

# A Study on Water Resource Management and its Issues in India

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## ABSTRACT

Water is a natural commodity that is an indispensable for all kind of creatures in this world. Without the consumption and availability of water, no regular works of the mankind can be proceeded. At most water covers 71% of the total surface area of the earth. Water's participation and role in the field of agriculture which plays a vital role in food production and also ensures the state of food security. So this type of water had to be managed and maintained in a proper plan or program called as 'WATER RESOURCE MANAGEMENT'. Water Resource Management mainly extends its helping hands in poverty eradication, sustainable growth of human society and also in many water sector developing activities. The quantity and quality of the groundwater and surface water are diminishing because of increase rates of pollutant dumping in the land which causes land and soil pollution. Climate change also massively affects the distribution and also the availability of water resources. This article exposes the present issues in developing and managing of water resources in India.

**KEYWORDS:** Groundwater, Pollution, Resource, Flood, Contamination

## 1. INTRODUCTION

Life and survival on Earth would be impossible without access to clean water. Research and analysis of scientific results show that 60–70% of the human body contains water, suggesting that water is the source of all life. It's impossible to fathom a world in which people are able to live without water. In this respect, groundwater is crucial to the economic and social progress of Asian nations. As a result, it contributes to the satisfaction of residential, commercial, and industrial water demands in addition to providing one-third of Asia's drinking water. Water resource management implications are a concept that is seldom understood by people from various parts of the world. It provides drought relief and irrigation for individuals who live in dry areas. The focus is on the water that is close to the surface, which is especially important to individuals who live in more humid climates. They worry about things like water treatment facilities, dams, and treatment for flooding. As one would expect, individuals from various occupations have varying points of view on Water Resource Management.

1.1. To the professional Water Engineer, Water Resource Management is related or concern with the construction and maintenance of dams,

reservoirs and concentrates in flood protection, diversions of canals, water treatment and reclamation of lands.

- 1.2. To the people in the field of ecologist, Water Resource Management is concerned with the deterioration of ecosystems, land and soil pollution and destroying of wetlands.
- 1.3. To the judicial perspective professionals(lawyer), the main conflicts in Water Resource Management are related to the ownership of water, the water rights system (ownership or legal rights to use or license to use), the water legislation and international water law.
- 1.4. To the economist scholar, Water Resource Management is concerned with the tradable water supplies and commodities, other types of water creation, private sectors in the water fields.
- 1.5. To the politician, Water Resource Management is concerned with the solving of conflicts in sharing water resources and attaining national goal such as economic growth, no poverty and food security.

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In an effort to boost manufacturing's contribution to India's GDP, the government has been actively pursuing its "Make in India" initiative. Special efforts are being made to increase the share of GDP contributed by exports from the current 17% to 25% by 2025. Water is also in high demand in the industrial sector. To a large extent, this is true for the 'MAKE IN INDIA' initiative, which has as its primary target market electronic hardware and devices like computers, mobiles, and phones. Today in India, the agricultural sector consumes 80% of the country's water supply, while industrial use accounts for just 15%. Also, the ratio might shift in the not-too-distant future. There will be a general increase in both water demand and availability. Reducing water toxicity and putting it to use in irrigation and other contexts are both possible thanks to water resource management technologies.

## 2. CONCEPT OF WATER RESOURCE MANAGEMENT

**GOALS OF WATER RESOURCE MANAGEMENT:** Water efficiency is the primary focus of Water Resource Management. The following is a list of the contents that must be present for proper Water Resource Management monitoring, maintenance, analysis, and control to be achieved,

- Water quality
- Water quantity
- Hydro meteorological and hydro – geological network
- Reservoir operation (Drought management )
- Watershed management (Drainage water regulation, Forest protection, Land conservation )
- Facilities maintenance



## 3. ROLE OF WATER IN AGRICULTURE:

Agriculture's enabling role is crucial if food security is to become widespread. Water is a crucial resource for farmers. Plants need water to germinate, and

people utilise this resource to feed their cattle. The quality of the water is crucial to the well-being of the crop and its capacity to produce, therefore ensuring that it is maintained even if water is available is essential. The availability and presence of water according to climate and seasonal changes also plays a major impact and performance in the agricultural field, and the programme of Water Resource Management includes a wide range of measures, including the construction of water harvesting structures, the dissemination of information about the importance of water conservation, the development of new water storage facilities, the establishment of connections between rivers, the restoration and refurbishment of existing water bodies, and so on..

### 3.1. COMMON USES OF WATER IN AGRICULTURE:

In the field of agriculture, water is used for,

- Irrigation
- Spraying
- Drinking water for livestock
- Washing down livestock buildings.

### 3.2. WHERE DOES WATER COME FOR AGRICULTURE?

The agricultural water comes from various sources such as,

- Surface water – rivers, streams, ditches for irrigation, open canal system
- Groundwater from wells
- Rainwater
- Municipal water systems water can also be used for agricultural purposes.

## 4. DROUGHT AND FLOOD

In India, the experience with water is dominated by the natural disaster of drought. Groundwater depletion is a major contributor to drought in the northern and western regions. The difficulty of overflowing rivers and recurring floods is especially acute in the eastern and north-eastern regions of India. This natural calamity often causes severe damage to or complete destruction of human dwellings, plunging many people into poverty. When we talk about drought, we're usually talking about a lack of rainfall, or water in the ground. There will be a shortage of water in that area until the drought ends or rain starts falling. Droughts may be caused by weather, and this one specifically alludes to a judicially-mandated lack of precipitation during an extended dry spell. When people talk about the effects of drought on farms, they're usually referring to the damage and losses that have occurred due to the drought. Hydrological drought is the depletion of an area's surface or subsurface water supply as a result of prolonged dry spells..

#### 4.1. PROBLEMS OF DROUGHT

The problems of drought are listed as:

1. Reduction of surface water.
2. Low levels of water in dams, reservoirs and lakes.
3. Lower soil quality.
4. Increase the quality of water.
5. Death of green vegetation.
6. Shortage of drinking water.
7. Reduction of life network of fish and wildlife.

#### 4.2. PREVENTIVE MEASURES OF DROUGHT

The preventive measures taken for drought resistance are as follows:

1. Implementing the connecting links of National Water Resources.
2. Innovative water pattern changes in irrigation of agriculture fields.
3. Construction of Rain Water Harvesting Tanks.
4. Awareness program for water conservation.

#### 4.3. PROBLEMS OF FLOOD

The problems of drought are listed as:

1. Cause huge damage to buildings and infrastructure.
2. Huge loss of human life
3. Road damages
4. Soil erosion and landslides
5. Health problems occur due to water contamination
6. Cause drinking water contamination.

#### 4.4. PREVENTIVE MEASURES OF FLOOD

The preventive measures of flood are listed as:

1. Creation of spongy surfaces in the city
2. Creation of overflow canals.
3. Separation of rainwater from the sewer water system.
4. Maintaining the sewer system clean.

#### 5. QUALITY OF GANAGA RIVER WATER

The National Mission for Clean Ganga (NMCG) provides financial aid to the government of the state of Uttar Pradesh in order to encourage the state's efforts to clean and enhance the Ganges River.

#### 5.1. INITIATIVES TOWARDS CLEAN GANGA

Before the National Mission for Clean Ganga (NMCG) was established, several efforts were made to clean up and reduce pollution in the river Ganga. Before the National Mission for Clean Ganga (NMCG) was established, the Government of India took a number of steps, some of which are mentioned below.

1. Ganga Action Plan
2. National River Conservation

3. National River Ganga Basin Authority (NRGBA)
4. Government clean-up campaign

Namami Ganga Yojna is another programme that the National Mission for Clean Ganga (NMCG) and the State Program Management Groups work to accomplish (SPMGS). Besides protecting the riverbanks, another goal of the Namami Ganga Yojna is to lessen the pollution of the Ganga. It mainly concentrates on:

1. Infrastructure of sewage treatment plant
2. Monitoring of industrial effluent
3. Schemes for cleaning river surface
4. Bio-diversity
5. Afforestation
6. Public awareness

#### 6. GROUNDWATER DEVELOPMENT

In India, most people have relied on groundwater for their whole lives. Groundwater meets between 50 and 60 percent of India's total water needs for irrigation, 50 percent of the country's urban water needs, and 85 percent of its rural water needs. The groundwater level has decreased due to the irrational cost of using it for different reasons, which has led to water shortages and other problems. The increased use of groundwater for agriculture, industry, human use, etc., has led to its overexploitation and pollution. Due to an unexpected shift in cropping patterns, more water is required for paddy cultivation and other cash crops. In dry locations, farmers must use more energy to draw water from the ground. The Central Ground Water Board has been keeping an eye on this underground river (CGWB). When it comes to approving groundwater extraction for use in factories, mines, and other commercial enterprises, the Central Ground Water Board (CGWB) is crucial. When granting NOC for industries, necessary and needed requirements and suggestions are placed on the industries. The primary responsibility of the Central Ground Water Board (CGWB) is to oversee the annual regional groundwater quality monitoring and assessment. Groundwater in certain regions of the several states is also polluted with salinity, arsenic, fluoride, iron, nitrate, and heavy metals at levels beyond the BIS guidelines for acceptable levels. Other than naturally occurring contaminants, human activities are responsible for most subterranean water pollution. The discharge of industrial wastes, the presence of other polluting landfills, and the presence of other submerged sources of pollutants such as fertilisers, pesticides from agricultural fields, etc., all contribute to what is known as "anthropogenic pollution of subterranean water.",

## 7. NATIONAL WATER INFORMATICS CENTRE

The Government of India's Ministry of Water Resources, River Development, and Ganga Revitalization has just opened the National Water Informatics Centre (NIWC). It served as a repository for statistics and data pertaining to all of India's resources and now operates as a branch of the Ministry of Water Resources, River Development, and Ganga Rejuvenation. Managing water resources and keeping accurate statistical reports on water availability is a challenging endeavor that calls for knowledge from many fields. First and foremost, the National Water Informatics Centre (NIWC) must keep a public domain, comprehensive "Water Resource Infrastructure System" up-to-date to ensure the participation and understanding of all parties involved in Water Resource Management. To put it simply, the goal of the National Water Informatics Centre (NIWC) is to serve as a "Single Source" for accurate information on water supplies.

## 8. CONCLUSIONS

"As the quality of water varies with the kind of soil; so will a man's reason vary with the quality of his companions," writes the famous poet Thiruvalluvar. And he said, "Thus when rain fails, no man may walk in duty's allotted route" (When water fails, activities of nature stop, you say). These statements were said by Thiruvalluvar in the year 31 BC. As a man would, he brought up the quality of the land and water. Therefore, it is not just the responsibility of the government to ensure the availability of clean drinking water; rather, each individual has a responsibility to do what they can to reduce water waste.

**'SAVE WATER – SAVE EARTH'**

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