Using Valuation for Decision Support: Saving Sewage Treatment Costs through Wetland Protection in the Nakivubo Wetland

Author: Kaitlin Almack (UFZ) mainly based on Emerton et al. 1999

Introduction

Covering an area of about 5.5 km² and a catchment of over 40 km², the Nakivubo swamp runs from the central industrial district of Kampala through residential settlements before entering Lake Victoria (Emerton et al, 1999). The area around the Nakivubo has been experiencing development pressures through the expansion of human settlements, industrial establishments, and drainage channels for crop production.

What ecosystem services were considered?

The Greater City of Kampala benefits from the ecological services provided by the Nakivubo swamp. It maintains the quality of urban water supplies by treating and purifying domestic and industrial wastes and effluents. At the same time the Nakivubo swamp supports small-scale income activities for slum dwellers such as papyrus harvesting, brick making, and fish farming (Emerton et al, 1999).

Informal settlements cover up to 25% the total area of the city. Only 65% of Kampala city's population has access to safe piped water and over 90% of Kampala's population has no piped sewage system (UN-Habitat, 2003). The Wetland Inspectorate Division with the IUCN evaluated the economic value of the wetland through its services of purifying the sewage from the city (Emerton et al, 1999). The conservation of wetland ecosystems is of national importance and is critical to Uganda's sustainable development because of dramatic declines in both the overall area and quality of remaining wetlands.

Methods Exercised

A key concern was to choose methods which would not require complete, lengthy or costly data collection and which could be easily replicated in other Ugandan wetlands. Emerton et al, 1999 used two methods, the "avoided costs of replacing natural wetland functions with manmade alternatives", and the "expenditures on mitigating the effects of wetland loss" (Emerton, 2003). Data was collected from the National Water and Sewage Corporation, civil engineering companies, and a donor-funded water supply and sanitation project that had been operating in the wetland area. The cost of developing the wetland was calculated by looking at the investment and recurrent costs of a sewage and water treatment, and the cost

per household for sanitation infrastructure. The additional capital and recurrent expenditures of the expansion of the sewage treatment plant had already been calculated by the National Water and Sewerage Corporation. The cost to livelihoods of adjacent dwellings was calculated based on income per person and returns to labour from using the wetland.

The results of the evaluation showed that the wastewater purification and nutrient retention ecosystem services of Nakivubo Swamp have a high economic value between US$ 1 million a year (using replacement cost methods) and US $1.75 million a year (using mitigation expenditures methods) (Emerton, 2003). Furthermore, the Wetlands Inspectorate Division and the IUCN showed that a sewage treatment plant would cost over US 2 million dollars to maintain each year (Emerton et al, 1999). Not only was the cost of expanding the sewage treatment plant greater than the value of the wetland, there was associated costs to livelihoods.

Policy Uptake

On the basis of this economic argument, and through highlighting the role of Nakivubo as an essential part of Kampala's water and sanitation infrastructure, plans to drain and reclaim the wetland were reversed and Nakivubo was designated as part of the city's greenbelt zone. (UNDP-UNEP, 2002).

The study made the point that residential and industrial development in Kampala's wetlands does not make economic sense if the costs of providing public goods such as sewage treatment are taken into account (Emerton et al, 1999).

Nevertheless, in the past decade, the potential of the wetland to remove nutrients and pollutants has been greatly reduced due to continued pressure by human settlements, industrial establishments, and drainage channels for crop production (Wetland Management Department, 2008). Despite a recognition of the wetland's value, half of the wetland has been modified with only the lower parts remaining in fair condition. There is an increasing concern to conserve and restore the ecosystem services and products of the Nakivubi swamp. In 2008, the Kampala Sanitation Programme has proposed a new plan to reduce the pollutant load by both expanding sewage treatment facilities in Kampala and rehabilitate and increase the area of the Nakivubo wetland to re-establish its original ecosystem services.

Reference:

Emerton, L., Iyango, L., Luwum, P., and Malinga, A., 1999, The Economic Value of Nakivubo Urban Wetland, Uganda, Uganda National Wetlands Programme, Kampala and IUCN — The World Conservation Union, Eastern Africa Regional Office, Nairobi (http://www.subpesca.cl/taller/documentos/valoracion%20de%20beneficios%20ecosistemicos/Reference_material/IUCN%5CEmerton_wetland_uganda.pdf)

Emerton, L and Bos. E (2004). Value-Counting Ecosystems as an Economic Part of Water Infrastructure. IUCN. Gland, Switzerland, and Cambridge. http://data.iucn.org/dbtw-wpd/edocs/2004-046.pdf (last access January 19 2010)

Emerton, L (2003). Case Study in Wetland Evaluation 7: Nakivubo Swamp, Ugand. Managing Natural Wetlands for their ecosystem services. Integrating Wetland Economic Values into River Basin Management. IUCN http://cmsdata.iucn.org/downloads/casestudy07nakivubo.pdf (last access January 19 2010)

Wetlands Management Department, Ministry of Water and Environment Uganda; Uganda Bureau of Statistics; International Livestock Research Institute; and World Resources Institute. 2008. *Mapping a Better Future: How Spatial Analysis Can Benefit Wetlands and Reduce Poverty in Uganda*. Washington, DC and Kampala: World Resources Institute (http://pdf.wri.org/mapping_a_better_future.pdf) Last access January 19 2010

United Nations Habitat Human Settlements Conditions and Trends, Statistics Programme, Global Urban Observatory and Statistics Unit, United Nations Human Settlement Programme, Nairobi Last Access January 24 2010

UNDP-UNEP Poverty-Environment Facility (2008). Making the economic case – a primer for mainstreaming environment in national development planning. http//www.unpei.org/pdf/making-the-economic-case-for-biodiversity