

Environmental Science

ASSESSMENT OF PAYMENT FOR ECOSYSTEM SERVICES OF JAMUNKHDAI WETLAND, KANKAI MUNICIPALITY JHAPA

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Abstract

People, nature and interdependence of our lives on ecosystem are linked by the Ecosystem Services. A payment for Ecosystem Services is popular tool for environmental management. The study has assessed the benefit of wetland, role of people for management of Wetland and willingness to pay for service provider. Management of wetland under community has drastically changed the socio-economic state of local people. This is the practical example of people responsibility towards the sustainable resources conservation and utilization.

Keywords: *Ecosystem services, pay to service provider, Income.*

Introduction

The diverse forms of benefit that are obtained from the natural ecosystem refer to Ecosystem Services. Services providing by Ecosystem includes supply of food, water and timber (provisioning services); the regulation of air quality, climate and flood risk (regulating services); opportunities for recreation, tourism and education (cultural services); and essential underlying functions such as soil formation and nutrient cycling (Smith et al. 2013).

Human has been dominating the ecosystem causing the system to be more blurred by undervaluing the services flow by ecosystem, introductions of exotic species, and extinctions of native species and lack of awareness regarding the payment to the services provider (Daily 1997).

Although, Nepal has very recent history of PES implementation has significantly achieved its conservation objectives through various community-based management approaches. In developing countries the Payment for Ecosystem Services program has implemented in Latin America as part of forest conservation program (Landell-Mills and Porras, 2002).

Wetlands contribute to the national and local economies by producing resources, enabling recreational activities and providing other benefits, such as pollution control and flood protection. Payment for Environmental Services (PES) has raised substantial international interest as a cost-effective means to improve environmental management and improve livelihoods by rewarding people for their efforts in providing ecosystem services, such as watershed protection, soil stabilization etc (Costanza et al. 1997).

Materials and Methods

Study Area

The study area for case study was Jamunkhadi Wetlands Conservation project in the Kankai municipality of Jhapa District, in Eastern Nepal. It lies about a kilometer away from the East-West Highway and occupies an area of about 10 hectares of the 26.5 hectare community forest. This wetland is situated at the height of 97 m from sea level. The latitude and longitude of study are 26°39'12.1" and 87° 54' 46.31" respectively.

Sampling and Sample size

Random sampling was used for selection of sample respondents.

Data Collection

Both primary and secondary data were collected for the study. Primary data were collected from that 30 questionnaire survey including local people, 3 focus group discussions, 3 key informant and 3 entrepreneurs were interviewed. Secondary data were collected from published document and unpublished document provided by Wetland Committee.

Data analysis

Both quantitative and qualitative data were analyzed by Microsoft Excel. Quantitative data were represented in pie chart and bar graph. Similarly, qualitative data were presented on the basis of the information provided by the respondents from the study area.

Results

Services provided by wetland area are interpreted in three statements; via 1). Services provided by wetland 2). Willingness to pay for wetland and 3). Income estimation of wetland of current fiscal year.

Services provided by Wetland

Services	Benefit
	Diseases regulation
Regulation	Water purification
	Flood regulation
Cultural	recreational, aesthetic educational

Table 1: Ecosystem Services of Wetland

Questionnaire to 30 different respondent including focus group discussions, key informant have provided information regarding their willingness to pay for ecosystem services. Most of the visitors come for recreational, aesthetic, refreshment, picnic and for educational purposes. On the basis of these services visitor have willingness to pay for Wetland.

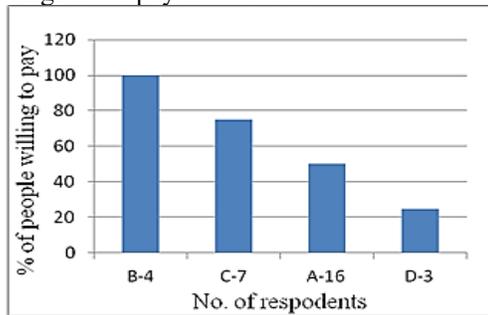


Figure 1: Willingness to pay by individual respondent.

Graphical, representation of willingness to pay for services of wetland by individual respondent. Total number of respondents is 30. Out of this 30 respondents; (4 respondents- B) which is 13.33 % could pay Rs 100, (7 respondents- C) which is 23.33 % could pay Rs 75, (16 respondents -A) which is 53% could pay Rs 50, and (3 respondents- D) which is 10 % could pay Rs 25 to the service provider wetland.

Willingness to pay by group respondent

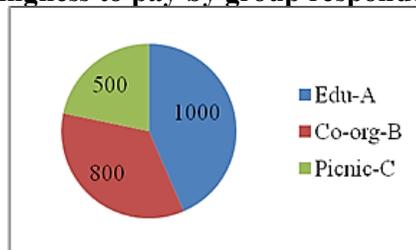


Figure 2: Willingness to pay by group respondent

Questionnaire to the 10 group respondents in the field like educational institution, co-operative organization, picnic group, etc could ready to pay more compared to the individual respondent to wetland. Five educational institution, two co-operative organization and three picnic groups ready to pay accordingly; Educational institutions Rs 1000 which is 50% of all respondents, Co-operative organizations Rs 800 which is 20% of all respondents and picnic groups Rs 500 which is 30% of all respondents.

Comparison of Income of Wetland in following fiscal year

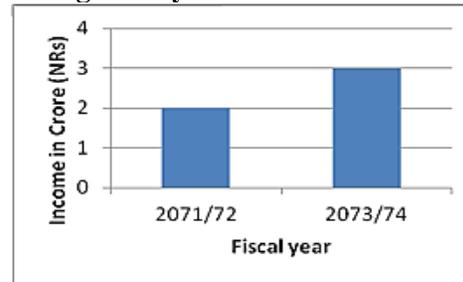


Figure 3: Income of Wetland in fiscal year

In fiscal year of 2071/2072, the total transaction of Wetland was about Rs 2 Crore. Now, in running fiscal year 2073/2074 wetland conservation committee has calculated that 3 lakh visitors will come in wetland area in which income of wetland is estimated to be Rs 3 Crore. Entry fee was Rs 30 in past year, now it has increased to Rs 50.

Discussion

There is difference in the overall economic activities in community before and after the management of Wetland. Before, the management of wetland by community the study area was centre of attraction for tourists, especially during picnic season. During picnic season visitors used to release large quantity of waste like meat, cooked rice, junk food, etc. The haphazard release of such waste polluted the environment; ultimately there were chances of diseases to local people. After the well management of wetland hundreds of birds such as Crow, Rупpi, etc live in wetland area and playing the role of natural scavenger. The total income of Wetland reached to 2 Crore in fiscal year 2071/2072 and it is estimated the transaction of Rs 3 Crore in fiscal year 2073/2074.

The Payment system in Rupa lake of Mid-Western Nepal, are made on the basis of both cash and kind. The kind payment includes the scholarship to local students support to

conservation activities of lake, helps to generate income through bee keeping (Pradhan et al. 2010). The value of the water service from Sundarijal catchment was calculated using the producers' surplus of the electricity production and drinking water which was estimated to be NPRs 98.72 million for the year 2008/09. The cost of conservation for local communities and park management to be around NRs 26,873 per household annually (Kunwar 2008).

Conclusion

Ecosystem services can be a basis for sustainable development by providing a means to think through how to retain our natural resources for people and for nature with a growing population and therefore an ever-increasing demand for them. After the management of Wetland in 2065 B.S the concept of sustainable development, paying for service provider, people have participation for wetland management for well function of ecosystem is observed practically.

Acknowledgements

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