



ENVIRONMENTAL PROTECTION THROUGH WETLANDS MANAGEMENT WITH ECONOMIC PRODUCTIVITY

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ABSTRACT

Growing Environmental problems in last few decades have made Environmental Management an important subject of concern. Every organism on earth including humans are endangered by the effects of these environmental problems. To protect environment and to reduce frequently occurring environmental problems protection of natural habitats like wetlands should be taken under consideration. Wetlands protection if developed properly can be useful to solve many environmental problems. Wetlands with its natural properties of water purification and biological productivity are becoming popular for Fisheries and water treatment as wetlands eco-system is known as most productive eco-system. This paper focuses on Wetlands Management as an excellent solution to environmental problems with special attention given to economic productivity with growth of eco- tourism in wetlands.

INTRODUCTION

Planet earth is facing acute problems of pollution, natural disaster, Loss of biodiversity, climatic change, global warming and soil degradation. As the severity of these problems is increasing day-by-day immediate action should be taken to protect environment. For these reason environmental management is the subject which has got immense importance. Environmental problems which are repeating itself like floods, drought, etc. can be controlled if wetlands are developed properly and wetland management is taken under consideration. Environmental protection through wetlands management with economic productivity is important approach to environmental management. Eco-tourism is a great sector to protect environmental destination with economic gain to nation. Wetland tourism and wetland fishery is mostly focused in this paper to develop wetlands economically.

FOUNDATION ON SUSTAINABLE DEVELOPMENT

India makes up 2.4 percent of the world's land, while supporting 16 percent of the world's population. The compounding result is a severely unsustainable use of natural resources for several generations. Currently, India is experiencing rapid and widespread environmental degradation at alarming rates. Tremendous pressure is placed upon the country's land and natural resources to support the massive overpopulation (www.fsdinternational.org).

OBJECTIVE

1. To Study an approach Environmental solution to Environmental problems with Wetlands as a solution to the Environmental problems and Economic productivity through developed wetland Management.

2. To focus on Eco-tourism destinations as a growing tourist attraction with attention to wetlands.

METHODOLOGY

This paper focuses on environmental problems and its solution with environmental management and attaining economic productivity through it. Secondary data is taken for this research paper from websites of authorities, institutions, organizations and media.

ANALYSIS

1 ENVIRONMENTAL PROBLEMS

1.1 Floods-

Increase in level of water across rivers that causes overflowing of water results in flood condition. Intensity of flood gets amplified due to destruction of wetlands. Although floods in many areas are repeating itself each year there is deficiency in its prevention and controlling method.

India is highly vulnerable to floods. An average every year, 75 lakh hectares of land is affected, 1600 lives are lost and the damage caused to crops, houses and public utilities is Rs.1805crores due to floods. The frequency of major floods is more than once in five years (www.ndma.gov.in).

1.2 Drought-

India is known as agricultural country, as large population of country is engaged in this occupation. Land under cultivation depends mostly on rain water as primary source of water to recharge water reservoirs. Due to lack in watershed management each year severe problems are faced by habitats of drought prone areas.

At least 330 million people are affected by drought in India, the government has told the Supreme Court. Authorities say this number is likely to rise further given that some states with water shortages have not yet submitted status reports. (www.bbc.com).

1.3 Biodiversity

India is nation which is rich in biodiversity due to its tropical environment, Still India is also a nation facing problems of loss in biodiversity. Due to increase in population of country and uncontrolled use of resources like natural habitat there is serious threat to biodiversity.

New Delhi: India, one of the 17 identified mega-diverse countries of the world, is facing a high rate of loss of bio-diversity due to human settlements, mining, industry and associated infrastructure, according to a Government report (zeenews.india.com).

1.4 Pollution

Due to growth in science and technology life is becoming mechanical. Unplanned and over-exploitation of resources environment is facing problems of various pollutions.

A) Air pollution

Burning of fossil fuels and industrial growth there is release of polluting gases in atmosphere. Change in natural composition of air and introduction of pollutants in air is called air pollution. Air pollution in Delhi and other Indian cities stubbornly refuse to go away. A new World Health Organisation (WHO) report says an estimated 12.6 million or (1.26 crore) people are dying each year globally from 'unhealthy environment' alone. This is one of every four casualty across the globe. Of these, two thirds, or 8.2 million (82 lakh), deaths are from

non-communicable diseases (NCDs) such as strokes, heart attacks, cancers and chronic respiratory ailments only (indiatoday.intoday.in).

B) Water Pollution

Introduction of pollutants in water due to natural and man-made activities is called water pollution. Even as India is making headlines with its rising air pollution levels, the water in the country may not be any better. An alarming 80% of India's surface water is polluted, a latest assessment by WaterAid, an international organization working for water sanitation and hygiene, shows (timesofindia.indiatimes.com).

C) Soil Pollution

Mixing of hazardous compounds in soil is termed as soil pollution. It causes degradation in natural quality of soil. About 40 percent of deaths worldwide are caused by water, air and soil pollution, concludes a Cornell researcher. Such environmental degradation, coupled with the growth in world population, are major causes behind the rapid increase in human diseases, which the World Health Organization has recently reported. Both factors contribute to the malnourishment and disease susceptibility of 3.7 billion people, he says (www.terradaily.com).

1.3 Climatic Change And Global Warming

Due to imbalance in natural composition of air and increase in greenhouse gases in atmosphere planet earth is facing acute condition of rise in temperature which causes rise in sea level and climatic change.

India is the fastest-growing major economy in the world. It is the fourth largest greenhouse gas (GHG) emitter, accounting for 5.8 percent of global emissions. India's emissions increased by 67.1 percent between 1990 and 2012, and are projected to grow 85 percent by 2030 under a business-as-usual scenario (www.c2es.org).

2 WETLANDS AS A SOLUTION TO MANY ENVIRONMENTAL PROBLEMS

Water security is widely regarded as one the key natural resource challenges currently facing the world. Human drivers of ecosystem change, including destructive extractive industries, unsustainable agriculture and poorly managed urban expansion, are posing a threat to global freshwater biodiversity and water security for 80 per cent of the world's population.

Global and local water cycles are strongly dependent on healthy and productive wetlands, which provide clean drinking water, irrigation for agriculture, and flood regulation, as well as supporting biodiversity and propping up industries such as fisheries and tourism in many locations.

Yet, despite the high value of these ecosystem services, wetlands continue to be degraded or lost at an alarming pace, according to *The Economics of Ecosystems and Biodiversity (TEEB) for Water and Wetlands* report, released for consultation today at the 11th meeting of the Conference of the Parties to the Convention for Biological Diversity.

Half of the world's wetlands were lost during the twentieth century - due mainly to factors such as intensive agricultural production, unsustainable water extraction for domestic and industrial use, urbanization, infrastructure development and pollution. The continuing degradation of wetlands is resulting in significant economic burdens on communities, countries and businesses.



The report also highlights that the restoration of wetlands and their water-related services, also offers significant opportunities to address sustainable and cost-effective solutions to water management problems.

"Policies and decisions often do not take into account the many services that wetlands provide - thus leading to the rapid degradation and loss of wetlands globally," said UN Under-Secretary General and UN Environment Programme Executive Director Achim Steiner.

"There is an urgent need to put wetlands and water-related ecosystem services at the heart of water management in order to meet the social, economic and environmental needs of a global population predicted to reach 9 billion by 2050," he added. (www.unep.org)

2.1 Flood

Wetlands prevents flooding by holding water like sponge. Rain water runoff prevented by wetlands as wetland traps and absorbs flowing water. Wetland stores water which is used for recharge of ground water reservoirs. Natural method for control on floods.

2.2 Drought

Wetland absorb water which is used in drought season to recharge ground water sources. As wetland contains variety of flora and fauna it is considered as great source of water to them in drought season.

2.3 Biodiversity

Wetlands are among the most productive eco-system in the world because of its nourishing environment. Variety of species of microbes, plant, insects, amphibians, reptiles, birds, fish and mammals can be part of wetland eco-system because of favorable conditions for their growth. Wetlands are also referred to as biological supermarkets. They provide rich source of nutrition to growth of flora and fauna. Wetlands contains organic material called detritus from dead leaves and plants. This enriched material feeds many aquatic insects, shellfish and small fishes that becomes food for many predators and thus maintains natural food cycle.

2.4 Pollution

A) Air Pollution

Wetlands can be used as soil bio-filters for various reasons like controlling of industrial waste. As wetland contains natural vegetation for plants it is a great resource to get fresh and filtered air.

B) Water Pollution

Wetland is an eco-system which purifies water naturally, it acts as natural filter and also known as kidney of planet earth. Decomposition of toxic chemicals is done in wetland which decays material into its natural form.

C) Soil pollution

Wetlands nourishes soil by releasing nutrients which improves quality of soil. It treats toxic waste and decays it and prevents degradation of soil. It controls soil erosion and maintains quality of soil.

2.5 Climatic Change and Global Warming

Wetlands prevents climatic change by maintaining balance of atmospheric gases. It reduces greenhouse gases and thud helpful method to control climatic change and global warming.

3 ECONOMIC PRODUCTIVITY THROUGH WETLANDS

3.1 Eco-Tourism

Scope of tourism industry in India is growing day-by-day. Eco-tourism an environmental approach to tourism is became a very important sector tourism industry. India is rich in bio-diversity because of that many foreigners visit India to see the environmental destination and thus contribute large share to Indian economy. Wetlands a rich source of biodiversity if developed properly can be developed as great Eco-tourist destination.

India by virtue of its extensive geographical extent, varied terrain and climatic conditions support and sustain diverse and unique wetland habitats. According to a Space Application Centre (SAC) report, 7.58 million hectare wetlands are in India which includes 3.56 million ha of freshwater wetlands. Odisha has 16277.5 ha of inland wetland and 185431.75 ha of coastal wetland. The rapidly growing human populations, large-scale changes in land use/land cover and the improper use of watersheds have caused a substantial decline in wetland resources of the country.

The geographical diversity of India makes it home to a wealth of ecosystems which are well-protected and preserved. These ecosystems have become the major resources for ecotourism. Ecotourism is sustainable tourism, which is based on the ecological principle and sustainable development theory. Ecotourism involves local community for conservation of the areas' ecology; and biodiversity, in its return, provides economic incentives to the community.

The World Travel and Tourism Council (WTTC) has recently notified India as one of the fastest-growing tourism economies in the world. In May 2002, the Department of Tourism, Government of India, formulated a new National Tourism Policy emphasizing on development and promotion of Indian tourism to harness its economic benefits to a large segment of its population. (www.dailypioneer.com)

3.2 Fisheries

Wetlands fishery is becoming popular as wetlands contains excellent environment for growth of fishes. Abundant variety of fishes are found in wetlands eco-system. Due to this wetland management with fishery development is very important to get economic productivity from environment.

Wetlands are one of the most productive ecosystems comparable to tropical evergreen forests in the biosphere and play a significant role in the ecological sustainability of a region. Wetlands form the transitional zone between land and water, where saturation with water is the dominant factor determining the nature of soil and the types of plant and animals community's living in and on it. An immense variety of species of micro-organism, plants, insects, amphibians, reptiles, birds, fish and mammals are the part of a wetland ecosystem.

Wetland is an ecosystem which provides great volume of food that attracts many animal species like shellfishes, small fishes and predatory fishes. Capture and culture fisheries activities can be effectively carried out in these type of water logged areas provided the system is well managed. (aquafind.com).

3.3 Water Treatment

Wetland water treatment is new approach getting importance as wetlands are natural filters which processes pollutants and decomposes it to natural form.



The use of wetlands to treat effluent is not a new idea. Thousands of years ago, natural wetlands were used by the Chinese and by the Egyptians to clarify liquid effluent. However, the first “constructed” wetland was not used until 1904 (in Australia). Even after that the use of such wetlands was slow to catch on. The first botanical treatment of waste was not reported in Europe until the 1950s; America’s research into the field did not begin until the 1970s. Nevertheless, it is now recognized that constructed wetlands are an economic way of treating liquid effluent (and even raw sewage - see the section on “New Generation” Reed Bed Filters in France).

Constructed Wetlands reduce concentrations of suspended solids, biochemical oxygen demand (BOD5), nitrogen, phosphorus, and coliform bacteria (often by up to 98%). Their simplicity and scalability make them effective for treatment of waste from small communities. If constructed on suitable topography, they require little energy input, which makes them suitable for both under-developed and rural sites. However despite the suitability of climate in developing countries, the spread of wetlands in such areas has been described as "depressingly slow" (P.Denny et al., 'Constructed wetlands in developing countries', *Water Sci and Tech.* 35 (5) pp167-174 1997).(www.fujitaresearch.com).

CONCLUSION

Increase in environmental problems have caused devastating effect on planet earth. So Protection of environment is becoming important topic of concern in Environmental management. Wetlands is a natural habitat for large number of living organisms. To protect environment in its natural form natural habitats like wetlands must be conserved. Wetlands with its natural properties like water treatment and pollution control is a solution to many environmental problems. Protecting and developing wetlands must be taken under consideration to solve environmental problems. Eco-tourism with wetlands as a tourist destination is an important factor in wetlands productivity. Wetlands development and attaining economic productivity with wetland management is an approach should be given prime importance in Environmental management.

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