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# *Water Mission*

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**Integrated Basin Development and Livelihoods Programme**  
*Meghalaya Basin Development Authority*  
*Government of Meghalaya*  
*Shillong*

# *Water Mission*

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## **1. Introduction:**

Water being a basic necessity of life, ninety-seven per cent of its total availability on the Earth is salt water and remaining merely three percent is fresh water. Fresh water is a renewable resource, yet the world's supply of clean fresh water is steadily decreasing. Water demand already exceeds supply in many parts of the world and as the world population continues to rise, so too does the water demand. India is rich in water resources, receives an annual rainfall of around 4000 cubic kilometres and being endowed with a network of great rivers and vast alluvial basins to hold groundwater. Conditions, however, vary widely from region to region. Whereas there are some chronically drought affected areas, there are others which are frequently subject to damage by floods. On the whole, under the pressure of rapid population growth, the available resources of water are being depleted at a fast rate and the situation seriously underlines the need for taking up integrated plans for water conservation and utilization for every agro-ecological area to meet the increasing demands of irrigation, water harvesting, human and livestock consumption, expanding industry, hydro-electric power generation, recreation, navigation and other uses. Water resources are divisible into two distinct categories: the surface-water resources and the ground-water resources. Each of these categories is a part of the earth's water circulatory system, called the hydrologic cycle, and is ultimately derived from precipitation, which is rainfall plus snow.

Meghalaya is endowed generously by nature as far as the water resources are concerned. The State ranks amongst the wettest regions in the world with an annual average rainfall of 1200 cm. The Annual average rainfall of Meghalaya is 280 cm with some pockets receiving about 250 cm in the Garo

hills to as high as 400 cm in the khasi and jaintia highlands. One-third of India's run-off flows from the North-East through and the Brahmaputra and the Barak rivers. The rivers, streams and lakes distributes themselves throughout the state; these may have comparatively smaller stretch but are quite important due to their uses of water as most of them are exploited for drinking water and many other purposes. The state is having ground water potential of 1226.44 million cubic meters (MCM) out of which only 1041.99 MCM is utilized for irrigation. Presently, there exists about 3300 km length of rivers, 8400 ha of reservoirs, 3734 ha of tanks and ponds, and 390 ha of swamps in Meghalaya. However, water resources in the state are currently threatened with contamination, siltation and pollution primarily being contributed from mining.

The five year average rainfall recorded in and around Shillong city from the year 1986 to 2010 showed that there has been a decrease in the amount of rainfall from 2606.60 mm in the year 1986-90 to 2371.80 mm in 2001-05. The decreasing trend from the year 1986 onwards led to the decreased in water availability which is mainly due to the dwindling of forests because of deforestation. The effects of deforestation lead to less humidity whereby there is less absorption in the root zone reducing the availability of water to the plants. This results in less evaporation/transpiration through the leaves which reduces the amount of water vapour in the atmosphere, resulting less rainfall in succeeding years. The decline trend of availability of rain water signifies a possible danger awaiting the state, which may reduce the water availability per capita in the years to come.

Since last few decades or so, the state started facing serious problems of pollution of surface as well as ground water due to indiscriminate discharge of untreated municipal effluents as none of the cities/ towns have any wastewater or sewerage collection and treatment systems. Dumping of garbage in the rivers is also another source of pollution. Unorganized mining activities mainly coal on a large scale in almost all the parts of the state are another major sources of water pollution and contamination. In monsoons,

the rivers and streams experience heavy siltation. This has accentuated due to deforestation, sand quarrying activities and land degradation. Siltation has also resulted in the disappearance of several perennial streams and natural springs. Due to contamination of surface sources there occurs problem in drinking water. The Ecology of the rivers and streams have also been severely affected whereby a number of local aquatic species have become either extinct or are in the endangered phase. Many rivers in Jaintia Hills have become dead rivers.

Climate change may alter the distribution and quality of natural water resources and affect the livelihood of state's people adversely. With an economy closely tied to its natural resources base and climate-sensitive sectors, such as agriculture, water and forestry, Meghalaya may face a major threat because of the projected changes in climate. Global warming may affect the hydrological cycle which could result in further intensification of temporal and spatial variations in precipitation and water availability. It is obvious that the projected climate change resulting in warming, will adversely affect the water balance in different parts of the State. Climate change is likely to affect ground water due to changes in precipitation and evaporation/transpiration. Climate change may affect the rainfall pattern and intensity which may lead to higher runoff and possibly reduced recharge and at same time may cause severe drought. The Meghalaya Integrated Basin Development and Livelihoods Programme aims to address these issues and focus due attention through implementation of its various scientifically planned activities, concerning to water resources conservation and management in the state.

## **2. Water Resources Scenario in Meghalaya**

Since, Meghalaya is endowed generously by nature as far as the water resources are concerned, the replenish-able ground water is estimated to be 1.15 billion cubic meters (BCM). Though, the ground water in the state has not

yet over exploited to its highest extend, but water stress is building up in urban areas in view of the rate at which ground water extraction for domestic purposes is taking place. The annual gross dynamic ground water recharge in Meghalaya has been estimated as 1.234 BCM. Annual allocation for domestic and individual requirement up to 2025 is estimated to be 0. 096 BCM as per census 2001which was 1.014 BCM.(Source: Central Ground Water Board, CGWB).

A ground water resources map indicating all the types of aquifers, their thickness and their storages in the state should be handed over to the concerned authority whereby ground water with proper legislation will be regulated by an authority such as the State Ground Water Regulatory Authority. A proper scientific recharging mechanism should be adopted and made mandatory in all ground water sites that are being tapped. Out of 9326 habitations only 5041 are fully covered for drinking water supply at 40 litter per capita daily (LPCD) and remaining 4285 partially covered habitations yet to be covered with drinking water supply. Similarly, merely 25 per cent of the cropped areas in the state are covered under irrigation, while remaining 75 per cent are still under rain fed cultivation. Water supply to habitants for their livestock remains almost un-organized in the state. These call for relook to water resource planning in the state.

### **3. Objectives:**

- I. Promote water conservation and preservation mechanism, and judicious uses of water resources, available through surface, ground and rain sources,
- II. Ensure adequate capacity building and training to different stakeholders, and department personnel,
- III. Prepare comprehensive mapping of water resources at village/ community level and estimate the demand for and supply of quality

water for various uses-drinking, irrigation, livestock, fishery and other purposes,

- IV. Integrate water resources in to village development planning for inclusive economic growth and prosperity of rural households,
- V. Identify eco-sensitive zones (vulnerable zones) and promote water use efficiency in water sectors,
- VI. Develop and improve water bodies including rejuvenation of springs for enhancement of water storage so as to preserve water for adaptation and mitigation of climate change effect.
- VII. Develop small multiple reservoirs and micro-hydro power units and strengthen existing State Water Resources Council and District Water Council, and integrate their activities for betterment of water resources in the state, and
- VIII. Enhance investment through public-private partnerships and community mobilisation in conservation and management of water resources.

#### **4. Plan of Action:**

##### ***I. Natural Resource Management- Water, Soil and vegetation:***

Promote social regulations and mass mobilization campaign towards conservation & preservation of water resource, protective measures of soil erosion & forests depletion, and environmental consequences, etc.

##### ***ii. Judicious uses of Water resource:***

Building up network for assessment and monitoring of water resource, both for surface and ground sources, and extends suitable measures to ensure equitable access to responsibility for judicious use of water resources for various purposes.

Develop intensive programme for rain water harvest, conservation, ground water recharge/ recycling and promote optimal conjunctive use of surface and ground water for various uses.

***iii. Maintenance of Wet-land, Rivers/ Lakes and other water bodies:***

Conserve wet-lands/ rivers/ lakes and rejuvenate & restore different water bodies, and promote need-base, ecological and economic development.

Encourage and improve traditional way of rain water harvesting and storage, and control and abate pollution of water bodies from municipal and industrial wastes generated from habitats by intercepting and diverting such wastes away from water bodies.

***iv. Water Resources Development-Application of Science & Technologies:***

Promote science and technologies in developing strategic integrated water resources development plans and their implementation for maintaining the quality of water bodies to protect and enhance their capabilities to support the various designated uses.

Ensure convergence among various programmes of water resource development-efficient management of surface and ground water, sewage and water drainage system.

***v. Human resources Development:***

Promote capacity building and skill development of various stakeholders and create mass awareness towards water resources conservation & management as campaign to provide equitable accessibility to water resource for its various end uses.

Establish and strengthen MIS for water sector and promote applied research on water resource management.

**5. Rational:**

- Increase in the capacity building among different stakeholder and mass awareness towards conservation, management and judicious uses of water resources, and its environmental consequences.
- Increase in people's perceptions towards traditional way of water conservation and supply of clean drinking water at large.
- Increase in the equitable accessibility of quality water for various end uses (domestic, irrigation, livestock maintenance, etc.) better waste water management and improvement in water drainage system.

- Protects soil erosion, forests depletion and environmental degradation thereby improved livelihoods of rural people.
- Improves development and rejuvenation of different water bodies and their better management and uses for providing sustainable livelihoods.