

ANALYSIS OF THE VALUE, VISITOR EXPENDITURE PATTERNS AND EMPLOYMENT BENEFITS FROM FOREST RECREATION IN MABIRA CENTRAL FOREST RESERVE, UGANDA

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Abstract

The contribution of forest recreation to national economy and the adjacent communities is rarely recognized and often overlooked. However, if assessed, it can help to justify the need to conserve forest resources. This study assessed the value, visitor expenditure patterns and employment benefits of forest recreation at the three recreation sites in Mabira Central Forest Reserve (CFR). Semi-structured questionnaires were administered to recreational visitors from July to December 2019. The zonal travel cost method was used to determine the annual recreational value of Mabira CFR and the direct tourism spend method to estimate tourists' expenditure. Employment income was assessed from questionnaires administered to all employees at the sites. The comparatively high annual forest recreational value of 577,446 USD was attributed to the forest's rich biodiversity and close proximity to densely populated urban areas. The most preferred recreational activity was canopy super skyway ziplining because it is relatively new. The annual income of employees at the three sites amounted to 28,034 USD, of which 78 % was attributed to employment at the sites. The total annual visitor expenditure amounted to 100,700 USD, of which 61,151 was attributed to the biodiversity of the forest. These results indicate the potential of forest recreation in job creation and income generation, which translate to improved standards of living for employees and surrounding communities. This calls for promotion of forest-based recreation in other high diversity forested areas of the country.

Key words: economic benefits, job creation, outdoor recreation, recreational value, site perceptions, tourism expenditure, travel cost method.

Introduction

Tourism industry has a major economic significance for any country through receipts from international tourists (Dwyer and Mistilis 1999). Worldwide, the pursuit for leisure has led to increased demand for recreational activities across many

countries (Amalu and Ajake 2012). The interest in forest recreation is attributed to aesthetic experiences offered and relaxing environment provided by forests (Grilli et al. 2014, Mamat et al. 2020). An estimated 3.7 % of the world's forests are designated for recreation, tourism, education, cultural and spiritual heritage (FAO

2010). A few studies have been conducted to evaluate these benefits (Eagles et al. 2000, Shoo and Songorwa 2013). Recreation has been suggested as one of the solutions to overcome obstacles to community development (Lawson et al. 2006, Amalu and Ajake 2012) due to the high number of tourists who spend money at recreational facilities.

In Africa and many other parts of the world forests are important for tourism but their main function remains conservation of wildlife. Many goods and services provided by forest ecosystems are crucial, but not always measurable in monetary terms. Forested land has traditionally been considered to be of lower economic value than agricultural land. The main forest output is viewed as timber production and yet recreation is one of the numerous sustainable services provided by forest ecosystems. Forests are parts of the countryside that visitors enjoy, sometimes for relaxation and other recreational activities. The value that users attach to forest recreation can be substantial but this is not reflected by market prices. This attachment can improve in the management, conservation and planning options for recreational activities. In Uganda, the value of forest recreation is often ignored or accounted for in other sectors like tourism when valuing forests (MWE 2013). However, if public goods are to be managed in ways that provide maximum benefits to the community, these benefits should be recognized. As more people visit forested areas for tourism and recreation purposes, it becomes increasingly important to emphasize the values provided by these natural resources. Managing a forest to the maximum benefit of society involves the identification and estimation of all resource benefits on a common metric scale. In order to convince policy

makers about the economic viability of forest conservation, it is essential to provide them with monetary gains from all forest benefits including recreational services.

The economic linkages between forests and adjacent communities are one of the important ways public lands contribute to the well-being of private individuals and communities (Mayer and Woltering 2017). Forests attract recreational visitors who spend money in communities and at forest recreation facilities (White et al. 2017). The importance of forests in recreation and leisure activities translates into other benefits to surrounding communities that ought to be assessed. Such benefits include income generation and job creation for both public and private sectors (Wagner 1997). Generally a change in tourism contribution leads to a multiplier effect in related industries (Harvath and Fretchling 1999). The income multiplier is the most important indicator of the impact of spending in the local economy. Forest recreational visitors spend money on drinks, food, accommodation and recreational activities. This creates direct revenue for businesses and public organizations associated with forests. Direct employment relates to the number of jobs directly supported by expenditures of forest recreational users. The employment multiplier measures the increase in employment associated with a specific increase in initial expenditure or the number of full-time jobs equivalent with a specified amount of expenditure.

The analysis of the role of forests in recreation and tourism based employment and income is hampered by the lack of information on exactly how much the local economy derives from them (Kass and Okuba 2000). This limitation, coupled with the fact that amenity attributes are non-market inputs, results into inad-

equate policy decisions (Marcouiller and Deller 1996).

Tourist expenditure is scrutinized by policy makers, planning officials, marketers and researchers for monitoring and assessing the benefits of tourism to the local economy (Wang et al. 2006). Direct effects are indicative of the total tourist financial spending at a tourism facility. Data describing economic and employment contributions of forests typically focus on timber harvesting and processing because of the conviction that other forest benefits like recreation are worthless. Despite this shortcoming, the economic contribution of forest recreation is of interest to private businesses, public agencies and individuals living in tourist destination areas (Simpson et al. 2009). The study assessed the value, visitor expenditure patterns and employment benefits from Mabira CFR. Specifically, the study (i) as-

sessed the value of Mabira CFR, (ii) estimated tourists' expenditure contribution to income generation and employment. Understanding the benefits of forest recreation to a local community can act as an incentive to support conservation of the forest resource.

Research Design

Study area

The study was conducted at three recreational sites within Mabira Central Forest Reserve, namely: Griffin Falls Camping Site, Mabira Ecotourism Site and Mabira Rainforest Lodge (Fig. 1). These sites are well-managed with a variety of recreational activities that attract tourists and offer support services to forest recreation. The reserve is located 20 km north of Lake

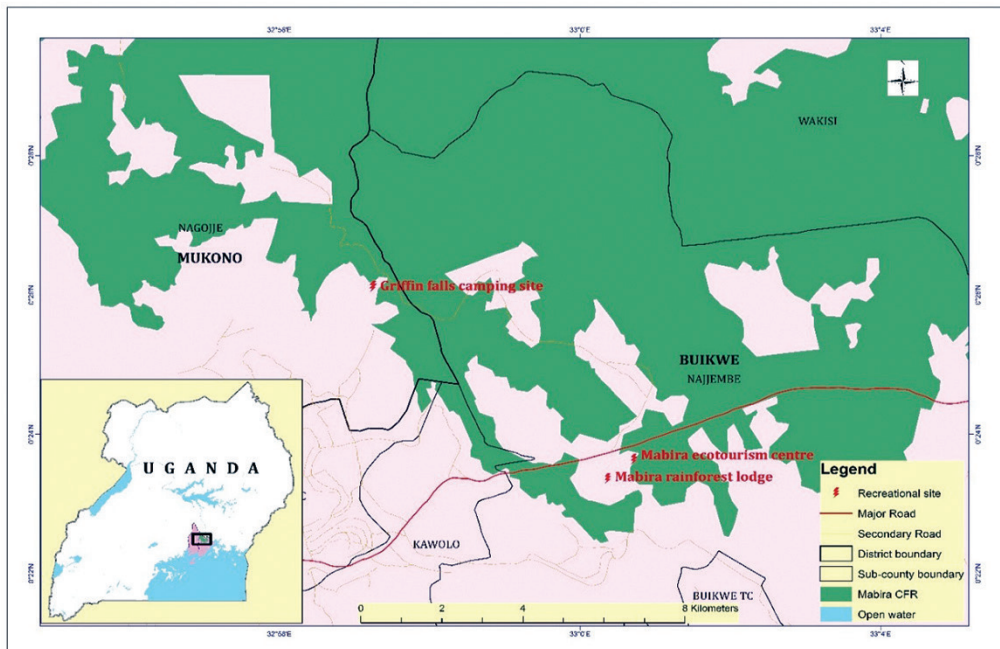


Fig. 1. Recreational sites within Mabira CFR.

Victoria shoreline to the west of Victoria Nile. It lies partly in Buikwe, Mukono and Kayunga districts and occupies an area of 306 km² with an altitudinal range of 1070–1340 m above sea level. It is situated between latitude 0°22' and 0°35' N and between longitude 32°56' and 33°02' E. The reserve is characterized by numerous flat-topped hills and wide shallow valleys (Howard 2001).

The soils are generally ferralitic sandy clay loams, with black waterlogged clays in the valley bottoms. The climate is tropical with two rainfall peaks from April to May and October to November with annual amounts ranging between 1250–1400 mm. The annual mean minimum and maximum temperature ranges are 16–17 °C and 28–29 °C, respectively (Tugume et al. 2016). Mabira CFR is an important ecosystem in Uganda and a watershed for Lake Victoria basin and Lake Kyoga.

The communities adjacent to the reserve comprise mainly the Bantu ethnic groups, namely: Baganda, Banyarwanda, Basoga, Bagisu, Bakiga, Banyankole, Bagwere and Batoro in addition to the minor Luo groups like the Samia, Ateso, Langi and Acholi (Galabuzi et al. 2014). The majority of the residents are subsistence farmers. Education and income levels of local people residing in the forest communities are low (Agea and Fungo 2009).

The forest is adjacent to large sugar cane plantations. Mabira CFR is located on the main Kampala-Jinja highway making it easily accessible even by public transport. Mabira CFR has a rich biodiversity, which, together with accessibility, makes it an important tourist destination area. It is one of the significant recreational places in Uganda that host local and foreign visitors.

Recreational value of the forest

The zonal travel cost method (ZTCM) (Clawson 1959) was used to estimate the recreational value of Mabira CFR. The ZTCM is an indirect approach used to estimate user benefits from visits to recreational sites (Liston-Heyes and Heyes 1999). It assumes that the value of a recreational site or its recreational services is reflected in how people pay to get to the site. The expenditure related to recreation travel was treated as travel costs (Englin and Shonwiler 1995).

Travel cost is seen as derived demand for a recreation site that contributes to each individual's production of a recreational activity providing utility (Smith 1990). Since visitors must travel to a particular site with preferred attributes to derive the recreation experience, their travel behaviour provides important information to calculate the recreation demand.

An on-site survey of recreational visitors was carried out from July to December 2019 using pretested self-administered questionnaires at the three sites. The questionnaires were filled by 201 visitors who were present at the time of the survey.

Each respondent was allocated to a zone of origin according to the distance travelled to visit the forest using the web flyer mileage calculator (WebFlyer 2019). This resulted in 10 zones. Through the questionnaires it was possible to clarify how many people had visited the forest within a period of one year from the different zones. The population of each zone was obtained from Mapofworld.com (2019). The basic model used depicts the rate of visits per 1000 population as a function of factors such as the travel cost and the time spent travelling.

Using information on the number of

visitors from each of the 10 zones (0–9), total visitors per year and the population in each zone (Table 4), the visit rate per 1000 population (VR_{1000}) in each zone was determined by using the formula (1):

$$VR_{1000} = \frac{N_i \cdot 1000}{P_i}, \text{ number of 1000 per year} \quad (1)$$

where: N_i is number of visits per year from zone i and P_i is the total population in zone i .

Information on the round-trip travel cost and the average time for each trip was also collected. Round-trip distance to the forest by visitors from each zone was calculated using the web flyer mileage calculator and this was multiplied by the standard cost per mile for the period according to the American Automobile Association (AAA) as 0.608 USD per mile for 2019 to get the full travel cost per zone. This method assumes that all visitors from a particular zone have the same probability of visiting the forest at the same travel cost. The recreational value of Mabira CFR was determined by multiplying the total cost per trip for each zone with the number of visits per year, to get the total travel cost per zone. These figures were summed up for all zones to obtain the total travel cost for all the visitors to Mabira CFR per year, which was equal to the recreational value of Mabira CFR.

Analysis of economic benefits to employees at the recreational sites

Semi-structured questionnaires were administered to all employees at each of the three sites to capture data about the benefits they obtained from forest recreation. In total 33 employees responded, of whom six worked at the Mabira Ecotourism Centre, five at Griffin Falls Camping

Site and 22 at Mabira Rainforest Lodge. Information was obtained about their demographic characteristics, net salary and wages, level of employment, other sources of income and other non-financial benefits received in the course of employment. The managers provided data about monthly revenues of the businesses, employment levels, charges for different recreational activities, the peak period, and the number of individuals employed at the recreation sites. Using the number of employees and monthly wages per head, an estimate of the total employment income from forest recreation was calculated and extrapolated to annual figures.

Visitor expenditure survey

User spending was used to measure the direct economic value of forest recreation (Carlsen and Wood 2004). The value was determined using a visitor expenditure survey, in which tourists were asked to record their expenditure on different items during their visit to Mabira CFR. The expenditure information was obtained using semi-structured questionnaires administered on the next come basis. Visitor expenditure was assessed by asking respondents to indicate i) The money spent on the trip with respect to travel, accommodation, food, drinks, entrance fees and recreational activities, ii) Whether expenditure figures were per day or for the whole trip, iii) The number of people covered by the expenditure figures and iv) The length of stay at the site. The survey data provided daily average expenditure per visitor using the average length of stay and adjustment for total expenditure to account for the number of persons the expenditure covered. Mean daily expenditure per person was calculated for each item. In case of accommodation, the number of nights

was determined by subtracting one (1) from the number of days visitors stayed at the site. The sum of each expenditure item separately was used to compute average expenditure per person per day. The average daily expenditure per person was extrapolated using estimates of total visitors to the study sites in 2019, the average expenditure per visitor and average length of stay to get the total annual expenditure (Crompton et al. 2001). The average expenditure per visitor per day on accommodation (*A*) and other expenses (*OE*) were calculated using the formulas (2) and (3).

$$A = MAE \cdot N \cdot MLS^{-1}, \quad (2)$$

$$OE = MNP \cdot LS, \quad (3)$$

where: *MAE* is mean accommodation expense, *N* is number of people, *MLS* is mean length of stay, *OE* is all other expenses (based on mean expense for each item), *MNP* is mean number of people, and *LS* is length of stay in days.

Total visitor annual expenditure (*TE*) was calculated using the formula (4).

$$TE = EDE \cdot ELS \cdot TLS, \quad (4)$$

where: *EDE* is average daily expenditure, *ELS* is average length of stay, and *TLS* is total number of visitors.

Regarding their perception of Mabira CFR in terms of environmental conditions for recreation and services offered, visitors were asked to respond to a set of seven questions structured to three categories using the five-point Likert scale (Ezeuduji and Mhlongo 2019). The questions also sought the visitors' perception about conservation issues that threaten the forest. The responses were coded as disagree or don't know or agree and used to calculate the mean scores.

The annual expenditure of the visitors attributed to Mabira CFR was estimated as follows: number of overnight visitors ×

visitor attribution to biodiversity × daily expenditure of the visitors × average length of stay.

Results and Discussion

Characteristics of visitors

Overall, 62 % of the respondents were female and the average age of visitors was 30 years. About 27 % of respondents were Ugandans and 73 % were foreigners. Resident foreigners comprised 10 % of the visitors, and the non-resident foreigners constituted 90%. Similar results were reported in a study in Brazil, where a majority of visitors to a protected forest were foreigners (Souza 2016). The low frequency of Ugandan visitors might be attributed to unaffordable costs and limited awareness about the variety of recreational activities available in Mabira CFR. Regarding education, 84 % of the visitors had attained at least tertiary education implying that education increases knowledge about the benefits associated with recreation. Therefore, people with higher levels of education appreciate environmental services, recreation and ecotourism (Kawsar et al. 2015). A similar trend was observed in a study conducted in Tanzania (Twerefou and Ababio 2012). The mean monthly household income of respondents was 954.52 USD; with a standard deviation of 1957.8 USD. About 26 % of the respondents earned above the mean income.

Forest recreation patterns

The study revealed that 48 % of the respondents visited Griffin Falls Camping Site, 28 % the Mabira Ecotourism Centre and 24 % the Mabira Rainforest Lodge.

The canopy super-skyway zip-lining activity at the Griffin Falls Camping Site attracted the highest frequency of visitors due to its uniqueness. At the Bavarian Forest in Germany visitor motivation for hiking was a small forest restaurant at the end of the trail and followed by tradition linked to forest visits every summer (Rathmann et al. 2020). About 75 % of the respondents visited Mabira CFR for the first time in the past 12 months and most of them were foreign tourists. An adult visitor made at least one trip to the site per year. The visitors were mainly interested in nature walks (43.5 %), canopy super-skyway zip-lining (34 %), bird watching (15 %) and camping (17 %). Other activities offered at the sites include biking and hiking. The months of July, August and November recorded the highest frequency of visitors because they coincide with the traditional holidays in countries of the temperate northern hemisphere where a majority of the visitors came from. Information regarding recreation patterns is important for business owners because it helps them to predict when to expect more visitors and plan for them in advance to avoid visitor dissatisfaction.

Site perceptions

Mabira CFR was regarded as having a good recreational space (92 %) with a

high aesthetic value (89 %) by the majority of the visitors (Table 1). The parking facilities at the forest were considered adequate and the staff at the sites offered the necessary information to the visitors. The mean values for the seven site perception characteristics were above four (4) an indication that visitors regarded Mabira CFR as a good recreational space with conducive environmental conditions. However, 51 % of the visitors considered the forest threatened by encroachers. This might have a negative implication on recreational visits and revenue collected in the long run. Thus, visitor perceptions and site characteristics are important aspects for any tourist destination area (Staneva 2019).

Environmental attributes that attracted visitors to Mabira CFR were the rich biodiversity (60 %), conducive environment that stimulates relaxation and self-reflection (47 %) and canopy super skyway zip-lining that was recently introduced (9 %). Similarly, a study by Lupp et al. (2016) revealed that forest diversity was the major motivator of tourist visits. Visitors also reported having contact with nature, exercising and relaxation as the main motives for visiting Mabira CFR. Preference of different recreational activities provide a guide to private investors in the tourism sector on which activities are highly demanded and worth investing in.

Table 1. Visitors' perceptions of Mabira CFR recreational sites.

Characteristic	Mean score	Disagree	Don't know	Agree
		%		
Good recreational space	4.40	2.8	5.1	92.1
High aesthetic value	4.32	1.4	9.8	88.8
Good environmental conditions	4.40	2.8	5.9	91.3
Availability of guiding information	4.05	2.1	10.9	87.0
Adequate parking facilities	4.42	8.6	8.0	83.4
Safety	4.32	5.8	9.4	84.8
Encroachment threat to the forest	3.58	23.9	25.4	50.7

A majority of the visitors (45.5 %) preferred nature walks followed by 34.1 % that preferred zip-lining (Table 2). The popularity of canopy super skyway zip-lining is an indication of its potential to attract more tourists.

Table 2. Preferred recreational activity.

Activity	Frequency	Percentage
Nature walks	78	45.5
Bird watching	20	15.2
Zip-lining	45	34.1
Camping	22	16.7
Biking	11	8.4
Hiking	16	12.1
Viewing the water fall	3	2.2

Note: The percentages are inclusive of each other.

Recreational activities offered at the different sites provide a range of health benefits through reducing physical inactivity. White et al. (2016) indicated that recreational physical activity especially walking in natural environments promoted good health. Health benefits of walking have been reported as preventing high blood pressure, breast cancer, type 2 diabetes, hip fracture, colon cancer, osteoporosis and impotence (Godbey 2009). Outdoor recreation in forests reduces stress, helps people to connect with nature and experience calmness (Ohe et al. 2017, Taye et al. 2019), which are precursors to wellness. Forest recreational activities constitute part of health tourism, which has been suggested as a means to improve and maintain health conditions of aged tourists without necessarily obtaining medical treatment (Huang and Xu 2014).

The relaxation obtained by visitors promotes a good state of mind. Some studies reported exposure to nature as an important factor in mental health improvement

by providing short term emotional benefits and recovery from stress (Holland et al. 2018, Buckley 2019, Buckley et al. 2019) and to improve happiness (Frumkin et al. 2017). Staneva (2019) reported that physical activity through outdoor recreation reduced the impact of electromagnetic fields on people's health through promotion of good sleep, improved immune system, stabilization of the cardiovascular system and provision of psycho-emotional comfort. From this discussion, it is evident that forest recreation not only promotes good health but also minimizes costs associated with management of wide range of health conditions. This is important in fostering improved health and wellbeing of citizens.

Forest recreational value

The total annual recreational value of Mabira CFR was 577,446 USD (tables 3 and 4). This value is higher than the previous estimates for the same forest at 91,035 USD (Muramira 2000). The in-

Table 3. Visitation rates per zone.

Zo- ne	Population, number	Dis- tance, miles	Vis- its, num- ber	Visits per 1000
	a	b	c	$d=c \cdot b^{-1} \cdot 10^{-3}$
0	599,817	0	4	0.006669
1	2,050,370	189	86	0.041944
2	64,006,033	1,335	14	0.000219
3	6,219,150	4,550	9	0.001447
4	1,251,695,584	6,080	5	0.000004
5	8,584,926	6,900	3	0.000349
6	42,910,000	6,940	1	0.000023
7	35,563,007	8,123	27	0.000759
8	64,088,222	8,040	15	0.000234
9	34,368,864	14,580	28	0.000815
$\Sigma=192$				

Note: a – population per zone of visitors' origin, b – distance from zone of origin to Mabira CFR.

Table 4. Total travel cost estimates.

Zone	Round trip travel distance, miles	Visits, number	Round trip travel time, min	Distance × cost per mile, USD	Cost of travel time per minute, USD	Travel time × cost per min, USD	Total travel cost per trip, USD	Total travel cost per zone, USD
a	B	c	D	e=b·0.608	F	g=d·f	h=e+g	i=h·c
0	0	4	-	-	-	-	-	-
1	189	86	342.0	115	0.260	88.92	204	17,544
2	1532	14	300.0	931	0.997	299.10	1231	17,234
3	4550	9	480.0	2766	1.222	586.56	3353	30,177
4	6080	5	280.0	3697	0.370	103.60	3800	19,000
5	6900	3	120.0	4195	0.500	60.00	4255	12,765
6	6940	1	120.0	4220	1.110	133.20	4353	4353
7	7932	27	675.0	4823	0.577	389.48	5212	140,724
9	8123	15	614.0	4939	0.620	380.68	5319	79,785
10	14,580	28	323.0	8865	0.847	273.58	9138	255,864
							Σ=36,865	Σ=577,446

Note: Cost of distance travelled from each zone (column e), cost of travel time (column f) was obtained by averaging travel time reported by visitors from each zone and multiplied by their reported wages. The cost per mile = USD 0.608.

crease is attributed to the new facilities and activities that have been established like the Mabira Rainforest Lodge and the canopy super skyway zip-lining at Griffin Falls Camping Site respectively. There has been increased sensitization about tourist attractions by the Ministry of Tourism, Wildlife and Antiquities, which has resulted in increased numbers of foreign tourists per year, and local tourists who have begun to appreciate forest recreation. Naidoo and Adamowicz (2005) estimated the value of nature-based recreation of Mabira CFR at 7000 USD; but this focused only on bird diversity. The high recreational value revealed by this study could be attributed to the activities mentioned earlier. Additionally, the strategic geographical location of the forest reserve near the major urban centres of Kampala, Jinja and Mukono, also contributes to the desire of tourists to visit the forest. The immediate alternative to Mabira CFR would be Budongo Forest Reserve in Western Uganda; but this is likely to have a higher value based on travel cost method because of its remote location. This recreational value is much lower than values that were obtained for different forests in other countries. For instance, Srengsen Jakarta urban forest in Indonesia RM was valued at 0.44 m·yr⁻¹ (Solikin et al. 2019), Belum-Temeng rainforest in Malaysia at RM 14.66 million per year (Gwee et al.

2019) and Swedish forest at \$ 3,406,751 (Ezebilo 2016). The variation in values could be attributed differences in the number of forest recreational tourists in the different countries.

The value demonstrates the economic benefits of recreation in Mabira CFR and other associated benefits. The preservation of these benefits depends on conservation of the forest biodiversity through sustainable use. This would prevent substantial reduction in its value, thus improve the number of visitors per year. Despite empirical data generated from the survey, market failure has been identified as one of the major causes of undervaluation. To determine the economic value of the Mabira CFR, decision-makers have always put into account the easily quantifiable cost and benefits related to goods and services traded at the market. However, numerous functions of the Mabira CFR were identified for which markets are malfunctioning, distorted or simply non-existent. Markets only exist for some of the environmental functions of the forest reserve, such as eco-tourism. However, even if markets exist, market prices for these services are not reflected in the real value of these services due to distortion by subsidies. This study revealed that benefits were enjoyed and costs incurred but not directly realized in the supply and consumption of recreational services, hence externalities were observed.

The contribution of forest recreation to the local economy

Employment income

Forest recreation created 33 jobs for the local people at the three sites with 74 % being occupied by males and 26 % by females. Therefore, tourism related labour is more important to men than women in terms of employment. Local people were employed as guards, waiters, managers, accountants, cleaners, tour guides and receptionists. The total annual income received by the employees amounted to 28,074 USD, of which 21,863 USD was attributed to employment at recreational sites and 6211 USD (Table 5) to other sources like agriculture and business. These figures are very low compared to those generated from other forests worldwide. For instance, protected forests in Brazil generated \$ 342 million and offered employment to 43,602 jobs (Souza 2019). Promotion of forest recreation brings about sustainable income that is dependent upon nature conservation. The high contribution of employment income underscores the importance of forest recreation to the rural community of Mabira CFR. Reliance on income from tourism related employment is characteristic of communities adjacent to other protected areas in East Africa (Shoo and Songorwa 2013). A similar scenario was

Table 5. Financial benefits that accrue to employees at the three recreational sites.

Tourist site	Annual recreational employment income, USD	Annual other income, USD	Total annual income, USD	Relative income from recreational employment, %
Mabira Ecotourism Centre	2833	1167	4000	70.8
Griffin Falls Camping Site	1567	2233	3800	41.2
Mabira Rain forest Lodge	17,463	2811	20,274	86.1
Total	21,863	6211	28,074	77.9

reported by Staneva and Marinov (2021). The local people preferred working in Mabira CFR recreational sites despite the proximity of large sugarcane plantations of Mehta Group of Companies. They attributed this to less pay in the sugarcane plantations.

The relative income from employment at Mabira Ecotourism Center and Mabira Rainforest Lodge was high at approximately 71 % and 86 % of total income respectively. These figures are higher than 9.6 % employment income attributed to ecotourism in Amani Nature Reserve (Shoo and Songorwa 2013). This indicates that forest recreation makes a positive contribution to the livelihoods of employees at the three sites. Griffin Falls Camping Site employed only four people hence the lowest employment income contribution of 41 %. The high relative income 77.9 % (Table 5) attributed to forest recreation activities reaffirms the fact that forest resources that were originally considered as only sources of raw materials for wood products are now valued for their recreational purposes. Therefore, promotion of forest recreational facility-based employment is a potential conservation strategy for forests. Additionally, it would enhance government revenue since it would increase the tax base. Mbaiwa and Stonza (2010) also revealed that employment at tourism facilities can improve livelihoods of communities.

Though employment can be regarded as an individual benefit, employees at the three sites financially support their families through payment of school fees, medical care and asset acquisition and accumulation. Other non-financial benefits derived from the forest by virtue of being employed at the sites include acquiring working experience that enhance employee skills in promoting teamwork

and managing people, gaining reputation in the local community, making friends and travelling to different places. Employees also make statutory payments to the National Social Security Fund on behalf of employees that guarantees them some level of income on retirement in addition to offering them medical insurance. Apart from direct income from employers, employees reported receiving gifts in form of clothes and money from the tourists who appreciated their services. The economic returns generated from forest recreation and related activities also benefit investors in the tourism sector.

Visitor expenditure patterns

Expenditure on forest related recreational activities in addition to employment income generates revenue for the various businesses near the sites. The average period of stay for forest recreationists was two days and the average daily expenditure amounted to 136 USD. Total annual expenditure of visitors to the three tourist sites amounted to 138,442 USD (Table 6). This figure is far below 61.26 million USD estimates by Christie et al. (2006) and Carlsen and Wood (2004). This could be attributed to the limited number of visitors, an indication that forest recreation has not yet attained its full potential in Uganda to contribute high revenues to the economy.

The highest expenditure was attributed to airfare to Uganda. However, if this is excluded from the analysis the opportunity cost of travelling to Mabira CFR for recreation is the second biggest cost. This clearly illustrates the importance visitors attach to forest recreation. Amongst activities offered at the sites super skyway zip-lining was the most expensive activity per individual.

Table 6. Mean visitor expenditure to and on site.

Expenditure type	Amount, USD	Percentage
Local transport to site	2890.17	2.08
Fuel to site	512.72	0.37
Accommodation	7427.06	5.36
Meals	2811.42	2.03
Nature Walk	719.72	0.51
Entrance fees	652.78	0.47
Airfare to Uganda	107,113.20	77.37
Communication	297.36	0.21
Super skyway ziplining	112.22	0.81
Other costs	2132.22	15.59
Opportunity cost	12,762.72	9.212
Total	138,441.59	100.00

Note: The number of visitors that responded to the expenditure survey was 201.

The average daily expenditure on recreational sites aided in the generation of the direct tourist expenditure at the recreational sites in Mabira CFR (Table 7).

Table 7. Average daily expenditure per person in Mabira CFR.

Expenditure item	Average expenditure per person per day, USD
Transport to site	3.05
Fuel to site (use of private cars)	0.60
Accommodation	9.61
Meals	3.41
Recreational activities	1.42
Communication	0.31
Other expenses	0.81
Mean total expenditure	19.23

The average expenditure per day per person excludes costs for the airfare and entrance fees. The total average expend-

iture per person per day amounted to 19 USD. This figure is lower than what was estimated by Sun et al. (2002) an indication that forest recreation has not been fully appreciated and developed in Uganda. Tourists to the three sites in Mabira CFR directly contribute about 100,700 USD per year. This is quite low compared to tourism expenditure from day visits to other recreational sites (Christie et al. 2006). This may be attributed to the significantly lower number of visitors during the survey period. Irrespective of the low amounts spent by tourists at Mabira CFR sites, visitor expenditure provides an important reason to conserve the forest (Souza 2016). Thus, forest managers in Uganda should ensure that these natural areas are conserved in order to attract tourists whose expenditure might benefit forest adjacent communities and the country at large.

Attribution value

The visitor survey revealed that 60 % of visitors in Mabira CFR attributed their visits to the high biodiversity of the forest. It is therefore prudent to assume that 60 % of visitor expenditure is attributed to the forest to the tune of 61,151 USD annually. The high biodiversity attracts tourists with varied interests like game viewing, bird watching, nature walks, and zip lining among others. This supports the idea of forest conservation to generate income for countries and their citizens and particularly local communities living adjacent to forests. Realization of huge economic benefits is dependent on effective management and protection of forest biodiversity. Therefore, if countries and communities are to economically benefit from forest recreation, biodiversity of in such areas have to be preserved.

Conclusion

The visitors to Mabira CFR were mainly foreigners because the local tourists were discouraged by unaffordable costs of the recreational activities. Thus, a deliberate effort to attract local people through subsidization of the costs should be supported. The frequency of tourists coincided with holidays for European countries. The canopy super skyway zip-lining was popular due to its novelty and contributed to the increased number of tourists. Therefore, this activity can be introduced in other forested areas in Uganda in order to boost local revenue collection. Mabira CFR was perceived by most of the visitors as a good recreational space with conditions favourable for tourism. The rich forest biodiversity was singled out as the most important factor in attracting tourists. The forest contributed to a great extent to income generation for employees at recreational sites. Therefore, there is need for improvement of aesthetics of the recreational sites while preserving the naturalness of the area in order to attract more tourists. Results of this study may provide motivation to improve the quality of environmental services from Mabira CFR and to expand the variety of services offered based on the demand of the people.

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