

Water Resource Management in West Bengal

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We generally receive rainfall in heavy showers followed by dry spells. When it rains heavily the soil is not able to absorb water at the rate of rainfall. As a result most of the rain drains away, leaving very little for storage & the recharge of groundwater. This makes most parts of India experience lack of water even for domestic usage. Thus it does not matter how much rain we get, if we don't harvest it.



In water-scarce region of West Bengal, an eastern region state of India where the majority of rural population depends on agriculture for their livelihood the lack of adequate water resource has inducted high level of uncertainty and insecurity in the mind of the local inhabitant. The issue of rainwater harvesting and conservation has emerged with significant gravity for combating the increasing demand of water for the purpose of irrigation throughout the state of West Bengal, as well as the overall scarcity of drinking water and maintaining its regular supply to pisciculture. In order to preserve the rain water and other natural water available on the earth's surface by carefully controlling the respective resources, Government of West Bengal has initiated a pioneering project, titled *Preserve Water-Reserve Water*.

All out initiative is being taken to establish reservoirs and check-dams of various capacities and sizes in different areas at the state, as well as re-excavation of the existing reservoirs to increase their capacity, in implementing its goals. The *Preserve Water-Reserve Water* initiative of Government of West Bengal tries to provide a replicable framework as a solution to this ecological inequality in the face of looming impacts of climate change.



The State Water Investigation Directorate under the Department of Water Resources Investigation & Development has intensively launched a series of programs throughout the state under the '*Preserve Water-Reserve Water*' initiative for its successful implementation. Preventing massive wastage of the surface run off and to ensure the utilisation thereof along with marked increase of the groundwater level are the prime objectives of this project.



Many small rivers and canals become dry during the winter season. In order to sustain the surface running water along the upstream, two to three meters high check dams are constructed. While on one hand this detained water is available for use in irrigation and on the other hand this can readily increase the level and quantity of the groundwater through percolation. Again, by analyzing the topographical diversity and utilizing good technology with a scientific outlook, spillway structures are constructed at various strategic locations obstructing natural surface flows. The rainwater thus preserved in these structures is used in the agricultural fields, especially in the dry seasons, through irrigation canals. To make the water supply available to relatively distant locations apart from preventing possible wastage of water in this process, a series of field channels are constructed, some parts of which are lined.



In those areas where the topographical variation is not suitable for the construction of reservoir but perennial surface flows are available, electric or diesel operated motor-pumps are used for river lift minor irrigation schemes to supply water through pipes to the agricultural field. Most of the irrigated areas in West Bengal are covered in minor irrigation. Even in the absence of rains, electric or diesel operated deep tube wells and shallow tube wells are used to ensure the availability of adequate water supply for irrigation.



The groundwater is extracted by these tube wells and utilized on the surface through pipelines for irrigational purposes. This process of extraction causes a significant decrease in the overall ground water level. In the season of boro cultivation, due to its huge requirements in irrigation purposes the declining trend of ground water level is further accelerated. Thus, on account of sustaining water balance by reducing the usage of ground water and consequently using the surface water and preserving rainwater in ponds or reservoirs as well as recharging rainwater into underground aquifer through scientific methods to raise the groundwater level have become imperative.



For using the rainwater by directly preserving it at the place of rainfall and then increasing the groundwater level through artificial recharge the issue of rainwater harvesting is of primary importance. Ponds are being excavated in the regions of water-shed alongside drainage channels to preserve water. Acute water crisis can

be effectively resolved by accumulating the rain water from the roof tops in both the urban as well as rural areas. This harvested water is used for household purposes while the surplus water is being carried to the reservoir passing through filter bed using pipelines along with the help of recharge well, the water is being then made to penetrate through a screen pipe into the aquifer zone and as a result ground water level moves upward to some extent. In any case, so that the rooftop harvested water does not pollute or infect the aquifer zone, it is being intensively filtered using the mediums of sand, stone and pebbles. To make sure that the groundwater is not polluted, the Government interference is a necessity. For sustaining an agricultural area with little water availability, drip irrigation system is being used in order to drip water near the root of the crops. Along with this, sprinkler irrigation system is also a good technique for creating an artificial precipitation using small adjoints at the nozzles. This reduces the water usage to a great extent.



The State Water Investigation Directorate supervises the fluctuation of groundwater level throughout the state by measuring it quarterly in a year through the Hydrograph Stations. Apart from this, automatic water level recorders have been set up experimentally at various places of the state to perfectly study the fluctuation in the groundwater level. Alongside, to keep a record of the precipitation, rain gauges are installed at each district headquarters and rainfall data base are generated accordingly.



To keep a constant watch on the quality of the groundwater as well as the surface water, the collection of water samples and its testing is a vital part. The State Water Investigation Directorate conduct chemical tests and analyzes the chemical quality of water samples, which are collected two times during pre-monsoon and post-monsoon in a year at its central and regional laboratories.



Respecting the needs of the environment, the West Bengal government is marching ahead towards the desired goal with their pioneering initiative *Preserve Water-Reserve Water* in which the Department of Water Resources Investigation & Development, Government of West Bengal plays an important role. Various projects undertaken by this Department for proper utilization of ground water and surface water as well as preserving rain water and thus hindering the misuse of the same brought about new dawns in agriculture and the life of the masses in West Bengal.



Susanta Biswas, an Environment Activist, is a Documentary Film Maker by profession. He Documents various themes through audio-visual means on contemporary issues for social communication. Several documentaries on sustainable development were made by him. He made a documentary on this subject titled "*Jal Dharo, Jal Bharo (Preserve Water, Reserve Water)*" [In Six language versions of Bengali, English, Hindi, Urdu, Nepali & Santali; Produced by the Government of West Bengal in cooperation with Department of Water Resources Investigation and Development] which was screened in 18th Kolkata International Film Festival (2012). His documentaries participated in international film festivals & cinema conferences held in different cities of the country. Various articles written by him on sustainable development issues of environment were published in different publications. [DoB: July 15, 1966]