Economic Valuation of Ihefu Wetland

1. Introduction: PEI in Tanzania

The current PEI programme is the second phase of the PEI in Tanzania. The first phase of PEI (October 2003-December 2006) focused on “Integrating Environment into the Poverty Reduction Strategy Process”. There were significant achievements during this period including the integration of environmental sustainability in the National Growth and Poverty Reduction Strategy (MKUKUTA), the development of Poverty and Environment Indicators and the inclusion of a core set of P/E indicators in the MKUKUTA Monitoring Systems. The second phase of PEI is a Joint programme between Government of Tanzania, UNDP Tanzania and the global UNDP/UNEP PEI that commenced in July 2007 to December 2010. The focus of this programme is on “Integrating Environment into National Strategy for Growth and the Reduction of Poverty (NSGRP/MKUKUTA) Implementation”. Programme implementation is coordinated by the Vice-President's Office (Division of Environment) and includes the following main implementation partners: Poverty Eradication Division (Ministry of Finance), National Environmental Management Council, National Bureau of Statistics, Prime Minister’s Office/Regional Administration and Local Government, Ministry of Livestock and Fisheries, and the University of Dar es Salaam (Environment for Development). The programme also works with Civil Society Organisations and Media organizations.

The overall goal of the program which is linked to Tanzania's UNDAF (2007-2010) is to contribute to poverty reduction and improved well-being of poor and vulnerable groups through mainstreaming of poverty-environment linkages into national development processes. Joint Program Outcomes include:

(i) Institutional capacity further enhanced to integrate environment and livelihoods issues into sector and district level plans and to implement strategic poverty-environment interventions at local level
(ii) Improved access and utilization of environment/livelihoods data for use in MKUKUTA process and in local level planning
(iii) Sustainable financing of environmental targets contained in the National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA in Swahili)
(iv) Promoting efficient utilization of rangelands and empowering pastoralist to improve livestock productivity through improved livestock productivity and market access

2. Purpose/Objectives of the Valuation of Ihefu Wetlands

Ihefu Wetlands that are part of the Usangu flood plain are important both to the local community and are a national resource responsible for water that generates over 65% of Tanzania’s hydropower. In 2007, the government annexed Usangu Game Reserve with Ruaha National Park, making it 20,226 km² the largest national park in Tanzania and one of the largest in Africa. The process initiated by the government aims at protecting the Ihefu wetland and the Great Ruaha River with associated catchment areas and biodiversity. Prior to this the Usangu game reserve had come under threat due to an influx of fishermen, livestock herders and crop farmers (mainly
irrigated rice). Weak management arrangements had led to severe degradation and a decrease in water availability downstream in the Great Ruaha and Rufiji rivers.

Protective measures that have been imposed on the resources of the flood plains and the wetlands need to take into consideration the livelihoods of the local population and the general public that depend on them. This includes provision of food, fuel-wood, pasture, building material, medicines etc. Thus, local communities' perceptions and socio-economic needs require special consideration in formulating national environmental policies and legislation in order to enhance implementation. Although local people may not directly be involved in policy formulation, they need to be adequately informed about government development policies and goals and their role in implementing them. The economic valuation is therefore expected to give an indication of the extent of the dependence of local communities and the nation on the natural environment of the Ihefu wetland.

Like many other wetlands, Ihefu wetlands provide very important goods and services to the society and help in sustaining critical livelihoods of wetland communities as well as communities living far downstream. There are two types of use-values that wetlands provide: 1) direct use values such as fish, tourism and agriculture; and 2) indirect use values such as flood control, groundwater discharge, and water shade protection, which are sometimes more important than direct use values. Also, indirect use values of wetlands benefit much wider sections of the society. In addition to fish and aquatic food products, wetlands provide several other important services and functions to the society, which are very critical for sustaining livelihoods, maintaining ecosystem base and economic activities. Some studies show that over 80 percent of the total economic values of wetland resources are indirect use value types (Barbie, et al., 1997).

3. Methodology

The exercise commenced with a training for technical staff from several sectors on basic economic valuation tools for natural resource management including an introduction to hedonic pricing, contingent valuation and travel cost methods and methodologies for valuing ecosystems services. The training was attended by sector level technical staff including national bureau of statistics, forestry and beekeeping, wildlife, water and irrigation, and Tanesco (electricity generating company). These experts are expected to contribute to the study as a practical application of lessons learned.

In order to evaluate the economic value of wetlands, the first step involved defining the spatial boundary of the wetland in question following IUCN definition of a wetland. This was followed by the identification of all services (benefits) of the wetlands ecosystem under study.

Three methods of data collection were employed during the survey to primary data and secondary data. These were the household survey, focus group discussions and field observation. The selection of households to be interviewed was based on a combination of stratified and random sampling. The sample was stratified according to the four levels (administrative structure) – ward, village, hamlet and the household. The stratification started at ward level where only wards near or covering Ihefu wetland was included for the study. The second stage was the selection of village from each ward. Here village proximity to the Ihefu wetlands resources (water and forests) was considered. In addition, village selection included those new villages established as result of eviction of people from the Ihefu wetlands. This was important to get information on what and how was the situation in both periods (before and after eviction). The third level was the selection
of households from each village. In this case, selection of household for the study was done by ensuring representativeness i.e having mixed kind of respondents in terms of age composition, gender, economic status, harvesting and use of resources, economic activities etc. In each selected household, a head of household or elder member of the household was interviewed using a pre–tested questionnaire.

For the focus group, a total of ten (10) people formed a focus group in each village. The group composed of village government officials, and other village members who are not in government. This was important to have both government and non government opinion. Information from the focus group were used to generate important data for both validating household data error (if any) and also extrapolating some data to get standard values for estimation purposes.

Field observation was also done in each village for the aim of having in our mind the actual situation on the ground. This included resource use (firewood, poles etc), crop grown (by visiting rice farms in some villages), state of infrastructure such as schools, dispensaries, water sources etc. At the end of village visits, we further visited District Administrative office and the PCCB office for some discussion on matters related to Ihefu and peoples welfare. This was important and formed a basis of establishing the validity of what the individual households' members and focus group discussion have given during interviews. We will soon visit Tanzania National Park Authorities (TANAPA) and the Ministry of natural Resources and Tourism for the same discussion.

4. Key findings and Recommendations

The preliminary findings of the study identified socio-economic activities and key environment related challenges in the study areas while the analysis on economic values attached to various uses is still on going. In all villages surveyed, the main economic activities include agriculture and livestock keeping. Crops grown include rice, maize, vegetables, millet, ground nuts, potatoes, sunflowers, sorghum etc. For the livestock, the common animal reared is the local cattle, goats and sheep. Other economic activities (in very small scale by some households) including sale of firewood, charcoal, furniture, local brew, leasing of farm land and supplying casual labour to estates. Preliminarily analysis of these activities shows that, household economy is totally dependent on agriculture, followed by livestock keeping. Any disruption from these activities would have detrimental effect to the living condition of majority households in the study area as well as other areas which are supplied by food crops from the study area.

Analysis of the information on the availability, access and use of environmental resources shows a reversed situation when comparison is made between the past and current levels of access to environment and natural resources. It should be noted that currently the Ihefu wetland is under Ruaha National park. The focus group discussions have revealed the reversed kind of situation in relation to resource harvesting and use by households in the study area. While majority households report to harvest and use of resources in the past (before turning the area into national park), there is very small proportion or no households that could harvest and use most of environmental resources from Ihefu wetland under the current management regime. That is this recent development of converting the Ihefu wetland into national park have stopped the operation of any kind activities related to harvesting and use environmental resources by the communities in the study area. All households who were depending on resource harvesting from Ihefu have lost completely their means of livelihoods and income and consequently, some have resorted either farming, while others are yet (not doing anything at the moment) in order to get their living. This
situation have actually made majority household members suffering from lack of shelter, food, other services such as medical and schools.

In all villages, individuals have lost the opportunity to collect resources for food, income and other uses. This has been so as a result of conversion of the wetland into the national park. The reported loss is on the following products: Fish, firewood, poles, wild meat, wild fruits etc. Households' members were used to collect these products freely in the area. But what has happen now, none of these could be collected. From the livelihood and poverty reduction point of view, households have lost significant opportunity for their means of living and poverty reduction. There are two dimensions into which households are negatively affected by the current conversion of Ihefu wetland into National Park. In addition to the lost opportunity, these households also face additional costs in obtaining these products from alternative sources.

Case of firewood
100% of households in the study area (all villages) use firewood as source of energy for cooking. Due to the lack of alternative of energy sources, households in the study area are reported to travel far away looking for firewood. There is more time lost for searching firewood now than before. This imposes huge expenses in terms of household's involvements in other development activities. In all villages, it is reported that, time use for firewood collection is more than double when comparison is made before and after conversion of the Ihefu into a national park1. On average, households are using 6-8hours in a day searching for 1 bundle of firewood which is used only for 2 to 3 days.

Fish and wild meat
Households report to lose the opportunity to fish in rivers within and outside the Ihefu. It is a criminal case if one found fishing or found having fish. During focus discussion, this matter was of great concern to many villages as this was one of the important livelihood and source of food and income to many. Denial from fishing means turning them into deep poverty. Another worse case is that, people in study area are being mistreated by TANAPA officials if found holding fish. There are rivers flowing in their villages (outside the reserve) with fishes, but there is no opportunity for one to fish.

Low compensation
In the year 2007, the government implemented an operation to remove all livestock keepers and their animals and other households that were involved in farming from the Ihefu wetland. While this was good move as far as management of wetland was concerned, the implementation of the operation is reported to done without fair consideration as far as compensation was concerned. During the field visits in most villages, it was reported that, households who encountered with the eviction are suffering from lack of proper settlement, lack of food and thus living in poor condition because of little pay they got from government as compensation. One example is the amount of money paid to each household who moved from the Ikoga village to Ikoga mpya village. They were paid Tsh 1,000 as rent per month to new place while establishing (constructing) their houses. But what is actually paid as rent by these households in the new place (Madibira) is Tsh 10,000 per month. This means that, the established rent amount as compensation is too small from the actual cost of housing in the area demarcated for resettlement. In another case, it has been reported throughout that, land and property valuation was poorly done resulting to low compensation and thus subjecting majority households into living problems. In fact the low pay has created a high

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1 In Nyeregete village total time (going, collecting and back) is 5 hours as compared to 1.30 in the past; for the case of Magurala village time is 6 hours compared to 3 hours in the past; Mlungu village time is 4 hours as compared to 1.3 in the past.
dependence burden to other villagers as they have to support their members who suffer from this tragedy.

5. Use of Study findings in PE Mainstreaming

In Tanzania, as in many parts of the world environmental resources are becoming increasingly scarce leading to competition and conflicts among uses and users. It is therefore necessary to make decisions about conservation and allocation of the scarce resources that are compatible with social objectives such as economic efficiency, sustainability and equity. This study, when completed will be used to enhance decisions related to equitable and sustainable environmental management. A key feature will be to provide a practical example of how environmental valuation can be used to aid in evidence based management of critical natural resources such as the Ihefu and support effective policy implementation. For example, in some cases for environmentally sensitive areas, farmers can be more involved in managing the resources through subsidies and other measures to promote sustainable use and conservation of specific environmental features within defined geographic areas of the country. By clearly defining the relative marginal values of different uses of Ihefu wetlands, valuation techniques will be useful tool and input for decision making that can be extended to other environmentally sensitive sites in Tanzania.