

## Management of Water Resources in Maharashtra

**Dr.D.N.Kharat**

Sharadchandra Pawar Mahavidyalaya,

Lonand. Dist: Satara

Email : [prof.dnkharat@gmail.com](mailto:prof.dnkharat@gmail.com)

### Abstract

The Water Resources of the State are defined as all waters, surface or sub surface, existing within the state or passing through the state in any and all drainages and aquifers within the state. The geographical area of Maharashtra state is 308 lakh ha and its cultivable area is 225 lakh ha. Out of this, 40% of the area is drought prone. About 7% of the area is flood prone. The highly variable rainfall in Maharashtra ranges from 400 to 6000mm and occurs in a four month period between June - Sept with the number of rainy days varying between 40 and 100. The estimated average-annual availability of water resources consist of 164 km<sup>3</sup> of surface water and 20.5 km<sup>3</sup> of subsurface water.

In Maharashtra, of the 5 river basin systems, only 55% of the dependable yield is available in the four river basins (Krishna, Godavari, Tapi and Narmada) east of the Western Ghats. These four river basins comprise 92% of the cultivable land and more than 60% of the population in rural areas. An approximate 49% of the area of these four river basins consisting 43% of the population is already considered as deficit or highly deficit in regard to water availability.

**Keyword :** Water resource, Surface water, Ground water, Water management

### Introduction:

The present paper deals with the management of water resources and in the Maharashtra state. Water resource is one of the components of the group of natural resources called 'land' resource. Thus water resource along with other resources should be conceived as aspect of the environment. The significance of the water resource in regional economic development hardly needs to be emphasized (Phule B. R., 2002).

Water is scarce resource. The management of natural sources like water is needed for sustainable agriculture development. It has been stated that, Resources in general and water resource in particular are once again occupying the attention of planners all over the country.

Throughout the world, utilization of water depends on social, financial and technical reputation of the humans. For example, in the advanced regions it has a combine of uses, predominantly non-agricultural in nature. Increasing urbanization and industrialization has improved the demand of water.

### Objective:

- 1) To study the management of water resources in Maharashtra

- 2) To identify the strategies of water resource management.

### Data Base And Methodology:

Present study is based on secondary data. The secondary data is obtained from State census handbook, Economic Survey of Maharashtra, State Gazetteers, State statistical department and socio economic review and various books to related water resources.

### Concepts Of Water Management

Water management has always been practiced in our communities considering historical times, but now a days this needs to be achieved on priority basis. Water management may be very critical for the increase and improvement of any economy, like India which is provide with many big rivers, lakes and wells that need to be conserved, better controlled, recharged and channelized for assembly the ever growing requirement of agriculture, industrial and urban growth. Integrated water control is crucial for poverty reduction, environmental sustenance and sustainable economic development in India Water is most important natural resource and its sustainable management is critical to guard the water environment and to solve current position and future demand. Population, household size, industry and

urban centers are the important factors affect how much water we use

Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources. It is a sub-set of water cycle management (Wikipedia, the free encyclopedia).

### **Strategies And Methods of Water Management.**

Some important strategies are described as follows.

#### **I) Surface Water Management:**

Storage of water by construction of various water reservoirs had been one of the oldest measures of water control. The scope of storage varies from area to place depending on water availability and topographic condition. The environmental impact of such storage also needs to be examined for developing surroundings friendly strategies. All efforts ought to be made to fully utilize the monsoon runoff and save rainwater at all probably storage web sites. In addition to growing new storages, it's miles crucial to renovate the existing tanks and water our bodies by de-silting and up keep. The revival of conventional water garage techniques and systems should additionally be given due priority.

#### **II) Ground water management**

Ground water is one of the maximum essential natural resources. The biggest source of fresh water in the international lies underground. At the equal time, the improvement of ground water could be very antique. Increased needs of water for diverse functions have stipulated development of ground water resources. Therefore the available ground water must be investigated, developed on clinical strains for optimum usage and methods of conservation and augmentation can be concept of for dealing with their aquifer. Ground water is an critical factor of hydrological cycle. It supports the springs in hilly regions and the river float of all peninsular rivers at some stage in the non-monsoon period.

#### **III) Catchment area protection (CAP):**

Catchment safety plans are typically known as watershed safety or management plans. This paper work is an important degree to conserve and guard the fine of water in a watershed. It enables in with conserving runoff water albeit quickly by way of a test bund built throughout the streams in hilly terrains to put off the run off so that extra time is available for

water to seep underground. Such strategies are in use in konkan and vidharba region, in hilly regions of tribal belts. This approach also helps in soil conservation. Forestation in the catchment vicinity is likewise adopted for water and soil conservation.

#### **IV) Rainwater Harvesting:**

Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation. Dew and fog can also be collected with nets or other tools. Rainwater harvesting differs from storm water harvesting as the runoff is collected from roofs, rather than creeks, drains, roads, or any other land surfaces. Its uses include watering gardens, livestock, irrigation, domestic use with proper treatment, and domestic heating. The harvested water can also be committed to longer-term storage or groundwater recharge.

#### **V) Use of modern irrigation methods:**

Drip irrigation is a type of micro-irrigation system that has the potential to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface. The goal is to place water directly into the root zone and minimize evaporation. Drip irrigation systems distribute water through a network of valves, pipes, tubing, and emitters. Depending on how well designed, installed, maintained, and operated it is, a drip irrigation system can be more efficient than other conventional methods of irrigation

According to Indian Council of food and Agriculture, Maharashtra state is second rank after Rajshtan for micro irrigation (drip and sprinkler irrigation) in India. In the year 2015, the Maharashtra state is occupying 1.27 million hectare (16.45 percent of India) land under the micro irrigation. However the drip irrigation is covered 896 (000 Hectare) area and sprinkler irrigation 375 (000 Hectare) in Maharashtra state during the year 2015.

**Table No.1**  
**Micro Irrigation Area in Maharashtra**  
**(2009-2015)**

Sr. No	Year	Area (000 Hectare)	Growth in percent
1	2009-2011	212.54	-
2	2011-2013	192.62	- 9.37
3	2013-2015	575.08	+ 198.55

Source: Indian Council of food and Agriculture.

#### VI) Increasing forest cover:

Due to growing deforestation over the past century, most of the rainwater flowed away to the saline seas without infiltrating into the floor. Water crisis also advanced over the past decade in Cherapunji, which gets maximum rainfall within the world, because woodland cowl has been destroyed there because of mining of limestone. As a end result of it, rain water flows away very rapid to the rivers. A similar aspect is taking place within the Dehradun vicinity of Uttaranchal. The antique lifestyle of tree plantation on the banks of rivers and tanks will must be revived.

Forest cowl will need to be evolved on uncultivable waste lands and hilly slopes on a huge scale. Since bushes endure drought situations for an extended duration as compared to plants, as a result bushes are useful in reducing the demand for water together with recharging water resources.

#### VII) Reducing evaporation from various water bodies:

The water losses by evaporation from storage tanks, reservoirs, irrigation tanks, rivers and canals lessen the water available for various uses. The methods that reduce evaporation from water bodies are putting in wind breaks, lowering strength to be had for evaporation, building artificial aquifers, minimizing uncovered floor through reservoir regulation, lowering ratio of region/extent of water our bodies, locating reservoirs at better altitudes and applying monomolecular firms.

Plantation of the tree and the thermocol was to be used as floating cover to control evaporation of water bodies. These two are the important solution to reduce the evaporation of water bodies.

#### VIII) Reuse of urban waste:

Demand for water has expanded in cities due to growing urbanization. There is no provision for

waste water treatment in many massive towns and towns within the look at area. Instead of being reused, it pollutes different water assets. Such condition is visible in district of Chandrpur, Gadchiroli, Beed and Nagpur on the banks of river Narmada, Tapi, Krishna in Maharashtra State water is used after treatment in nearby fields for growing vegetables and end result. After use of water in city areas, disposed waste water may be deal with and conserved to be used in agriculture in the peripheral areas of cities. Such regulations ought to be included at the same time as making plans city improvement.

#### Conclusion:

Water is one of the most precious natural resources and a key element in the socio-economic development of a country. The significance of the water resource in regional economic development hardly needs to be emphasized. Water is scarce resource. The management of natural sources like water is needed for sustainable agriculture development. Water is vital no longer most effective for agricultural quarter but also for realizing out the whole capacity of state's improvement. Optimum improvement and efficient utilization of our water sources, therefore assume very impressive significance.

The forty percent cultivated area is drought prone of the state; variable rainfall, low rainy days, high rate of evapotranspiration, water pollution, growth of population, industrialization; urbanization and modernization of agriculture etc. are the specific reasons to need of water management and conservation in Maharashtra state.

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