

Wetlands Ecosystem: A solution to Environmental Degradation

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Abstract: *This paper explores India's wetland resources in terms of its geographic distribution and scale, the ecosystem benefits it offers and the various stresses it is exposed to. The paper also addresses the efforts being made to maintain these fragile habitats, describes the institutional vacuum and recommends focus areas where urgent action is required to devise better management strategies for these efficient systems. Management of wetlands has been found to have provided insufficient consideration on the agenda of the national water sector. As a result, many of the wetlands are subjected to anthropogenic pressures, including changes in catchment land use; emissions from agriculture and households; intrusions; tourism; and overuse of their natural resources. However, most wetland management work in India is related to the limnological dimensions and ecological/environmental wetland management economics. However, the physical (such as changes in catchment hydrology and land use) and socioeconomic methods leading to limnological adjustments have not been substantially explored.*

Keywords: *India, Wetlands Ecosystem, benefits Anthropogenic, threats, Institutional strategies..*

INTRODUCTION

A wetland is a type of the ecosystem which is a piece of the land filled with the water. The water quantity in that ecosystem depends upon the season and even some times these are filled with the water permanently. These reason are known for the processes which are oxygen free. Wetland are considered as an important part of the biodiversity as it play a variety of the role such as water purification ,processing of the carbon, water storage and helps in processing of the other many types of the nutrients. These wetlands are also helpful to stabilization shoreline as well as support of the plants and animals. The wetlands are considered most diversified ecosystem as it supports number of the living beings.

Generally, biodiversity are the collection of the many type of the ecosystem that are existed in the natural environment and wetlands are also a type of the ecosystem. Wetlands are among the world's most active ecosystems and provide human society with many essential services. These are however both environmentally aware and adaptive structures. Wetlands display tremendous diversity based on their origin, geographical location, water and chemistry, dominant organisms, and characteristics of soil and sediment. Overall, the size of wetland habitats ranges from 917 million hectares (m ha) to over 1275 m ha with an estimated economic value of about US\$ 16 trillion per year[1].

The wetland ecosystem in India is identified by the Ramsar Convention as most natural water bodies (including rivers, lakes, coastal lagoons, mangroves, peat land, coral reefs) and man-made wetlands (like those of ponds, farm ponds, irrigated fields, sacred groves, salt pans, reservoirs, gravel pits, sewage farms, and canals). Among these various wetlands, only 26 were designated Ramsar Sites (Ramsar, 2013). Nevertheless, the policy process continues to neglect many other wetlands that perform potentially valuable functions. As a consequence, many species of freshwater wetlands have been at risk and others are already degraded and lost as a result to urbanization, population growth and greater economic activity[2].

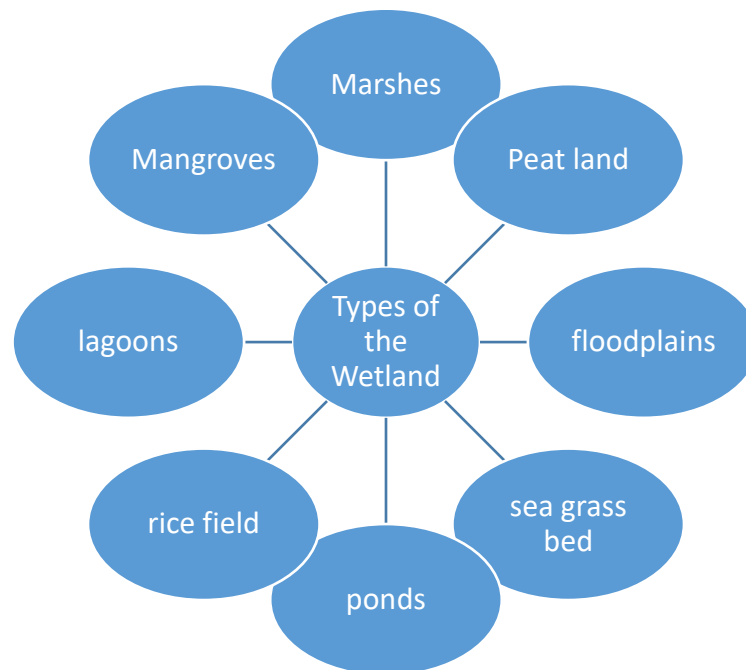


Fig. 1 Types of the Wetlands

The lack of consistency between government policies in the areas of economics, ecology, conservation of biodiversity, development planning is one reason why these water bodies are deteriorating. There are also significant explanations for lack of good governance and management [3]. The aim of this review paper is to examine the status of wetlands in India in terms of their geographical distribution and extent; the ecosystem products and services they provide; the numerous stresses they are subject to; and the various legal and policy approaches to environmental conservation and management adopted in India [4].

IMPORTANCE OF WETLANDS

Wetlands are recognized as having special ecological characteristics that provide humanity with various goods and services. Wetland-provided ecosystem goods primarily include: irrigation

water; fisheries; non-timber forest products; water supply; and recreation. Essential resources include: carbon sequestration, flood management, groundwater recycling, pesticide removal, pollution retention and conservation of biodiversity.

➤ *Multiple-use water services:*

Wetlands such as wetlands, dams, lakes and reservoirs have long provided water resources with various applications, including water for agriculture, domestic needs, fisheries and recreational uses; groundwater recharge; flood control and collection of silt. Andhra Pradesh, Karnataka and Tamil Nadu's southern states have the highest irrigation tank concentration, totaling 0.12 million, accounting for nearly 60 percent of India's tank-irrigated area. Similarly, conventional tank systems exist in the states of Bihar, Orissa, Uttar Pradesh and West Bengal, comprising almost 25% of the irrigated net tank area. Tanks play a crucial role in harvesting surface runoff during monsoon and then making subsequent use. In addition to irrigation, these tanks are also used for fisheries, as a source of water for domestic and nutrient-rich soils, cultivation of fodder grass and brick making. Both applications are of high benefit for the poorest of the poor in terms of household income, nutrition and health.

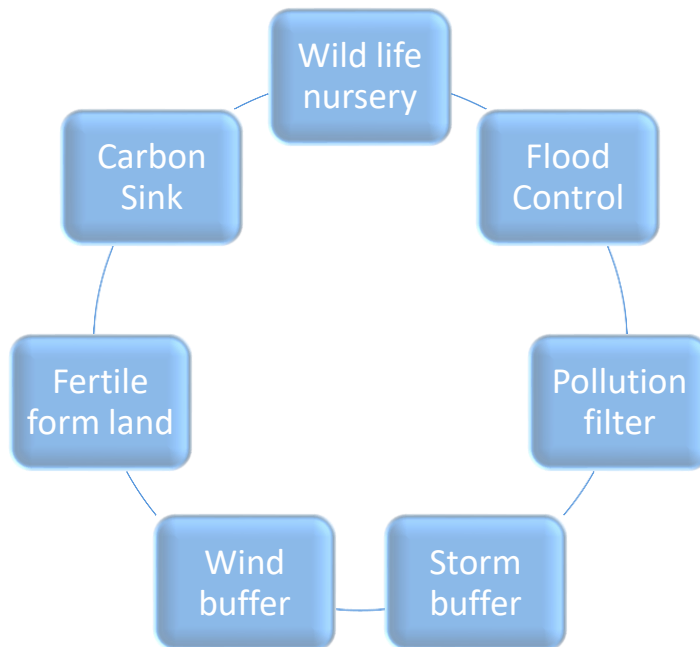


Fig .2 Benefit of the Wetland

➤ *Carbon sequestration:*

In the carbon cycle, swamps, mangroves, peat lands, mires and marshes play a significant part. Although wetland sediments are long-term carbon stores, short-term stores are current biomass (plants, animals, bacteria and fungi) and dissolved surface and groundwater components in wetlands. Although wetlands contribute about 40% of global methane (CH₄) emissions, they have the highest density of carbon (C) in terrestrial ecosystems and relatively higher capacity to sequester additional carbon dioxide (CO₂). Wetlands sequester C by high input levels of organic matter and decomposition levels. Wetland soils may contain as much as 200 times as much C as their vegetation. Drainage of large wetland areas and their subsequent agriculture in many places had, however, made them a net source of CO₂.

➤ *Recreational and Tourism :*

Wetland has emerged as the center for the recreational activities and the tourism as the government want to develop wetland as a tourism center. The many type of activities such as bird watching, hiking, kayaking provided to the people to find these places even more enjoyable.

➤ *Wild life nursery :*

The location of the wetland is important as it is situated between the land and water and also source of the fresh water, salty water or even brackish water. The location of the wetlands are helpful for the natural habitat for the number of the species and also helpful to save the endangered and threatened species. The wetland is habitant of a large number of songbirds, waterfowl, shell fish etc.

➤ *Pollution Abatement:*

In many agricultural and urban landscapes, wetlands serve as a sink to pollutants. Wetlands have also been proposed from an environmental perspective as a low cost strategy to minimize point and non-point emissions. Natural wetlands including riparian wetlands, by eliminating nitrate and phosphorus from surface and subsurface runoff, raising the nutrient load of flowing water. Wetlands are also polluted in India by agricultural runoff and disposal of untreated sewage and other industrial waste. Under normal conditions, surface and sub-surface holding contaminants from the catchment, preventing them from entering rivers and streams.

➤ *Flood Control:*

Wetlands play an important part in flood prevention. By storing water and increasing the speed at which flood water flows to mitigate the effects of flooding, wetlands support. In addition, they trap suspended solids and load of nutrients during periods of flooding. Despite their success in preventing flood damage, wetlands are considered a natural capital alternative for conventional flood control investments, such as deer, dams and dams.

➤ *Biodiversity Hotspots:*

Wetlands, as with any other natural habitat, are important in promoting diversity of species. For their entire life cycle, some vertebrates and invertebrates rely on wetlands, while others only interact with these areas during specific stages of their lives. Since wetlands provide an atmosphere where photosynthesis can occur, and where nutrient recycling can occur, they play an important role in supporting food chains. In India, lakes, rivers and other freshwater bodies sustain a broad biota diversity comprising nearly all taxonomic groupings. The total number of aquatic plant species exceeds 1200 and is a valuable source of food for waterfowl in particular.

CONCLUSION

In India, wetland habitats support diverse and unique conditions and are scattered through different topographic and climatic regimes. These are considered a vital part of the hydrological cycle and are highly active processes in their natural form. Not only do wetlands support substantial biodiversity, but they also have a wide range of environmental products and services. Wetlands provide a range of recreational facilities in India, including irrigation, household water supply, freshwater fishing and electricity. However, the conservation of wetlands has received inadequate attention on the national water market agenda. As a result, anthropogenic pressures are subject to most of the urban and rural wetlands, including land-use shifts in catchment; industrial and household pollution; invasions; tourism; and over-exploitation of their natural resources.

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