

# Assessment of Water Bodies for Proper Planning and Development

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## Abstract

Water bodies are an inherent part of the ecosystem. They have traditionally served the function of meeting water requirements for drinking, household uses like washing, for agriculture, fishing and also for religious and cultural purposes. Apart from these functions, which involve direct use of the lake water, river water and pond water which are also known to recharge ground water, channelize water flow to prevent water logging and flooding. Water bodies are also host to a wide variety of flora and fauna, especially birds.

**Keywords:** Development, ground water, management, planning, watershed

## INTRODUCTION

The need to initiate efforts for role of water as resource for planning & development of region as a valuable part of the whole ecosystem which could no longer be ignored. It realizes that if the water bodies are not conserved without loss of time, the restoration costs later will not only reach phenomenal heights, but will more importantly cause a permanent ecological damage. This may lead to scarcity in potable water, cause heat islands in the cities and affect bio-diversity in cities as well as villages.

## NEED FOR PLANNING & DEVELOPMENT

It realize that water bodies being major sources of accessible fresh water require well planned, sustainable and scientific efforts to prevent their degradation. It as an essential to restore and conserve water bodies and intends to explore the possibility to work in protection, conservation and sustainable management of it.

## **APPROACH**

The goals for planning & development have to be tailored to individual regions, specific to the problems of degradation and based on the level of dependence. This requires reconstruction of the physical conditions; chemical adjustment of both the soil and water; biological manipulating, reintroduction of native flora and fauna, etc. The interpretation of existing trends and scenarios in the process of planning & development as presented here is based on interaction with limited key players namely government stakeholders, developers involved in similar projects and personnel involved in the field work.

## **METHODOLOGY**

Methodology derived is based on-

- The m-Social/Cultural/Economic and Environmental Consciousness.
- Stresses caused by the human activities on the environment.
- Present status of environment and assessment of causing factors.
- Effects of environmental degradation.
- Responses - Solutions with due consideration to all the above factors and feasibility for mutual coexistence of man and resources.

### **Parameters to study**

- 1) Depth of the water body.
- 2) Total average availability of water in the water body .
- 3) Other aspects affecting the water body.

### **Identified Problems**

The pressures in the water bodies itself was resulted in

- degradation of the area due to deforestation
- extensive agricultural use
- consequent erosion and increased silt flows
- which have polluted the quality of water stored in the water bodies.

### **Role of water resources and their types**

Water resources are sources of water that are useful or potentially useful which include agricultural, industrial, household, recreational and environmental activities. The majority of human uses require fresh water.

### **Under river flow**

Throughout the course of a river, the total volume of water transported downstream will often be a combination of the visible free water flow together with a substantial contribution flowing through sub-surface rocks and gravels that underlie the river.

### **Ground water**

Sub-surface water, or groundwater, is fresh water located in the pore space of soil and rocks. It is also water that is flowing within aquifers below the water table. Sometimes

it is useful to make a distinction between sub-surface water that is closely associated with surface water and deep sub-surface water in an aquifer.

**Desalination**

Desalination is an artificial process by which saline water (generally sea water) is converted to fresh water. The most common desalination processes are distillation and reverse osmosis. Desalination is currently expensive compared to most alternative sources of water, and only a very small fraction of total human use is satisfied by desalination. It is only economically practical for high-valued uses (such as household and industrial uses) in arid areas.

**Watershed approach in water resources planning and quality management**

Watershed management is holistic approach to managing water resources for quality and quantity within a watershed. The watershed approach is an ongoing cycle of tasks which includes important steps like planning, cycle of task which includes important steps like planning, data collection, assessment and targeting, strategy development and implementation. In planning phase, the watershed unit and resource personnel are identified. Quantitative and qualitative aspects of water resources including point and non-point pollution sources are obtained during data collection. Assessment and targeting compare the current water quality to the established standards for water uses and water quality management in water supply. The strategies need to be developed to maintain water quality standards and meet future demands. The final step in watershed approach is the implementation of goals and strategies through permits, best management practices and education programs.

**KEY ISSUES LEADING TO DEGRADATION OF WATER BODIES**

Key issues leading to the degradation of water bodies are:-

Many water bodies have been lost in the process of various anthropogenic activities and population pressures leading to unplanned urbanization and expansion. Rest of the surviving water bodies are reduced to drains due to direct discharge of industrial effluents and unregulated dumping of solid wastes.

**SOURCES OF POLLUTION IN WATER BODIES**

Source	Type of problem
Point Sources	
Power plants	Combustion of fossil fuels emit nitrogen products into the atmosphere, which are carried down by rainfall and other processes, causing eutrophication in water bodies.
Sewage Treatment Plants	Treatment process release oxides of nitrogen and phosphorous in effluents, which drain into water bodies.

	Industrial Plants	Industrial processes release nitrogen and phosphorous products in effluents, which drain into water bodies.
Non-Point Sources		
	Agriculture	Farming practices, including use of fertilizers rich in nitrogen and phosphorous, deposit increased amounts of these nutrients in the soil. Run-off from these farms cause eutrophication in water bodies.
	Sewage	Direct discharge of sewage from domestic sources, not connected to treatment plants, will eventually make its way into water bodies.

**Deficiency In Proper Management:** The number of water bodies has been gradually decreasing because some of the them have been converted into residential uses. Most of the live water bodies have silted up due to faulty land management and indiscriminate mud lifting from the beds consequently, so their water impounding capacity has been reduced considerably apart from rendering the water turbid. Conflict of interests among various land & water use sectors and their failure to evolve common strategy.

**Social composition of land ownership:** Increasing population and growing economies leading to unplanned development and greater pressures on land resources. Water bodies are often seen as main targets for development duet to pressure of human activities. As a result of these activities most of the are getting degraded beyond the point of recovery.

**Spread of well irrigation:** As the population increase, the demand for water continues to increase. Bore wells are dug indiscriminately. If the rainwater-harvesting is not done to recharge ground water the massive investment in bore wells in simply washed away.

**Lack of governmental commitment:** Insufficient cohesive academic research centered on wetland in understanding the importance and essence of conservation and management, owing to financial constraints and lack of infrastructure and required expertise. Also the change in the institution mechanism and their weakening over the years is an issue.

**Lack of data bank :** Census of water bodies and identification and assessment of their problems both in the urban and rural areas is not available. Lack of access to scientific data and scientific norms for restricting building activity around the water bodies.

### **IMPACT OF URBANIZATION ON WATER BODIES**

The rapid urbanization has the following impact on the water bodies:

Industrial effluents, run-off from agricultural fields, refuse and sewage, domestic wastes like food remnants, soaps, detergents and sewage are dumped into water bodies which break down and release nutrients in the water bodies. Microscopic organisms consume these nutrients and survive on them. Following ingesting of carbonic elements, carbon dioxide is released, while some of the elements are converted into nitrates and phosphates. This is called oxidizing and uses up a lot of dissolved oxygen. The depleted levels of dissolved oxygen in water lead to a situation where other aquatic life-forms cannot survive.

### **CONCLUSIONS**

A number of actions are required to restore by proper planning and development of water bodies to a healthy state and then to ensure it stays in a good condition. An individual strategy is required for water bodies, which sets out its uses, management objectives and actions. The restoration work needs to be phased over years, while maintenance actions need to occur annually. This study is to review the feasibility for role of water as resource for planning & development of region at identified location in one of the regional area and suggest methods and techniques for its reviewal. Study is to derive a method for a systematic study of water bodies and its surrounding which suggest a method to fill up ground water through revival of water bodies and to develop on integrated management plan for the execution of the whole process. Study indicates demarcation of the project area, study of wetlands with respect to various environmental parameters and preparation of guidelines through interaction with local communities.

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