

Assessment and Utilization of Environmental Resources at Ode-Irele Forest Area, Nigeria

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Abstract: Reliance on subsistence extraction of environmental resources can ignite strong desire to implement sustainable practices for the continual availability of products. The primary dataset used for this study was extracted from survey conducted in Ode-Irele forest area. Questionnaires were administered on one adult person per household in five selected villages namely Ludasa, Lonla, Loda, Petu and Gbogi. The five villages were purposively selected as a result of their proximity to the forest areas. Questionnaires were administered to 20 household heads purposively selected from each village. Time land was acquired and property owned were considered as the main criteria for defining households. Direct economic uses of the forest were ascertained by asking the respondent about the satisfaction derived from using environmental resources and whether payment should be made for the resources. This study was framed within the model that sustainable management of environmental resources is a consequence of heavy reliance on subsistence extraction of resources. Data were analysed using descriptive statistics of frequency counts and percentages. The result shows that 38 % of respondents have acquired land in the study area since birth, while literate respondents accounted for 27% in property ownership. There is a high reliance on environmental resources for food, natural honey, medicinal plants, wild fruits and use of wood for fuel. Also trades in wild animals and their products were on the high side. Knowledge of respondents about the management of trees for resources such as timber with arable crops (92%), resins (95%), shade for domestic animals/understorey crops (92%), soil conservation (83%), water conservation (75%) was high. Many approved payments for managing environmental resources. Sustainable management of environmental resources by local residents in natural forested areas could only be achieved if an alternative means could be provided to reduce heavy reliance on resources for survival

Keywords: Environmental resources, Sustainability, Management, Payment

INTRODUCTION

The natural resource base is very necessary for sustained economic development, a prerequisite for poverty eradication (UNEP, 2014). Natural resources are said to be the foundation for wealth generation in many poor countries. The conservation of natural lands with special reference to forests can generate huge financial returns to local people. Individuals living in rural communities in tropical forests rely heavily on subsistence extraction of resources, and usually have strong ties to their local environment. Rural community members strongly desire to implement sustainable practices to ensure that natural products will continue to be available in the future (Lindsey and Madigosky, 2014).

There are numerous expressions of the criticality of forest products, highlighted within the context of livelihood strategies based on the integration of income sources. Multiple class comparisons provided evidence that land use intensification is not associated to land sparing. Near 40% of the households' annual income was derived from forests, followed by agriculture (25%), wages (17%) and livestock (11%) (Roberto *et al* 2014). Singwane and Shabangu (2012) reported a high reliance on woodland resources, especially fuel wood, food, and medicine. In the process of ensuring survival, poorest communities have little choice but to fathom out their

basic needs and livelihoods from a fragile ecological resource base, and having lost the means to conserve it, they often damage its productivity and thus the very basis for their livelihoods (UNEP, 2014). However, in terms of management, sustainable management practices were lacking. From their findings, it can be deduced that 'open accesses to the woodlands contributed significantly to their poor management. It is unusual for people to take much care of a 'free' resource; rather everyone desires to get a better share for him or herself; hence, the 'tragedy of the commons'.

Ratsimbazafy *et al* 2012 revealed that higher percentage of the material for housing came from the forest (such as thatch for roofing material and timber for the house and furniture), firewood as the main source of fuel, and the harvest of fiber and edible resources was significantly higher for women.

There could be a relationship between age and use of environmental resources. Additionally, length of residence in a rural setting could also be linked to resource exploitation and management for sustainable use. All these initiatives could influence local attitudes toward conservation. Nyamasyo and Kihima, 2014, reported high percentage of non-indigenes all who had emigrated from other areas and

owned land in a new area through buying, while some had rented the land they were using.

Many landowners permit access to their land—usually for family, friends, and local people—but many restrict land access by outsiders. By posting your land, you spend resources to keep people off, but perhaps you can put that effort into considering whom to let onto your property. Forbordet *al* (2014) illustrates how the proportion of wholly owned holdings has steadily decreased while the proportion of wholly rented holdings has been stable and low. At the same time there has been a notable increase in partly rented farm holdings while the only category to have experienced constant numerical and proportional growth over the time period has been the “mainly rented” category. Relative to the purchase of land the renting of land is often seen as a good solution for both those who rent and those renting out, Forbordet *al* (2014).

In places where there are noticeable increases in the size of farmland, settlement, and other lands and a decline in forestland, grassland, wetland, and woodland. The main possible causes could be attributed to agricultural expansions, human population dynamics, economic factors, changing land tenure policy, politics, and sociocultural factors. The rapid population growth in any area is a key factor responsible for increased demand for more land for farming, settlement, and infrastructure development, (Nyamasyo and Kihima, 2014).

Farm forestry has proved to be an important enterprise for small- and large-scale farmers worldwide. It has the potential of improving forest/tree cover across the globe. Farmers with postsecondary education had more chances of planting and retaining trees on farm as compared to those with only formal primary and secondary education, respectively. This also goes for male-headed households as against female-headed households. But, negative significant correlation between marital status and size of household as well as age of the household respondent has been reported by Oebaet *al*, 2012. Kobbail (2012) reported significant relation between respondents’ age, educational level, main occupation, respondents’ indigenous knowledge, family uses of different forestry products, and attitudes towards participation of respondents in forest management. Forest, trees and associated environmental resources are becoming scarce, thus resulting in a state of imbalance between what rural households need and what they can obtain. This is a threat to their survival. Rural households should therefore involve themselves in the

management of forest areas in order to be able to obtain a number of products from them.

For this purpose the study focused on determining the socio-demographic factors that enhanced property ownership in the community; determining the environmental resources that are of commercial values and assessing the management efforts geared towards sustainable use of environmental resources.

METHODOLOGY

The primary data used for this study was extracted from survey conducted in Ode-Irele forest area, Ondo State . Questionnaires were administered on one adult person per household in five selected villages namely Ludasa, Lonla, Loda, Petu and Gbogi. The five villages were purposively selected as a result of their proximity to the forest area. One hundred copies of questionnaire were administered to residents in the communities selected for this study. Twenty respondents representing the household heads from each village were purposively chosen for the interview. People living and working in the study area were considered as the target group. Time land was acquired and property owned were considered as the main criteria for defining households.

Specially trained interviewers with fluency in local language were used for conducting surveys among the local communities. The survey questionnaire comprised 21 questions in all, and 31 Ordinal-polytomous (optional sub-questions that were divided into a number of sections) focusing on some basic socio-demographic information.

The basic information at the respondent level included questions about the respondent’s sex, age, educational status, residence of parents, previous residence, property owned, size of land, time land was acquired, payment of rent. Educational status and time of land acquisition were subsequently cross-tabulated with property owned.

Direct economic uses of the forest were ascertained by directly asking the respondent about the satisfaction derived from using environmental resources in terms of the commercial values of the resources with regards to hunting wild animals for food; trade in wild animals and their products; trade in fruits; trade in natural honey; trade in medicinal plants; collecting wood for use and sale and; trade in wild vegetables. Questions were also asked about the management of trees for some environmental resources such as timber with arable crops; animals food; resins; shade for domestic crops and understorey crops; soil and water conservation. The respondents were asked to respond yes or no to the

knowledge about the use and management of the environmental resources. This study was framed within the model that sustainable management of environmental resources is a consequence of heavy reliance on subsistence extraction of resources. Individuals living in rural communities in forests areas rely heavily on subsistence extraction of resources, and usually have strong ties to their local environment. Consequently, they will want to sustainably manage the resources for continual availability and use. Data were analysed using

descriptive statistics of frequency counts and percentages.

RESULTS AND DISCUSSION

The results of demographic information of respondents are presented in table. The result of the age distribution shows that 15% of the respondents are within the age bracket of 21-30 years, 21% within 31-40 years, 29% within 41-50 years, 19% within 51-60 years, 14% within 61-70 years and 2 within the age bracket of 71-80 years.

Table 1: Demographic information

Sex	% Distribution	Educational Status	% Distribution	Residence of Parents	% Distribution	Previous residence	% Distribution
Male	80	Literate	27	Within	69	Within	75
Female	20	Illiterate	73	Outside	31	Outside	25
Total %	100		100		100		100

Property owned by Residents and Payment of Rents

The type of property owned by the respondents in the study area is presented in figure 1. The result shows 8% of the respondents owned land, 32% owned farm, 4% owned both house and farm, 19% owned both land and farm, 8% owned both house and land, 26% owned house, land and farm together, while 3% owned none of the properties.

On payment of rents, 18% of the respondents pay to landlords, 3% to chiefs, while 79% do not pay rent at all. The result shows that 38 % of them have acquired land in the study area since birth, 20% have acquired

land in the last 1-10 years, 17% in the last 11-20 years, 12% in the last 21-30 years, 9% in the last 31-40 years, 3% in the last 41-50 years, while 1% have acquired land within the last 50 years.

On the cross tabulation of educational status and type of property owned presented in Table 2, 4% literate respondents accounted for the ownership of land, 14% for farm, 4% for land and farm, 2% for house land farm, and 3% for none totaling 27%. The illiterate respondents accounted for 4% land ownership, 18% ownership of farm, 4% house and farm 15% land and farm 8% house and land, and 24% ownership of house, land and farm totaling 73%.

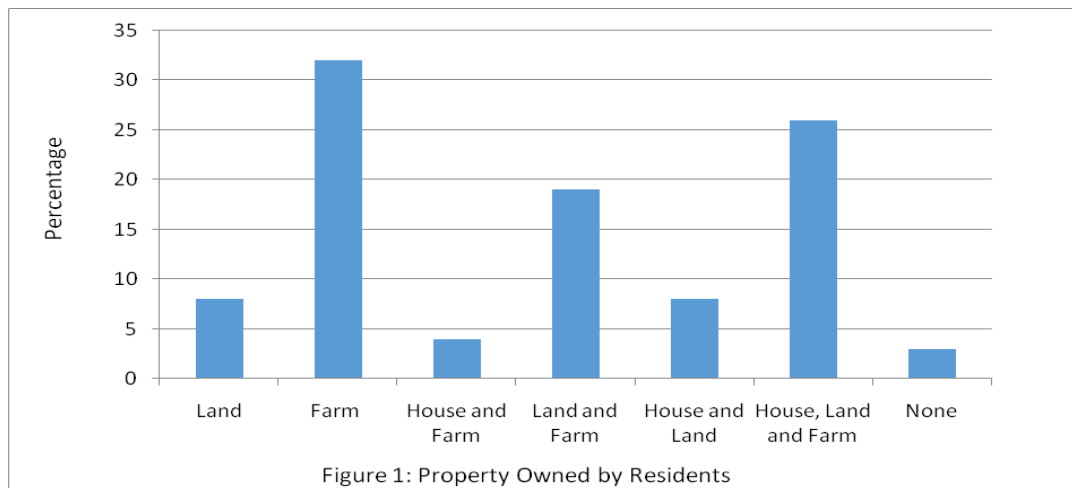


Table 2: Cross tabulation of Time Land was Acquired * Property Owned

Time land was acquired	Property owned (% of total)							Total
	Land	Farm	House & farm	Land & farm	house & land	House, land, farm	None	
Since birth	3	12	1	7	5	10		38
1-10 years	2	10	1	1	2	1	3	20
11-20 years	2	4	2	3	1	5		17
21-30 years		5		4		3		12
31-40	1	1		3		4		9
41-50				1		2		3
Above 50 years						1		1
% of Total	8	32	4	19	8	26	3	100

Commercial values of Environmental Resources

The result of the response of involvement of people in commercial activities in environmental resources in the study area is presented in table 4. The result shows that more people are involved in hunting activities for food 65%, trade in wild animals and their products was 62%, trade in wild fruits was 92%, trade in natural honey yielded 69%, 86% traded in medicinal plants, and 92% engaged in collection of wood for use and sale., 92% of the respondents managed trees for timber with arable crops, 59% managed trees for resins, 92% managed trees for shade for domestic animals/understorey crops, 83% managed trees for soil conservation, 75% for water conservation and 67% traded in wild vegetables, while the response for managing trees for animals food was lower at 42%.

Management of Environmental Resources and Payment for Environmental Resources

The result shows that within the split of people that recognized that trees are managed for timber with arable crops, 55% approved payment for the management, while 45% disapproved of it. On the management of trees for animals' food 55% of the respondents approved payment for the service while 45% disapprove of it. The result also reveals that for managing trees for the production of resins, 55% of the respondents approve of payment for the service, while 45% disapprove of it. For the management of trees for shade for domestic animals and understorey crops, 55% of the respondents approve of payment, while 45% disapprove of it. For the management of trees for soil conservation, 65% approve of payment, while 35% disapprove of it. So also did 65% approved while 35% disapprove payment for the management of trees for water conservation. In all the level of approval as against disapproval stands at 55-45% and 65-35% depending on resource type.

DISCUSSION

Socio-demographic features of local residents in natural forested areas have a lot to do with resource

use and the ways the resources are managed for continual availability. This study has revealed highest demographic proportion of male residents, illiterate persons, people whose parents are resident in the locality and those who are themselves resident in the locality. Data on gender demography is in agreement with the findings of German *et al.*, (2009), Oeba *et al.*, (2012) and Mbavai *et al.*, (2015) that the majority of the sample households in some study areas were male-headed, who adopted improved practices, and that male-headed households had more chances of planting and retaining trees on farm as compared to female-headed households. Result on educational level, however, contrasts with the finding of Kobbail (2012) in which significant relation between respondents' educational level and attitudes towards participation in forest management was reported. Length of residence in a rural setting could also be linked to resource exploitation and management for sustainable use (Nyamasyo and Kihima, 2014).

It could be seen from the result on age brackets that those within the age brackets of 21-30 years and 41-50 years constitute 50% of respondents in the study population. This age grades are the most active in terms of agility to work. This agreed with the finding of Mbavai *et al* (2015) that majority of the farmers who adopted improved practices were young people within the age bracket of 25-54 years. Nyamasyo and Kihima, (2014), also confirmed that there is a relationship between age and use of environmental resources that could influence local attitudes toward conservation.

On property ownership, the result depicts a noticeable increase in property ownership that tended towards owning farm, owning house, land and farm, as well as land and farm in that order. This goes to reveal that ownership of farm, house for settlement and land for farming and settlement are of prime importance to the people of the study area. This is supported by the findings of Nyamasyo and Kihima, (2014). According to Oeba *et al* (2012), farmers with

large land size had high chance of planting and retaining trees on farm.

The highest percentage of responses that accrued to non-payment of rent is possibly due to the high number of people that are resident in the study area who are possibly natives and have acquired their own land through inheritance as revealed in the higher percentage of the residence of parents and previous residence of respondents. The few that pays rent are the people that have possibly migrated to the area to own land for farming activities by lease and so have to pay rent. This is in agreement with the findings of German *et al* 2009 that all sample households had customary land tenure in one country, while in another majority had customary and few had lease-holding. Relative to the purchase of land the renting of land is often seen as a good solution for both those who rent and those renting out Forbord *et al* (2014).

The result on time period of land acquisition reveals that respondents that have lived in the study area since birth have the largest share of land. This could be attributed to the strong ties that they have with the land since birth, which agrees with the finding of Nyamasyo and Kihima, (2014) that length of residence in a rural setting could also be linked to resource exploitation and management for sustainable use which in turn could influence local attitudes toward conservation.

From the result of cross tabulation of educational status and property owned more of the illiterate respondents own farm, house and farm, land and farm, house and land house and farm put together than literate respondents. This implies that the illiterates are the set of people that are more involved with resource utilization in the study area. This result contrasted with the finding of Kobbail (2012) that there is significant relation between respondents' educational level and attitudes towards participation of respondents in forest management.

The result of property ownership as cross tabulated with the time land was actually acquired for the development of the properties revealed that the percentage of total for respondents that have acquired land since birth are the most abundant in the study area, with strong attachment to the ownership of farm followed by ownership of the trio of land, house and farm put together as well as land and farm. The percentage of total for all categories of time period of land acquisition also reveals the same cohort of attachment for the ownership of farm followed by ownership of the trio of land, house and farm put together as well as land and farm. This finding is in

line with the early work of Nyamasyo and Kihima, 2014 in which they reported that the main possible causes of noticeable increases in the size of farmland, settlement, and other lands could be attributed to agricultural expansions, changing land tenure policy, human population dynamics, economic factors, and sociocultural factors.

The findings on involvement of people in commercial activities in environmental resources depicts a high reliance on environmental resources for food (meat), trade (wild animals and their products, fruits, honey, medicinal plants, fuelwood) and use of wood for fuel. This is in concordance with the findings of Singwane and Shabangu (2012), Lindsey and Madigosky (2014), Ratsimbazafy *et al.*, (2012) and Roberto (2014).

CONCLUSION

It is worthy to note that Ode-Irele Forest is a natural area owned by the community. For most of the tree management efforts for the provision of resources for human use, there is high level of agreement by respondents that payment should be made for the services of managing trees for the provision of resin, shade for domestic animals/understorey crops, soil and water conservation.

The amount payable for managing forest resources by residents is however negotiable. This agreed with the finding of Tian *et al* (2015) in which it was revealed that landowner interest in managing forests for ecosystem services were significantly related to financial incentives.

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