in Sikar district, Khamnor in Rajsamand and Mandore-Osian area in Jodhpur district with an objective to evolve a model concept for sustainable management of groundwater resource through a community driven approach, so that these findings can be replicated in other areas having similar groundwater conditions. The supply side as well as demand side activities form integral part of the management options. The supply side activities include construction of groundwater recharge structures like sub-surface barriers, sub-surface dykes, recharge pits and other rainwater harvesting structures. The demand side activities include educating farmers for growing low water demand crops and efficient use of irrigation water through sprinklers and drips.

Supply Side Management (Augmentation of Water Resources)

- Ground Water Department has prepared a Master Plan for rainwater harvesting and artificial recharge to ground water. In all, 299 sites have been identified where rainwater could be used to recharge groundwater bodies through artificial recharge techniques. Likewise, State Water Resources Department has also prepared Master Plan for rainwater harvesting in the state.
- The Department has constructed numerous model designs of Roof Top Rain Water Harvesting Structures (RTRWHS) to generate mass awareness and construction of such structures in much wide area by common mass. Further, the Department is providing concept designs and all necessary technical assistance for construction of such RTRWHS to all government/non-government institutions, agencies and individuals free of cost. The Department has also prepared proposals for construction of storm rain water harvesting structures along roads and pavements having sufficient run-off.
- The state government has amended the building bye-laws for making Roof Top Rainwater Harvesting Structures mandatory in all buildings in urban areas of the state having plot area of 300 m² and more.

Demand Side Management

- To regulate groundwater withdrawal through legislation, a Rajasthan Ground Water (Regulation) Bill 1996 (Draft) had been prepared in the year 1996. In a National Seminar held in June, 2000, a general consensus emerged that in place of legislation, the state government should act as a facilitator and efforts should be made to create awareness amongst general masses regarding adverse effects of over-exploitation of groundwater resource.

Recently, Chief Minister of Rajasthan, while presenting State Budget (2006-07) in Vidhan Sabha, expressed need for Ground Water (Regulation) Bill for regulating groundwater withdrawal and judicious use of the water resources in the state.

In view of the budget speech, the Rajasthan Regulation and Control of the Development and Management of Ground Water Bill, 2006 was put up before Vidhan Sabha in the year 2006. This bill

includes provisions for controlling groundwater withdrawal, constitution of State Ground Water Authority and provisions for imposing cess on commercial use of ground water. The cess, being in the Union list, was deleted from the bill.

Information, Education and Communication (IEC) Activities

- As a part of IEC activities, booklets, posters and brochures displaying the groundwater scenario in blocks, districts and concept design for roof top rain water harvesting and various techniques of water conservation in domestic/agriculture and industrial uses were distributed at Gram Panchayat and village levels in public gatherings/meetings organised by the district and block level authorities during “Jal Chetna Yatra: Kisan Mahotsava” under the State Government Jal Abhiyan Programme inaugurated by the Chief Minister of Rajasthan in December, 2005. These public gatherings were also addressed by politicians/technical and administrative officers explaining them about groundwater condition and various options available for management of the water resources.

To sum up, groundwater resources are depleting in major part of the state. It requires effective water management policies to be adopted without lapse of time. Some of the salient options are:

- Mandatory provision for construction of RTRWHS in all buildings in urban areas having plot area of 300 m² or more.
- Construction of model designs of RTRWHS.
- Regulating public water supplies.
- Providing subsidiaries/loans on water saving devices in irrigation devices.
- Evolving model concept of community driven management approach through pilot area studies,
- District Collectors to regulate groundwater withdrawal in areas notified by Central Ground Water Authority.
- To carry out IEC activities related to water management activities.