

# Strategies for Wetland Conservation: Study of Kanwar Wetland, Begusarai

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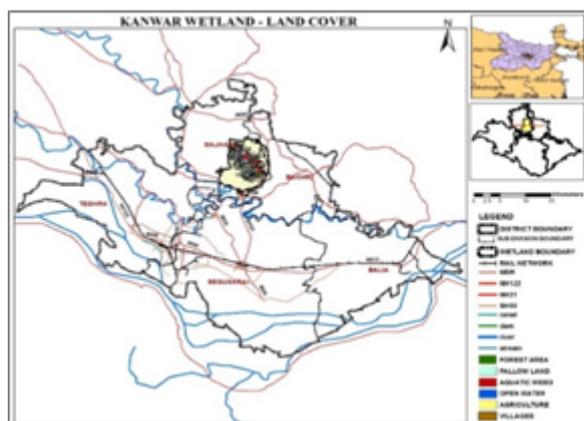
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**Abstract:** *The world is developing very fast these days with the help of modern technology. The world is following sustainable development methods in all kind of development (Sectorial) and for that sustainable development goals have been identified. Wetland conservation is one of the major aspects, which is needed better care while planning. For the conservation of wetlands, many initiatives have taken worldwide. In India itself there are lot many schemes and policy are running these days. India is the signatory to the Ramsar Convention on Wetlands and has drafted Wetland (Conversation and Management) Rules in 2010 but still, no significant improvement has been made on the conservation and wise use of wetlands. In India majority of research work on the wetland is associated with the limnological aspects and ecological/environmental economics but, the physical and socio-economic processes leading to limnological changes have not been inspecting substantially. It is necessary to investigate the Draft Wetlands Rules, 2016. This paper author discussed various research strategies for the conservation of wetland in India with the example of Kanwar Wetland in Begusarai District (Bihar).*

**Keywords:** Wetlands, Conservation, Strategies, Environment, Ecology.

## 1. Summary of Key Findings



District	Begusarai	Area in hectares	7,400 hectares during high floods and 300-400 hectares during lean season
State	Bihar	Bbiogeography zone	indo-gangetic plain
Nearest village	Munjhol	Biological category	freshwater
Nearest railway station	Begusarai	wetland type	ox-bow wetland
Nearest air port	Patna	Altitude	32-45 m above sea level
Nearest river	Burhigandak	depth of the wetland	1-5 meters

Kanwar wetland is Asia's largest freshwater oxbow lake. It is natural shelter of hundreds of species of endangered and rare domestic and migrant birds. It is also famous for its bird sanctuary and is one of the most visited picnic spots in Begusarai. Ghosh explained that the lake has been shrinking at an abnormally high rate, as revealed by a comparison of remote-sensing pictures taken in 1984 and 2010. It has reduced by 66 per cent since 2004 and only 30 per cent of the original coverage area is left, as recorded in 1984 (Sengupta 2014) (Anand and Joshi 2013). Extensive deforestation, overgrazing, unsustainable agricultural practices, and over exploitation of biomass for fuel, fodder and timber purposes have stripped the land of its natural vegetation cover, resulting in erosion (Sengupta 2014). The application of fertilizers, pesticides and herbicides in the agricultural fields adjacent to the wetland causes rapid deterioration in the water quality. The wetland offers an excellent example of macrophytic diversity (112 species recorded), is often exploited as fodder and thatching material needs a closer look before being exploited (Kumar 2013). Indiscriminate poaching in the past has taken its toll

on the winter visitors. The flooding, maintenance of water level and release to agricultural use needs a closer monitoring for wetland management. At present the wetland has no any legal boundary. This brings the conflict situations between the two communities; sahnis and farmers. Sahnis does fishing for their livelihood purposes and want the wetland to be flooded whole year, so they can easily conduct the fishing activity whole year. The study attempt to investigate the existing issues and develop different strategies for the conservation. The literature based on wetland conservation and livelihood, wetland assessment and conservation strategy, wetland mapping and ecotourism has been identified and studied to formulate the strategies for the conservation and wise use of wetland. The primary survey has been conducted to understand the socio economic status of community dependent upon the wetland for their livelihood purposes. The major findings reveals that approximately 8000 people are dependent upon the wetland for their daily cash income. Fishermen and agriculture labour are more vulnerable towards their livelihood as these community has no permanent source of income. Females are

generally engage in agriculture work, tourism and vending activity shows the vulnerability and diversity in work. Over exploitation is the major drivers of change in change in services. Influx of both foreign and domestic tourist are significant, shows the potential and opportunity to develop site as an eco-tourist spot. Aquatic weed area has decreased gradually shows pressure on wetland by human as well as natural induced activity.

## 2. Backgrounds and relevance

Management of wetlands has received insufficient attention in the national water sector agenda. As a result, many of the wetlands in urban and rural areas are subject to anthropogenic pressures. India is signatory to Ramsar Convention on Wetlands and has drafted Wetland (Conservation and Management) Rules in 2010 but still no significant improvement has been made on the conservation and wise use of wetlands. The three major issues are of instant concern: Firstly, the draft does away with the Central Wetlands Regulatory Authority, which had Suo moto perception of wetlands and their protection. Second, the draft rules hold no ecological criteria and indicators for recognizing wetlands, such as biodiversity, reefs, mangroves etc. And finally, it has deleted section on the protection of wetlands, and interpretation of detrimental activities which require regulation (Sinha 2016). Thus more research emphasis on the physical, socio-economic and institutional factors influencing condition of wetlands and their use is required in order to arrive at better and comprehensive management strategies. The objectives of the study are; to understand the existing wetland functions and services, to identify the major issues and analyze the spatial and socio-economic factors responsible for deterioration and to formulate strategies for the conservation of wetland.

## 3. Material and Methods

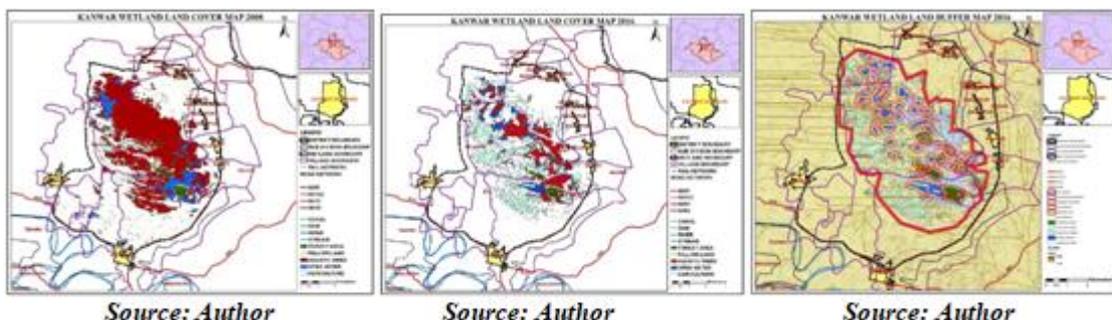
Ten revenue villages were selected for data collection around the wetland. 2.5 percent of the total population of each village has been selected for the primary survey. Stratified sampling was used for data authentication. Samples were stratified based on two communities' sahnis and farmers. The primary survey has been conducted to understand the existing wetland function, services and socio-economic status of the local community dependent upon the wetland for their livelihood purposes. The secondary data were compiled and consolidated in the form of a spreadsheet

for qualitative and quantitative analysis. The contextual thematic map has been created using ArcGIS and ERDAS.

## 4. Results and Conclusions

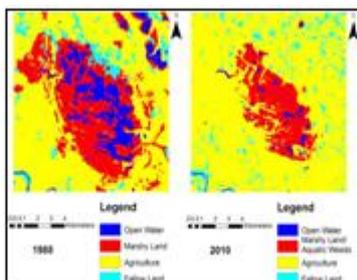
Worldwide different countries are facing problem and pressure to tackle the issue of livelihood. The population has been gradually increasing but the resources are identical. And the deteriorating state of wetland also brings the threats to livelihood despite it is neglected by local as well as state authority. In India, more than 60 percent of people are still residing in a rural area. These people are more or less dependent upon the local natural resources. So, there is a need for balance and wise use approach to tackling the issues. Different conventions and the treaty have been signed and promoted worldwide but still, there is a lack of data gap which brings the misconception among the researcher to identify the wetland for the national and international importance. The misconception among the developing country is that wetlands are waste land. This subject to convert these wetlands for other purposes like agriculture and other land use changes. The three major aspects have been recognized for the formulation of strategies for the conservation as well as wise use of wetlands includes existing wetland functions, services, and livelihood of the local community. The different strategies include buffer zone creation based on wetland functions and services, crop rotation (grass and legumes) near the wetland protects water quality by preventing excess nutrients or chemicals from entering water supplies. Tree planting protects water quality by filtering excess nutrients and chemicals from surface runoff and increasing infiltration rates, development of the site as ecotourism destination for providing the alternative source of income for the local community. The buffer zone will help in the protection of the natural heritage of wetland and provide transition zone where best practices intervention may allow. The best practices include artificial farm pond and filter strip. Artificial farm pond helps in reducing the pressure on wetland by providing water for irrigation purposes and prevents soil erosion and protect water quality by collecting and storing runoff water. It helps in providing water for livestock, fish, wildlife and recreational activities. Community co-management may help in the process of conservation and wise use of wetland.

## 5. Figures and Tables

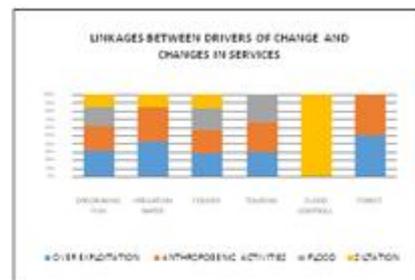




Source: Telegraph, 2012



Source: Remote Sensing to Quantify Wetland loss



Source: Primary Survey

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