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ECOSYSTEM (PROVISIONING) SERVICE AND RESOVRCE VTILIZATION PATTERN OF AN SAMASTIPUR URBAN AGGLOOMERATION, BIHAR

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Abstract

The present paper deals with identification and recognition of Es by the dependent communities and the city inhabitants of samastipur urban Agglomeration in Bihar. The present study Assessed the provisioning services as drivers for the analysis of e.s from oxbow lake and compared with utilization pattern of the derived functions. Customized household questionnaire survey was conducted in various locations in the city. Which included several segments of the society The questions were categorized in two categories, i.e, based on Goods/need and ii utilization pattern, which was on indication of the resource utilization pattern, which was an indication of the resource utilization pattern, which was an indication utilization from the oxbow lake.

In total, 500 persons were interviewed randomly for the details of provisioning services; those reparented diversified issues such as 1 sicio- economic status,2) education oral background ,3) age group, 4) primary occupation 11 different provisioning services; provided by The oxbow lake in the shamateur city were the prominent ones which influence the local peoples livelihood status. Overall , More than 70y of respond ends are obtaining services from the oxbow lake. Whereas, utilization wise More than 65y respondents revealed their dependency on the lake of their needs.

Introduction

Wetlands Assume prominent significance in not only Maintaining the rangiora and global ecological balances, but also providing living environment for wild animals and plants (yin and in 1998)

Wetland cover 7y of the earth's surface and deliver 45% of the world's natural productivity and ecosystem functions which provide many resources and services that are of great ecological and socio cultural importance (panigorahi et a 2010) As one of earth's Most productive ecosystems, wetlands directly and indirectly support Millions of people by providing various services (turner et a 2006 Finlayson et a 2005) in both tangible and Non tangible terms Wetlands are estimated to be occupying 1-5y of geographical

Area in India, support about a fifth of the known, biodiversity

wetlands occupy about 15.26 Million an (Mna) of area in India and Bihar has an estimated are of 4.03 Mna under wetlands. The recent survey by Space Application Centre (SAC) Ahmedabad has estimated the wetland are of about 19 different types, of which oxbow lakes)

cut-off Meanders cover 16172 ha that is about 4y of total wetland oleic Samastipur district has ei total wetland area at about 10490 n; this is 2.6y. of total wetland area of state and shares 13.22% of oxbow lake area.

Of the samastipur district (partigiani at 2010) with such large area under wetlands, the Natural resource base (NRB) and environmental resource base (ERB) are expected to be much higher catering to large semertis of society. However, wetlands ae often wrongly viewed as wastelands and often been the victim of land use changes and urbanization, are treated as receiver of the urban waste water and used as solid waste dump sites. This psychology is being very harmful to Such Natural Systems,

Consequently , wetlands lose Most of the functions especially the ecological benefit and services (cui and zany 2002, xue et al. 2008) ES Provided by the wetlands in Bihar, though well documented in various literatures, ae poorly understood. More importantly , the perception of local population of local populace and their recognition of the ES ae important MEA (2005) classified ecosystem services into four Major categories ; provisioning services:-

The resources or products provided by ecosystems, such as food, raw materials (wood), genetic resources,

Medicinal resource, ornamental resources (animal, shells, flowers)

Regulating services

Ecosystems Maintain the essential ecological processes and life support system

Cultural services

Ecosystems are a source of instauration to numen culture and education through out amenity services viz

Supporting services

Ecosystems provide habitat for flora and fauna in order to Maintain biological and genetic diversity.

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Oxbow lakes are fallout of geological processes and result of changing river course. They are fed by the main river during monsoon that sustains the lakes throughout the year and consequently seasonality in the ecosystem functioning of such systems is observed. Akin to other type of wetlands, oxbow lakes also offer provisioning, regulating, cultural and supporting services and in

turn influence the livelihood support system of stakeholders directly, indirectly and by potential uses (MEA 2005). Despite appropriate institutional frameworks and legislations designed to protect them, wetlands continue to

be degraded and lost at an alarming rate. The National Wetland Assessment undertaken by Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore reports about wetland loss in India, which was more than 38% in just the last decade (Vijayan et al., 2004). In some districts, the rate has been as high as 88%. This is partly because of a lack of understanding of their ecological and socioeconomic importance, which leads to distorted policy planning and decision making regarding their use and management (Adaya et al., 1997; Smit and Wiseman, 2001; Terer et al., 2004). There are a number of use and non use values of wetlands, viz., water retention (during dry periods); maintaining water table (high and relatively stable); flood control (reduce flood levels and trap suspended solids and nutrients): feeding, breeding, and drinking areas of wildlife and refuges of waterfowl (Prasad et al., 2002). In view of the above specifics, we attempted to i) understand peoples' perception about the ES provided by an Oxbow lake in Muzaffarpur city and ii) examine the usage pattern of the resources by the local populace. The specific objectives were to i) identify and recognize the provisioning services by oxbow lake in Muzaffarpur city and ii) evaluate the usage pattern of services in the locality by stakeholders. The present survey

was aimed at answering the following questions:

Whether services of Oxbow lakes are known to the local denizens?

What kind of provisioning services are provided by oxbow lakes in Muzaffarpur city?

How is the pattern of resource use from the Oxbow lake in question?

Can oxbow lake improve and sustain the socio economic status and the vicinity?

Do socio-economic status and educational background of stakeholders decide the usage pattern of resources from Oxbow lakes?

Study area

Bihar is the seventh largest state in India in land area and Muzaffarpur (Fig. 1) is the 3rd largest district in regard to population in Bihar. Located between 26°072 N and 85°242 E, the total population of the district is around 4.78 million, wherein the population density is 1506 persons/km2 as compared to the national average of 382 persons/km (Census of India, 2011). Muzaffarpur city, located around 70km from Patna, has total population of 351607 as of 2011 census. The decadal growth rate has been 28% and the projected population for year 2030 is 507876, as per the recent City Development Plan (Personal Communication with officials of Urban Development and Housing Department). River Budhi Gandak splits the city in two halves, wherein the future growth potential of city is in north, west and southwest directions. The city's drinking

water requirements are met by bore wells, as the water quality of the River Budhi Gandak is not found potable. It may be noted that water bodies cover 2.84% of the total area of the city.

The present survey was based on an urban wetland of Muzaffarpur city (Fig. 1). i.e. an Oxbow lake (local name Maun), in the north west of the city and also called locally as Bramhapura Maun (Fig. 1). The Brahmpura Maun (oxbow lake), an L-shaped lake, is the major water body in the city. It is characteristically a 'Live Lake' as it connects with River Budhi Gandak through a channel. It covers an average surface area of 60h and shore line length of 8.1km. and annual average depth of 2.53 meter. This wetland is located amidst a vast agricultural landscape, which in due course of time was taken over by urbanization in the city. The lake sustains an integrated resource based practice with a combination of agriculture and aquaculture, which provides livelihood support to a large, economically underprivileged population of thousands of families that depend upon the lake for various products, primarily fish and vegetables. Presently, the lake is under pressure of several magnitudes from various anthropurgic activities in the city such as water diversion, land use changes, waste water discharge, garbage dumping. In the past it was one of the popular and richest sites in the vicinity, but due to the recent developmental activities and population growth, the aesthetic beauty is on the decline. The lake suffers from several environmental issues including eutrophication. All the water bodies, including this lake, in the city are ill maintained and receive the bulk of the city sewage and have the highest levels of human interferences. Presently, the lake has around six drainage outfalls, which have been one of the major reasons of depletion of aquatic resources.

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