Journal of Research in Forestry, Wildlife & Environment Vol. 15(3) September, 2023
***E-mail:** jrfwe2019@gmail.com; jfewr@yahoo.com*
http://www.ajol.info/index.php/jrfwe
jfewr ©2023 - jfewr Publications
ISBN: 2141 – 1778
***Aondoakaa** et al., 2023*

DRIVERS OF FOREST CONSERVATION AND THEIR EFFECTS ON LIVELIHOODS OF ADJOINING COMMUNITIES IN IPINU-IGEDE COMMUNITY FOREST RESERVE, OJU LOCAL GOVERNMENT AREA, BENUE STATE, NIGERIA

Aondoakaa, M.A.; Shomkegh, S.A.; Ancha, P.U. and Origbo, B.U.

Department of Social and Environmental Forestry, Joseph Sarwuan Tarka University, Makurdi, Nigeria
***Corresponding author:** *alumuntor@gmail.com;* +2347032349303

ABSTRACT

A study was carried out to determine the drivers of forest conservation and their effects on livelihoods of adjoining communities in Ipinu-igede community forest reserve, Oju Local government area Benue State Nigeria. A Semi-structured questionnaire which sought answers to questions on socio-economic characteristics of the people in adjoining communities, Drivers of forest conservation and socio-economic factors influencing conservation of forest resources in Ipinu-igede community forest reserve Oju local government area, Benue State. Data for livelihood activities of the people was collected through multi-choice question format. Administration of questionnaire was done with the assistance of the local residents. Three hundred and eighty-eight (388) copies of a semi-structured questionnaire were administered to respondents from five communities (Odaleko, Oyinyi, Ikache, Andibilla, and Uchenyum), purposely selected due to their proximity to the forest reserve of Ipinu-Igede, for the assessment of drivers of forest conservation, socio-economic factors influencing the conservation of the forest, and the contribution of forest resources to the livelihoods of the people. The data gathered were analysed using descriptive and inferential statistics. Based on the result, traditional taboos, forest laws, prevention of illegal logging, and protection of forests from fire were the drivers of forest conservation in the area. Traditional taboo was identified as the major driver that helped to conserve the forest ecosystems from indiscriminate exploitation. Socioeconomic attributes such as education and age significantly and positively influenced the conservation of forest resources in the study area. Fuel wood, medicinal plants, fodder, plant foods, wood products, honey, and animal products, among others, were some of the identified forest resources collected from the study area. The study recommends that there should be an awareness campaign on private partnership funding to encourage individuals to invest in afforestation programs in the study area and community forest management should be encouraged by involving the community people in decision making, planning and implementation of programs in the area.

Keywords: Drivers, Forest Conservation, Livelihoods, Ipinu-Igede.

Correct Citation of this Publication
Aondoakaa, M.A.; Shomkegh, S.A.; Ancha, P.U. and Origbo, B.U. (2023). Drivers of forest conservation and their effects on livelihoods of adjoining communities in Ipinu-igede community forest reserve, Oju Local Government Area, Benue State, Nigeria. *Journal of Research in Forestry, Wildlife & Environment* Vol. 15(3): 57 - 67

INTRODUCION

Forests play an important role in contributing to carbon sequestration and other global ecological services such as provision of food, fresh water, wood, fiber, genetic resources and medicines, climate regulation, natural hazard regulation,

water purification and waste management amongst others (Agbogidi and Eshegbeyi, 2008). Chand (2011) asserted that forests provide raw materials from more than 5,000 products valued at 23 million dollars. According to Attah (2014), forest goods and services contribute US$450 billion/year to the global economy. The continuous flow of these benefits for future generations requires efficient forest conservation measures (Ashley *et al*., 1999; West and Brockington 2006; Forester *et al*., 2011).

There are many studies in Africa which suggest that incorporating cultural norms and taboos into conservation programs may provide incentives to communities to conserve natural resources (Infield and Adams 1999). For instance, in Madagascar, several studies (Lingard *et al*. 2003, Schachenmann 2006, Tengo *et al*. 2007, Jones *et al.*, 2008 and Rabearivony *et al*., 2008) have reported the relevance of taboos and cultural laws in the continued existence of forest biodiversity. Also in Ghana, studies have shown how clans protect their natural resources through the use of taboos (Abayie- Boaten 1998; Hens 2006; Saj *et al*. 2006; Sarfo-Mensah and Oduro 2007; Kobina and Kofi, 2009; Nganje 2009). East Africa also has a good record of effectiveness of taboo and social norms in wild life conservation (Kweka 2004; Kideghesho 2008). There are also records of efficacious use of traditional norms and taboos in wildlife conservation in other parts of the world (Berkes *et al*. 2000; Colding and Folke 2001; Berkes 2003; Becker and Ghimire 2003). These were based on the fact that these practices control human behaviours (Saj *et al.,* 2006; Kobina and Kofi, 2009). Similar cases were also recorded in Nigeria, Dagba *et al.,* (2013) reported on totemic beliefs and biodiversity conservation among the Tiv people of Benue State Nigeria. Tee, *et al*., (2014) also reported on indigenous forest conservation practices in Benue State, Nigeria while Akindele S.O., (2010) wrote on forest restoration through traditional institutions in Nigeria: Challenges and Prospects. In addition, Jimoh, *et al., (*2012) identified the role of traditional laws and taboos in wildlife conservation in the Oban hill sector of Cross River National Park (CRNP), Nigeria. Banjo *et al.,* (2006) reported on taboos as a means of plant and animal conservation in South-Western Nigeria. Ipinu Igede Community Forest in Oju Local Government Area (LGA) of Benue State is one of the reserves that is rich in biodiversity, though had no appreciable ecological survey of its resources, hence, the dearth of information necessary for the development of the reserve.

MATERIALS AND METHODS

Study Area

The study was carried out at Ipinu-Igede Community Forest Reserve in Oju Local Government Area of Benue State, Nigeria. The community forest is an ancestral heritage site for Igede people of Benue State, stretching through Odaleko, Oyinyi, Ikachi, Andibilla and Uchenyim. The forest contains relict of traditional worship practices in the area, although, the traditional religious worship practices are no longer strong and appreciated due to acceptance of Christianity. However, the laws and taboos governing the forest are still observed by the people of Igede. The forest which is located in the southern guinea savanna belt comprises of both hilly and lowland parts and lies between Longitude 8° 25' 0" E and 8° 41' 67"E and Latitude 6° 51' 0'' N and 6° 85' 0'' N (Okwoche, 2017). It has an area of approximately 4 km ^{2} on a fairly flat land drained by four main seasonally flowing streams (Abadehe, Otuhukwu, Ekpaa and Ugbunwu) which are tributaries to River Ogbugwu. The mean annual rainfall is between 1200 mm and 1500 mm. The mean annual temperature is 30°C. Relative Humidity is between 60% and 80% wet but decreases in the early months of the dry season. It is a derived tropical rainforest characterized by luxuriant vegetation with high composition of riparian forests, of the large trees are *Cola gigantean, Elaeis guinensis, Ficus exasperatea, Khaya spp, Afzelia africana* (Okwoche, 2017). Dominant herbaceous species include *Sphenoclea zeylanica, Pentodon pentandrus, Ageratum conyzoides, Nymphaea lotus and Asystasia gangetica*.

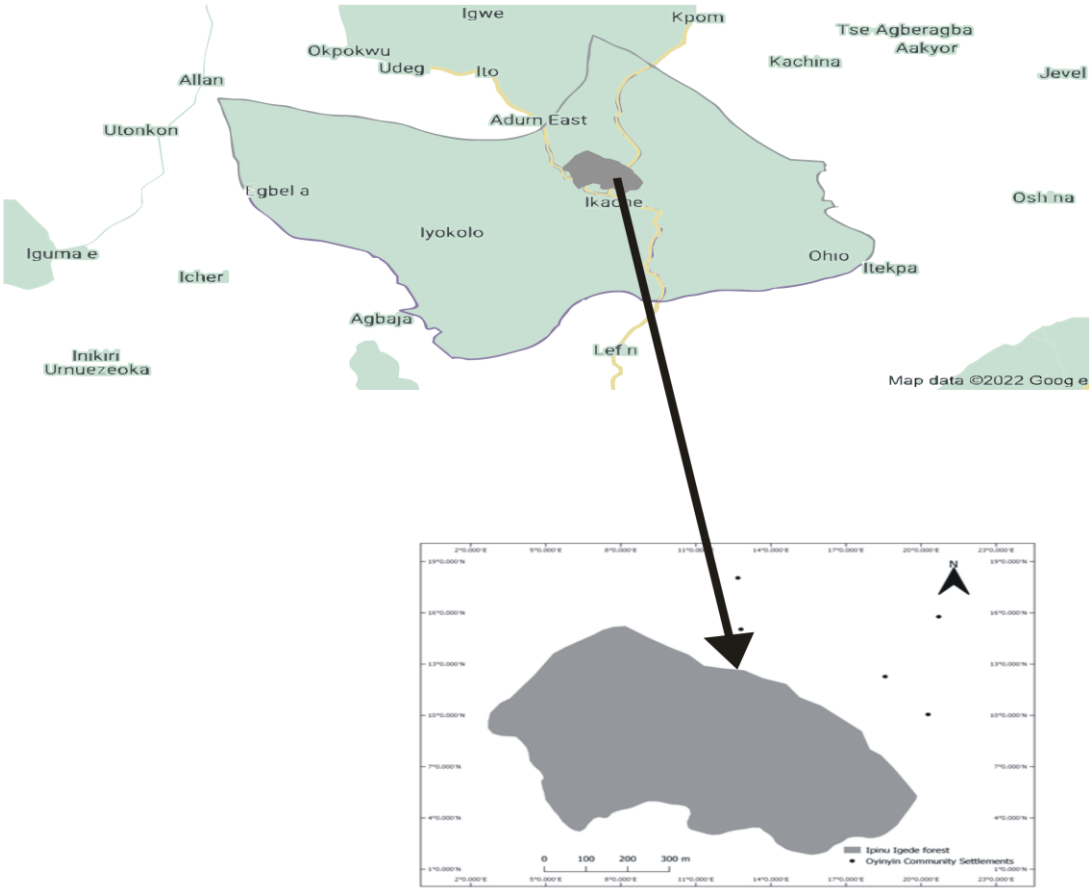

Figure 1: Map of Oju showing Ipinu-Igede Community Forest Reserve, Benue State

Population, Sampling procedure, Sampling size and Data Collection

The population, community sample size and number of households were determined following the procedure outlined by George *et al., (*2004). The study communities were purposely selected due to their proximity to the forest reserve. A systematic random technique was used to select households in each of the communities. The first household in each community was identified and selected for interview and thereafter every fourth household was selected. Two most elderly adults in each household were purposively selected for interview. A semi-structured questionnaire which sought questions on conservation strategies, socio-economic factors influencing conservation of the forest and the contributions of forest resources to the livelihoods of the people was administered. 388 respondents from five communities (Odaleko, Oyinyi, Ikache, Andibilla & Uchenyum) made up of men, women were selected for the study.

Data Analysis

Both descriptive and quantitative techniques were used in the analysis of data collected. The descriptive techniques used were frequency, percentages, mean and tabular presentation of results.

Descriptive statistics such as frequency and percentages were used to determine the socioeconomic characteristics of the people in adjourning communities and the drivers of forest conservation in Ipinu-Igede community forest reserve. Binary Logistics Regression Models (BLR) analysis (Obeng and Weber, 2014) was adopted to analyze the socio-economic factors influencing conservation of Ipinu-Igede community forest reserve. A Five-point Likert scale format was used to measure the contribution

of the forest reserve to the livelihood of the people.

RESULTS

Socio-Economic Characteristics of the People of the Adjoining Communities in Ipinu-Igede Community Forest Reserve Oju LGA, Benue State

Based on the result of socio-economic characteristics of the respondents in Ipinu-Igede community forest reserve, majority of the respondents were female (66.6%) while 33.4% were males (Table 1). The age range of the respondents showed that most (31%) of the respondents were within the age bracket of 51-60 years while 3.9% were less than 30 years old. The result on the occupation of the respondents revealed that 43.2% of the respondents were farmers; while 8.1% were civil servants. The educational level of the respondents was evaluated and the result showed that, 54.6% of the respondents had primary school certificate, while 1.6% of the respondents had tertiary certificate in the area. Majority of the respondents were married (80.3%), while 5.5% were widows/widowers. Majority of the respondents (60.7%) lived 2km away from the reserve; while 29.7% of the respondents reside less than 1km to the forest reserve and 1% of the respondents lived more than 4km away from reserve.

Table 1: Socioeconomic Attributes of the Respondents in Ipinu-Igede Community Forest Reserve Oju LGA, Benue State

Attributes	Option	Frequency	Percent (%)
Sex	Male	122	33.4
	Female	243	66.6
	Total	**365**	**100.0**
Age categories	<30	15	3.9
	30-40	114	29.5
	41-50	110	28.4
	51-60	120	31.0
	>60	28	7.2
	Total	**387**	**100.0**
Occupation	Civil Servants	18	8.1
	Hunting	86	38.7
	Farming	96	43.2
	Trading	21	9.5
	Others	1	0.5
	Total	**222**	**100.0**
Educational Qualification	Primary	207	54.6
	Secondary	114	30.1
	Tertiary	6	1.6
	Non-Formal	52	13.7
	Total	**379**	**100.0**
Marital Status	Unmarried	27	7.5
	Married	290	80.3
	Divorce	24	6.6
	Widow	20	5.5
	Total	**361**	**100.0**

Number of children	2	51	13.2
	4	186	48.3
	Above 4	120	31.2
	Nil	28	7.3
	Total	**385**	**100.0**
Religion	Christianity	353	92.2
	Islam	2	0.5
	Traditional	27	7.0
	Total	**383**	**100.0**
Distance to forest reserve (km)	<1	115	29.7
	1	14	3.6
	2	235	60.7
	3	19	4.9
	4 and above	4	1.0
	Total	**387**	**100**

Drivers of Forest Conservation in Ipinu-Igede Community Forest Reserve, Benue State

Based on the findings, majority of respondents reported that traditional taboos or cultures (32.4%) were the most highly compliant local laws observed to conserve forests resources in the area (Table 2). This was followed by forest laws (31.4%) prevention of illegal logging (28.1%) and prevention of forest fires (8.1%).

Table 2: Drivers of Forest Conservation in Ipinu-Igede Community Forest Reserve, Oju LGA of Benue State

Drivers	Frequency	Percent (%)
Forest laws	361	31.4
Traditional taboos	372	32.4
Prevention of illegal logging	323	28.1
Protection of the Reserve from forest fire	93	8.1
Total	**1149**	**100.0**

Socio-economic Factors Influencing Conservation of Forest resources in Ipinu-Igede Community Forest Reserve, Benue State

Distance of the respective communities to the forest reserve had a significant positive influence on conservation of the reserve (β =1.632, $p<0.05$). The β statistics indicated that a unit increase in the distance away from the reserve would increase conservation by a factor of 1.632 in the area. Based on the Exp (β) value of 5.115, distance was ranked the highest factor influencing conservation in the area. Age of the people had a non-significant positive influence on conservation of the reserve (β =0.020, $p<0.05$). This implies a unit increase in household size would increase conservation of the reserve by a factor of 0.020. Age of the people was ranked the third factor influencing conservation of the reserve based on the Exp (β) value of 1.020. Household size had significant negative influence on conservation of the reserve (β = -0.299, $p<0.05$). This implies a unit increase in household size would decrease conservation of the reserve by a factor of 0.299. Household size was the least factor influencing conservation of the reserve based on the Exp (β) value of 0.742.

Table 3: Socio-economic Factors Influencing Conservation of Forest resources in Ipinu-Igede Community Forest Reserve, Oju Local Government Area Benue State

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	Raking
Distance from home to Forest Reserve	1.632	0.245	44.266	1	0.000	5.115	1
Years schooling	0.068	0.033	4.362	1	0.037	1.071	2
Age	0.020	0.013	2.507	1	0.113	1.020	3
Household size	-0.299	0.087	11.924	1	0.001	0.742	4
Constant	-3.575	0.725	24.293	1	0.000	0.028	-

Number of cases = 387, Model Chi-square= 109.15 ($p<0.05$) -2LL = 438.70; Overall percentage = 67.4%, Negelkerke R^2 = 0.261, Exp (β) = Odds ratio (probability of success/probability of failure), SE= standard error of the estimate, Sig =significance, β = regression coefficients which stand for the odds ratio of probability of success to the probability of failure and Wald statistics = $(β/ SE)^2$, d.f = degree of freedom.

DISCUSSION

Socio-Economic Characteristics of the People in the Adjoining Communities in Ipinu-Igede Community Forest, Benue State

The socio-economic attributes of the respondents indicated that more females were involved in livelihood activities in the forest reserve as the study is aimed at conservatoria. The result varied with Owonobi (2014) and Mohammed *et al.* (2019), both findings reported that, males were more involved in forest resources exploitation in most parts of Nigeria than the females. The respondents were mostly between the ages of 30 to 50 years, implying an active population capable of engaging in forest conservation activities. According to Tsue *et al* (2016), people at this age bracket were mostly actively involved in agricultural activities. The respondents were mostly primary school certificate holders with a number of them attaining secondary school level education, characteristic of rural Nigeria populations (Lamino *et al.*, 2016; Omale *et al.*, 2019). Majority of the respondents were farmers while others were hunters, indicating that this could be a future threat to conservation if local laws are compromised.

Most of the respondents were married with four children and above implying that, livelihood activities and utilization of forest resources could be high in the area in other to support their household needs. Also, high marital status was a strong indication of family expansion that will propel them to seek for alternative sources of livelihood from forest resources to augment their incomes. The large number of children or household sizes points to the availability of family labour for forest resources exploitation and utilization (Mohammed *et al.,* 2019). Conversely, large household size could worsen the livelihood situation of the farming populace, particularly if they are composed of many dependents. (Bola *et al.* (2012) stressed that a large household with no alternative income rely more on forest resources for livelihood. Most of the respondents live about 2km away from the forest reserve, the result is in line with the finding of Dau and Elisha (2014) that, a large proportion of rural populations live near forestlands; and they earn their livelihood from the extraction, collection, and sale of Non-Timber Forest Products (NTFPs) thereby improving their quality of lives and standard of living.

Drivers of Forest Conservation in Ipinu-Igede Community Forest Reserve, Oju LGA Benue State.

Drivers of forest conservation in the area identified were forest laws, traditional taboos, prevention of illegal logging and protection of forests from fire as the major factors that helped to conserve the forest and its resources. Traditional taboos or culture were identified as the major factor which helped to protect the forest ecosystems from indiscriminate exploitation. Traditional taboos have been regarded as sacred groves that have been protected since ages by traditional societies and norms (Liu *et al*., 2001). They have served as valuable storehouses for biodiversity. Though sacred groves were originally established for spiritual, cultural and worship purposes, they have greatly contributed to in-situ biodiversity conservation such that they have been noted to represent biodiversity hotspots (Myers *et al*., 2000) and are considered as refuge for endangered species.

Forest laws, prevention of illegal logging and fire were also identified to support conservation of forest resources in the area. Forest laws, policies and administration reflect an ideal approach to fulfill the objectives of arresting forest degradation and ensuring sustainable forest development (FAO, 2010). Forest policies also incorporate society's needs and wider development goals (Vihemaki, 2006; Cleaver, 2012; Funder *et al*., 2013). Forest laws identified in Ipinu-Igede Community Forest Reserve revealed that no entry, fishing or hunting in some forests without permit, no felling or illegal logging and no encroachment to the reserve were the most conversant forest laws in the community. The respondents were aware of these laws which conserved the forest ecosystems and the level of compliance was significant to the conservation of forests in Ipinu-Igede Community Forest Reserve. Findings revealed very high level of compliance which helped to conserve the forest reserves within the community.

Socio-economic Factors Influencing Conservation of forest resources from Ipinu-Igede Forest Reserve, Oju LGA Benue State

The findings on socio-economic factors influencing conservation of forest resources were in line with Olunga *et al*. (2015), who reported that education significantly and positively influenced conservation of forest resources in Kipini division of Tana Delta district, Kenya. Also, the finding is in line with Lepetu and Oladele (2009) and Ofoegbu *et al* (2017) as they found education to have significantly influenced utilization of forest resources.

Similar arguments were put forward by Shalli (2003) in the Coastal region of Tanzania; he emphasized that the level of education has a remarkable bearing on sustainable management of natural resources. Godoy *et al* (1998), found that a unit increase in the year of education reduces the probability of cutting trees by 4%; while, Garekae *et al* (2017) reported that, education had a negative significant influence on household forest dependency in Chobe enclave, Botswana. This might be due to the possibility of educated members who have better alternatives than those who are not educated.

Education enables people to go away from subsistence agricultural activities. Hedge and Enters (2000) reported that highly educated people will have greater off-farm employment opportunities than less educated ones. Campbell and Luckert (2002) and Dovie *et al* (2005) found in their studies that less educated people are more likely to rely on forest income, as they have less access to alternative incomes such as wages or business.

The result on age is not in line with the report of Lepetu and Oladele (2009) that age significantly influence forest conservation in Botswana; Shomkegh *et al* (2019), reported that, age has significant positive influence on utilization of forest resources from Odoba forest reserve. The finding also agreed with Garekae *et al (*2017*)* that, age had a negative significant influence on household forest dependency in Chobe enclave, Botswana. Age is one of the demographic factors that affect the knowledge, attitude and practice of individuals towards environmental management (Torgler and Gracia, 2005).

Ancha *et al.,* (2019) reported significant contribution of forest resources to the livelihood of the adjoining villages to Odoba forest reserve. Given that most household members in the study area are farmers, the larger the household size, the higher the chances that the members will be involved in various livelihood strategies that depend on reserve's resources. A larger household size implies an over-exploitation of the reserve's resources to satisfy livelihood needs. Such implications have been confirmed by Medulu (1996), Nduwamungu (2001) and Masozera and Alavalapat (2004), who reported a strong relationship between household size and environmental degradation.

CONCLUSION

Drivers of forest conservation identified in the study area include - traditional taboos, forest laws, prevention of illegal logging and protection of forests from fire. Traditional taboos were identified as the major driver which helped to conserve the forest ecosystems from indiscriminate exploitation. Socioeconomic attributes such as - education and age also significantly and positively influenced conservation of forest resources in the area. Fuel wood, charcoal, medicinal plants, fodders, plant foods, wood products, honey and animal

products, among others were some of the identified forest resources collected from the study area. The study recommends that there should be an awareness campaign on private partnership funding to encourage individuals to invest in afforestation programs in the study area and community forest management should be encouraged by involving the community people in decision making, planning and implementation of programs in the area.

Recommendations

Based on these findings, it is recommended that:

i. Campaign and awareness on private partnership funding should be carried out to encourage individuals to invest in afforestation and re-afforestation programs in the study area;
ii. Realistic sustainable forest management should be adopted in the study area;
iii. Community forest management should be encouraged by involving the community people in decision making, planning and implementation of projects or programs in the area;
iv. Further studies on conservation strategies that have positive impact on sustainable forest management should be carried out for implementation in the study area.

REFEENCES

Abayie-Boaten A., (1998). Traditional conservation practices: Ghana's example. In: DS Amlalo, LD Atsiatorme, C Fiati (Eds.): Biodiversity Conservation: Traditional Knowledge and Modern Concepts. *Paper presented at the Third UNESCO-MAB Regional Seminar on Biosphere Reserves*

Agbogidi OM, Eshegbeyi O.F. (2008). Forestry development for a safe environment. In*:* Onykwelu, J.C., Adekunle, V.A.J. and Oke, D. O. (eds.). Proceedings of the 1st National Conference of the Forests and Forest Products Society of Nigeria (FFPN) held at the Federal University of Technology, Akure, Ondo State. pp. 95-98.

Akindele S.O., (2010). Forest Restoration through Traditional Institutions in Nigeria: Challenges and Prospects. From <http://www.cfc2010.org/papers/session 13/Akindele-s13.pdf > (Retrieved August 27, 2011)

Ancha, P. U., Shomkegh, S. A. and Onuche, P. (2019). Contribution of Odoba Forest Reserve to Livelihoods of the Rural People in Ogbadibo Local Government Area, Benue State, Nigeria; *Asian Journal of Environment & Ecology* 9(1): 1-12.

Ashley C., J. Elliott, G. Sikoyo, and K. Hanlon. (1999). *Handbook for assessing the economic and livelihood impacts of wildlife enterprises*. Nairobi: African Wildlife Foundation.

Attah, A. N. (2014). The contribution of forests to the economy of Ghana. *Retrieved from https://fornis.net/system/files/users/contribution_of_forests.pdf*

Banjo, A.D., Otufale, G.A., Abatan, O.L., and Banjo E.A., (2006). Taboo as a means of plant and animal conservation in South-Western Nigeria: A case study of Ogbe River and its Basin. *World Applied Sc,* 1: 39-43.

Becker CD, Ghimire K. (2003). Synergy between traditional ecolo-gical knowledge and conservation science supports forest preservation in Ecuador. Conserv Ecol. 8(1):1

Berkes, F., Colding, J., Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. Ecol. Appl.10:1251-1262.

Bola, A.A., Aliou, D. and Omonona, T. B. (2012). Impact of improved agricultural technology adoption on sustainable rice productivity and rural farmers' welfare in Nigeria: Local Average Treatment Effect (LATE) Technique. A paper Prepared for Presentation at the African Economic Conference October 30- November 2, 2012 Kigali, Rwanda, Pp 1– 19.

Campbell BM, Luckert M.K. (2002). Towards understanding the role of forests in rural livelihood. Uncovering the hidden

harvest: Valuation methods for forest and woodland resources. Earthscan. London; Pp35.

Chand, S. (2011). Forest conservation: Useful methods for forest conservation. *Retrieved from http://www.yourarticlelibrary.com/environment/forest/forest-conservation-useful-methods-for-forest-conservation/25277/.*

Cleaver, F. (2012). Development through bricolage: Rethinking Institutions for Natural Resource Management. London: Routledge. pp 240

Colding J. and Folke C. (2001). Social Taboos: 'Invisible' systems of local resource management and biological conservation. Ecol Appl. 11:584–600

Dagba, B.I., Sambe, L.N, and Shomkegh S.A. (2013). Totemic Beliefs and Biodiversity Conservation among the Tiv People of Benue State, Nigeria. *Journal of Natural Sciences Research ISSN 2224-3186 (Paper) ISSN 2225-0921 Vol.3, No.8, 2013*

Dau, J.H. and Elisha, A. (2014). Survey on Non-Timber Forest Products in Bauchi South Senatorial Districts, Bauchi State, Nigeria; *Journal Of Research In Forestry, Wildlife And Environmental* ,6 (1): 82-97.

Dovie DBK, Witkowski ETF, Shackleton CM. Monetary valuation of livelihoods for understanding and composition and complexity of rural households. Agric Hum Values. 2005; 22:87-108. 36.

Foerster, S. D.S. Wilkie, G.A. Morelli, J. Demmer, M. Starkey, P. Telfer, and M. Steil. (2011). Human livelihoods and protected areas in Gabon: a cross-sectional comparison of welfare and consumption patterns. Oryx 45(3): 347-356.

Food and Agricultural Organization, (2010). Global Resources Assessment 2010.Country Report, Ghana. FRA 2010/077, Rome 2010 *for* Biodiversity Conservation and Sustainable Development in Francophone Africa (BRAAF*)*, Cape Coast, 9 -12 March, 1997.

Funder, M., Danielsen, F., Ngaga,Y., Nelsen, M.R andPoulsen, M.K (2013). Reshaping Conservation: The Social Dynamics of Participatory Monitoring in Tanzania's Community-Managed Forests.*Conservation and Society*, 11(3):218-232.

Garekae H, Thakadu O.T, Lepetu J. Socioeconomic factors influencing household forest dependency in Chobe enclave, Botswana. Ecological Processes. 2017;6: 40,1-10.

Godoy, R., Groff, S. and O'Neill, K (1998): The Role of Education in Neotropical Deforestation: Household Evidence from Amerindians in Honduras; *Human Ecology, Vol. 26 (4): 649-675.*

Hegde R, and Enters, T., (2000). Forest products and household economy: a case study from Mudumalai Wildlife Sanctuary, Southern India. Environ Conserv 27(3):250–259.

Hens L., (2006). Indigenous knowledge and biodiversity conservation and management in Ghana. *J Hum Ecol,* 20(1): 21-30.

Infield, M. and Adams W.M., (1999). Institutional sustainability and community conservation: A case study from Uganda. *Journal of International Development*, 11: 305-315

Jimoh, S.O., Ikyaagba, E.T., Alarape, A.A., Obioha, E.E., and Adeyemi, A.A. (2012). The role of traditional laws and taboos in wildlife conservation in the Oban hill sector of cross river national park (CRNP), Nigeria.

Jones, J.G., Andriamarovololona M.M., and Hockley, N., (2008). The importance of taboos and social norms to conservation in Madagascar. *Conservation Biology*, 22: 976-986.

Kideghesho JR. 2008. Co-existence between the traditional socie-ties and wildlife in western Serengeti, Tanzania: Its relevancyin the contemporary wildlife conservation efforts. ConservBiodivers. 17(8):1861–1881

Kobina, E.D., and Kofi A.A., (2009). Change and Continuity: Using Indigenous Knowledge to Achieve Environmental Sustainability in Ghana. Paper presented at the 7th International Science Conference on the Human Dimensions of Global Environmental Change held in

Germany, Bonn, on 26th -30th April, 2009 on the Theme. The Social Challenges of Global Change.

Kobina, E.D., and Kofi A.A., (2009). Change and Continuity: Using Indigenous Knowledge to Achieve Environmental Sustainability in Ghana. Paper presented at the 7th International Science Conference on the Human Dimensions of Global Environmental Change held in Germany, Bonn, on 26th -30th April, 2009 on the Theme. The Social Challenges of Global Change.

Kweka, D. (2004). The Role of Local Knowledge and Institutions in the Conservation of Forest Resources in the Eastern Usambara. UNESCO-Man and Biosphere, Dares Salaam.

Lamino, Y. W., Peter, I. A. and Yusuf, K. (2016). Assessment of the utilization of radio as a source of agricultural information by farmers in Lafia Local Government of Nasarawa State. *Journal of Agricultural Economics Extension and Science (JAEES) Vol. 2 (1) Pp 14-22.*

Lepetu, J.P., and Oladele, O.I., (2009). Socio-economic determinants of forest conservation in Botswana. Conference on International Research on Food Security, Natural Resource Management and Rural Development, Tropentag 2009, University of Hamburg

Lingard, M., Raharison N., Rabakonandrianina, E., Rakotoarisoa, J., and Elmqvist, T. (2003). The role of local taboos in conservation and management of species: The radiated tortoise in Southern Madagascar: *Conservation and Society*, 1: 223-246.

Masozera, M.K., and Alavalapati, J.R.R., (2004). Forest dependency and its implications for protected areas management: a case study from the Nyungwe Forest Reserve, Rwanda. Scand J for Res 19(4):85–92

Medulu, N.F., (1996). Environmental degradation and marital fertility changes in Tanzania. Ph.D Thesis, Unpublished. Dar essalaam: University of Dar essalaam

Mohammed, U., Umar, I.S., Olaleye, R.S, Tyabo, I.S, Tsado, J.H., and Pelemo, J.J. (2019). Effects of Forest Resources Utilization on Livelihood of Rural Farming Populace In Kogi and Niger States, Nigeria; *Journal of Agriculture and Environment Vol. 15 No. 1*.

Myers, N. and Mittermeier, R.A. (2000). Biodiversity hotspots for conservation priorities. Nature 403: 853-854.

Nduwamungu, J. (2001). Dynamics of deforestation in Miombo Woodlands: A case study of Kilosa District, Tanzania. Ph. D Thesis, Unpublished. Morogoro: Sokoine University of Agriculture Ofoegbu, C., Chirwa, P.W., Joseph Francis, J., and Babalola, F.D. Socio-economic factors influencing household dependence on forests and its implication for forest-based climate change interventions, Southern Forests, Journal of Forest Science. 2017: 1-8.

Nganje, M., (2009). Harnessing Traditional Ecological Knowledge for the Conservation of Forests and biodiversity. XIII World Forestry Congress, Buenos Aires, Argentina, 18- 23 0ctober 2009.

Okwoche S.O., (2017). Assessment of tree species composition and diversity of Ipinu-Igede community forest in Oju L.G.A, Benue State, Nigeria. Unpublished Undergraduate project submitted to the Departmrnt of Forestry, Wildlife and Range Management, University of Agriculture Makurdi, Nigeria.;10-35

Olunga, M.A., Kavoi, M.M., and Guthiga, P.M. (2015). Assessment of factors influencing utilization and conservation of forest resources in Kipini Division of Tana Delta District, Kenya. African Journal of Environmental Economics and Management. 3(5):231-243

Omale, P.I., Tor, L.G. and Demenongu, T. S.l (2019). Women Access to Forest Extension Services and Compliance to Forest Laws in Lere Local Government Area of Kaduna State; *Journal of Agricultural Economics, Extension and Rural Development;* 7(9): 996-999.

Owunobi, J.J. (2014). Disappearing forests: a review of the challenges of conservation of genetic resources and environmental management. Journal of Forest Resource Management. 1: 11-20.

Rabearivony J., FanamehaI E., Mampiandra J., and Thorstrom R., (2008). Taboos and social contracts: Tools for ecosystem management - lessons from the

Manambolomaty Lakes RAMSAR site, western Madagascar. *Madagascar Conservation and Development,* 3: 7-16.

Saj, T. L., Mather C., and Sicotte, P., (2006). Traditional taboos in biological conservation: The case of *Colobusvellerosus* at the Boabeng-Fiema Monkey Sanctuary, Central Ghana. *Soc Sci Inform,* 45: 285-310.

Sarfo-Mensah, P., Oduro, W. (2007). Traditional Natural Resources Management Practices and Biodiversity Conservation in Ghana: A Review of Local Concepts and Issues on Change and Sustainability.

Schachenmann P., (2006). Spiritual values in Madagascar: The starting point for endogenous conservation initiatives. *Mountain Research and Development,* 26: 323-327.

Shalli, M.S. (2003). Contribution of Agroforestry against Rural Household Food Security in Kibaha District, Coast Region. M.Sc. Thesis, Unpublished. Morogoro: Sokoine University of Agriculture.

Shomkegh, S. A., Ancha, P. U. and Onuche, P. (2019). Socio-economic Factors Influencing Utilization of Forest Resources at Odoba Forest Reserve, Benue State, Nigeria; *Journal of Agriculture and Ecology Research International 18(4): 1-9.*

Tee, T.N., Agbidye, F.S. and Ogwuche, (2014). Indigenous Forest Conservation Practices in Benue State, Nigeria; *Journal of Agriculture, Forestry and the Social Sciences; 12 (1): 182-194.*

Tengo, M.K., Rakotondrasoa, F., Lundberg, J., and Andriamaherilala, J.A., (2007). Taboos and forest governance: Informal protection of hot spot dry forest in Southern Madagascar. *Ambio,* 36(8): 683-691.

Torgler, B., and Gracia, M.A. (2005). The determinants of individual's attitude towards preventing environmental damage. Yale Centre for International and Area Studies, US

Transparency International. (2011). Tackling Political Corruption to Combat Illegal Logging. Retrieved from www.illegal-logging. info/approach.php?a_id=201.

Tsue, P. T., Gidado, E. H. and Abah, D. (2016). Cooking Energy Demand Among rural Farmers in Gboko LGA of Benue State, Nigeria. Journal of Agricultural Economic and Extension Science (*JAEES) VOL. 2 (1). Pp 71-80.*

Vihemaki, H. (2006). Developments and conflicts of forest conservation in Africa: Participatory approaches and forest control in the East Usambaras, Tanzania: IDs working paper.

West, P., and Brockington D. (2006). An anthropological perspective on some unexpected consequences of protected areas. *Conservation Biology* 20: 609-616.