FUDMA Journal of Sciences (FJS)
ISSN online: 2616-1370
ISSN print: 2645 - 2944
Vol. 6 No. 1, March, 2022, pp 402 - 407
DOI: https://doi.org/10.33003/fjs-2022-0601-911

IMPACTS OF DEFORESTATION ON SOME SELECTED COMMUNITIES IN DAMATURU, YOBE STATE NIGERIA

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ABSTRACT

The study was carried out to assess the impacts of deforestation on some selected communities in Damaturu, Yobe State Nigeria. The study evaluated the main causes of deforestation in the study area. It also evaluated the effect of deforestation and its impact on the people of the area. A total of 150 questionnaires were administered to the participating households, purposive sampling techniques were used in generating primary data through questionnaire, discussion and observation and the data obtained were analyzed with descriptive statistics. Majority of the respondent (59.3%) were between the ages brackets of 31-40 years. The result of the study showed that 96 of the respondents representing 64.0% have strongly agreed believed deforestation are naturally occurrence. It also showed that 87 respondents representing 58.0% agreed that most logging for fuel wood is tremendously a major cause of deforestation. The findings of the research showed that most of the respondents have little knowledge of the consequences of deforestation. It was also found out that the main economic activities of the indigenes were farming, logging, which resulted in destroying large areas of land because they do not take any measures to conserve the forest in search of their basic daily needs. The study recommends that enforcement enacted against logging, education/awareness creation on effects of deforestation, re-introduction of tree planting programs, nurseries should be established in each of the communities to enable them raise seedlings for planting.

Keywords: Communities, Damaturu, Deforestation, Yobe State

INTRODUCTION

Deforestation is the loss of the vegetation cover usually as a result of forests being cleared for agriculture and other land practices (Osoba *et al.,* 2019). One major problem caused by deforestation is the impact on the global carbon cycle called Green House Gases (GHG) effects (Ruth *et al.,* 2007). It also affects economic activity and threatens the livelihood and cultural integrity of forest dependent people by reducing the supply of forest products and causes siltation, erosion, desertification, drought and flooding (Annan, 2013). Forest are exquisite assets which the world cannot do without. Not because they provide us with resources such as timber, food, medicine but they also play a key role in the fight against global warming, climate change and loss of biodiversity (Adebayo, 2010). Thus, this indicates the essential purpose a forest in human survival.

Another major effect of deforestation on chemical and nutritional properties of soil is related to a decrease in carbon-based content (Udofia *et al*., 2011). This results to disturbance of nutrient cycling mechanism as a result of the removal of deep rooted trees, which has serious effect on organic and nutrient content as such affects agricultural productivity (Aliyu *et al.*, 2014). In terms of agriculture, deforestation and conversion of forest to arable land has drastic effect on soil properties (Gandiwa *et al.,* 2011). However, there is need for operational policy and management strategies, to bring together practitioners interested in climate protection, biodiversity conservation, effective natural resources exploitation and rural livelihood to protect forest. Forests regulate global climate and act as a major agents of carbon exchange in atmosphere. The rate at which forests of different types are disappearing for years now is alarming and the trend remains unprecedented (Hassan *et al*., 2019). Worldwide, the high demand for timber and other forest products has resulted in the high level of forest encroachment and high rate of deforestation and forest degradation (Gana, 2020). Nigeria is ranked amongst the countries of the world with abundant forest resources (Sakiyo *et al.,* 2020). The nation is naturally endowed with vast expanse of forest land, the swamp forests in the extreme Southern part of the country, the tropical rainforest in the South- western axis and the wooded savannah in the middle belt (Mfon *et al.,* 2014).

In Nigeria, most disturbance of forest is linked to fuel wood availability and cost, were others depend directly on forest for their livelihood, among them are a high number of forest and wood workers (Aliyu *et al.*, 2014).

Views on the causes of deforestation varies depending on one's perspective. Most people perceived poverty, population growth, hunger and high illiteracy as the root cause of deforestation, to others, deforestation is cause by lack of alternative livelihood in forest communities where the forest serve as sole source of income generation and food (Tadesses *et al.,* 2006). Taking lack of alternative livelihood as contributor to deforestation could be true to some extent because apart from farming, hunting, illegal wood logging and charcoal burns, most rural dwellers have no any effective income generation activities to augment pressure on forest resources which has compelled rural communities to rely on forest land for farming and other activities that could degrade the forest (Adebayo, 2010; Aliyu *et al.*, 2014).

One critical aspect of the knowledge gap is the shortage of reliable economic values of deforestation in Nigeria especially in Damaturu. Because of this shortage, policy makers often do not have credible evidence bases to promote sound forest management (Hassan *et al*., 2019; Gana, 2020). Thus, livelihood is said to be sustainable when it maintains or enhances the local and global assets on which livelihood depends and has no beneficial effect on other livelihoods (Bisong and Mfon, 2006). With the existing situation, deforestation is still on-going. Therefore the study is aimed towards assessing the impact of the deforestation on some communities in Damaturu, Yobe State Capital, Nigeria.

MATERIALS AND METHODS

Study Area

Damaturu is the State Capital of Yobe State, which lies between latitude 11°39' 30'' – 11° 47' 00'' N and longitude 11° 54' 00'' – 12° 02' 00''E (Figure 1). The state headquarters occupies a land mass of 2, 366 square kilometers and a population of 88, 014 (NPC, 2006). The Damaturu Town shares boundary with Tarmuwa Local Government Area from the North, Kaga Local Government Area of Borno State from the East, Gujba Local Government Area from South and Fune Local Government Area from the West.

Damaturu is characterized by semi-arid savannah vegetation with considerable long period of hot season (maximum average temperature of 38 ºC to 42 °C) and evident desertification, which makes most parts of the State sandy during the dry season and muddy in the rainy season as a result of which, the terrain is mostly difficult and communities classified as "hard to reach" (Daskum *et al.*, 2020).

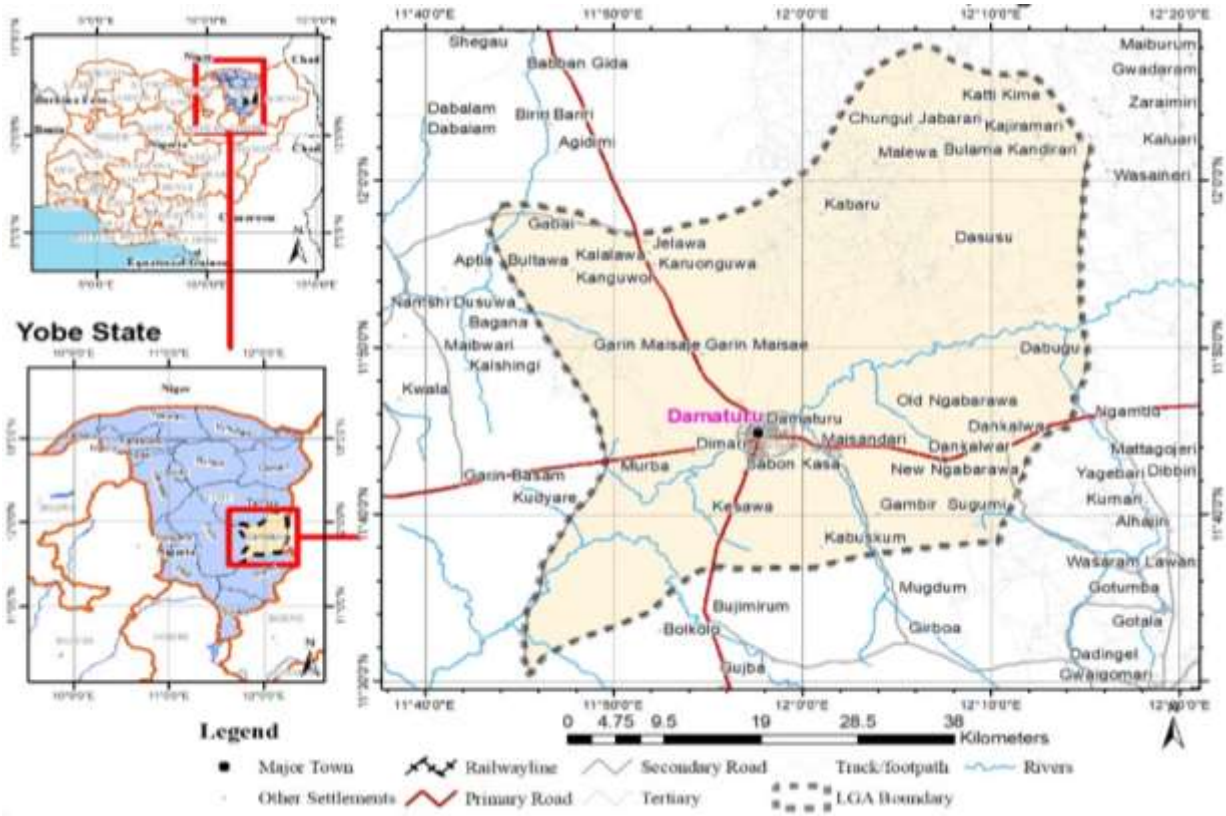

Figure 1. Map of Yobe State Showing Damaturu Town **Source**: Google, 2021

Population and Sampling Techniques

The study adopted the purposive sampling techniques. In the first stage of the sampling technique, three (3) communities were selected from the Damaturu LGA [Dikkumari (**A**), Malmatari (**B**) and Maisandari (**C**)]. The second stage involved the selection of respondents (i.e. household heads). Fifty (50) household were selected from each of the three (3) communities to represent the target population, making a total number of one hundred and fifty (150) household.

Data Collection

Data for this study were collected from primary sources. The primary data were obtained by the use of structured questionnaire. Information inquired include, age of household heads, occupation, marital status and educational qualification. Information on the causes of deforestation and its effects, local programs aimed at checking deforestation and knowledge on the consequences of deforestation was also asked. Besides, observations were also used during visitation to obtain information on the subject matter, this supported the primary data collection techniques. The questionnaires were filled and retrieved for further statistical analysis.

Data Analysis

Data obtained was subjected to descriptive statistics, and results were presented in simple percentage.

RESULT

Socio-Demographic Characteristics of the Respondents

The socio-demographic characteristics of the respondents examined include: gender, age, marital status, profession and educational attainment, these are shown in Table 1. A total of 150 questionnaires were administered to the participating family unit, out of these number, 128 (85.3%) were male while 22 (14.7%) were female. The populations of the study were youth constituting 59.3% of people between the age brackets of 31-40 years. This implies that, most of the respondents were young people who were at their prime age and are capable of getting involved in different income generating activities from the forest to augment feeding and betterment of their living standard. In terms of marital status, most of the respondents were married which constitute 87.4%, followed by singles with 5.3%. Widowed respondents had 3.3% and the least were the divorced with 4.0%. In terms of profession, Farmers had the highest with 54.0% among others. Moreover, the educational status of the respondents indicated that Secondary school certificate holders had the highest 74 (52.0%) followed by those with primary school certificate 33 (22.0%), uneducated had 23 (15.3%) and those with tertiary education had the least 16 (10.7%).

Table 1: Demographic characteristics of Respondents

Variables	Frequency	Percentage (%)
Gender		
Male	128	85.3
Female	22	14.7
Age		
20-below	14	9.4
21-30	15	10
31-40	89	59.3
41-above	32	21.3
Marital Status		
Married	131	87.4
Single	8	5.3
Widow	5	3.3
Divorced	6	4
Profession		
Farming	81	54
Trading	36	24
Civil Servant	25	16.7
Others	8	5.3
Educational Status		
None	23	15.3
Primary	33	22
Secondary	78	52
Tertiary	16	10.7
TOTAL	**150**	**100**

Source: Field Survey, 2020

Table 2 below reveals the major causes of deforestation, i.e. Respondents perception on the causes of deforestation. The respondent's opinion on decrease in soil fertility brings about deforestation. The agreed had the highest 58 (38.7%) followed by the strongly agreed with 28 (18.7%), the undecided had 16 (10.7%), the disagreed had 26 (17.3%) while the strongly disagreed had 22 (14.6 %). The responds of the participants on forest clearing for farming purpose causes deforestation realized that 52 (34.7%) strongly agreed with the assertion, followed by the agreed with 49 (32.7%). The disagreed had 20 (13.3%), the undecided had 15 (10.0%) while the strongly disagreed had the least 14 (9.3%). The table also showed the respondents opinion on Logging for fuel wood is heavily practiced in the forest. The strongly agreed had the highest 87 (58.0%) followed by the agreed 36 (24%), the disagreed had 11 (7.4%), the strongly disagreed had 14 (9.3%) while the undecided had the least 2 (1.3%). The view on Natural causes such as floods and erosion is destroying the forest. The strongly agreed had 96(64.0%), agreed had 41(27.3%), undecided had 3 (2.0%), disagreed had 6(4.0%), while strongly disagreed had 4(2.7%). The claim that expanding market for timber/firewood has encouraged forest clearing. To this, the disagreed had the highest 52 (34.7%) followed by the strongly agreed with 49 (32.7%), the agreed had 20(13.3%), the strongly disagreed had 15 (10.0%) while the undecided had least 14 (9.3%). The respondent's opinion on Low literacy level among the populace will lead to removal of the forest realized that the strongly agreed had the highest 62 (41.4%) followed by the agreed 48 (32.0%), the undecided had 15 (10.0%), the disagreed had 14 (9.3%) while the strongly disagreed had the least 11(7.3%). Lastly, the respondent's views on Poverty cause most houses to rely on the resources obtained from the forest. The strongly agreed had the highest 58 (38.7%) followed by the agreed with 26 (17.3%), the undecided had 16 (10.7%), the disagreed had 22 (14.6%) while the strongly disagreed had 28 (18.7%).

Table 2: Major causes of deforestation in Damaturu

Variables	SA	A	UN	D	SD	Total
Decrease in soil fertility brings about deforestation	28(18.7)	58(38.7)	16(10.7)	26(17.3)	22(14.6)	150(100%)
Forest is being cleared for farming purpose	52(34.7)	49(32.7)	15(10.0)	20(13.3)	14(9.3)	150(100%)
Logging for fuel wood is heavily practiced in the forest	87(58.0)	36(24)	2(1.3)	11(7.4)	14(9.3)	150(100%)
Natural causes such as floods and erosion is destroying the forest	96(64.0)	41(27.3)	3(2.0)	6(4.0)	4(2.7)	150(100%)
Expanding market for timber/firewood has encouraged forest clearing	49(32.7)	20(13.3)	14(9.3)	52(34.7)	15(10.0)	150(100%)
Low literacy level among the populace will lead to removal of the forest	62(41.4)	48(32.0)	15(10.0)	14(9.3)	11(7.3)	150(100%)
Poverty cause most houses to rely on the resources obtained from the forest	58(38.7)	26(17.3)	16(10.7)	22(14.6)	28(18.7)	150(100%)

Source: Field Survey, 2020
Key: SA = Strongly Agree A = Agree UN = Undecided SD = Strongly Disagree D = Disagree

Table 3 depicts the respondents' opinion on the major effects of deforestation. Opinion on biodiversity loss revealed that, strongly agreed had the highest with 104 (69.3%), followed by the agreed 35 (23.3%), the disagreed had 4 (2.7%), the strongly disagreed had 5(3.4%) and the undecided had the least with 2 (1.3%).
The table also showed the respondents opinion on climate change as effect of deforestation. The strongly agreed had the highest with 52 (34.7%) followed by the agreed 49 (32.7%), the disagreed had 20(13.3%), the strongly disagreed had 15(10.0%) and undecided had 14 (9.3%) each. Table 3 further showed the respondents opinion on planting of trees and attending awareness creation programs as one of the preventive measures of deforestation. The agreed had the highest 95 (63.3%) followed by the strongly agreed with 50 (33.3%), the disagreed had 4 (2.7%), the undecided had 1 (0.7%) while the strongly disagreed had the least 0 (0.0%).

Table 3: Major effects of deforestation

Variables	SA	A	UN	D	SD	Total
Loss of Biodiversity	104(69.3)	35(23.3)	2(1.3)	4(2.7)	5(3.4)	150(100%)
Climate change	52(34.7)	49(32.7)	14(9.3)	20(13.3)	15(10.0)	150(100%)
Awareness	50(33.3%)	95(63.3%)	1(0.7%)	4(2.7%)	0(0.0%)	150(100%)

Source: Field Survey, 2020
Key: SA = Strongly Agree A = Agree UN = Undecided SD = Strongly Disagree D = Disagree

DISCUSSION

The result of study indicated that 128 (85.3%) were males, while 22 (14.7%) were females. This is a clear indication of higher participation of male in forest income generating activities compared to females but both contributes massively to deforestation. This is in consistent with the findings of Osoba *et al.,* (2019) who reported that women prefer to engage in domestic tasks near farmhouse rather than exploiting forest resources. Moreover, the study revealed that most of the respondents were young people who were at their prime age and are capable of getting involved in different income generating activities from the forest to augment feeding and betterment of their living standard. The age of respondents was important in this study because it was to determine economic active group whose activities have serious repercussion on the environment. Since age goes with man power, the more active age group engage in any degradable activity the higher the exploitation, hence the greater the environmental impact. In terms of marital status, the result showed that a good number of the respondents were married 131 (87.4%) followed by singles with 8 (5.3%), widowed respondents had 5 (3.3%) and the least were the divorced with 6 (4.0%). This suggest that agricultural practices in the study area is mostly associated with the married individuals and it is also likely that they engaged their family members in farming activities and hence making farm work relatively simple in operation. Moreover, in terms of profession of the respondents, farmers constitute most of the respondents with the highest percentage (54.0%) followed by traders (24.0%), then civil servants with (25.0%) and the least were found among others with (5.3%). This is mostly common within most rural communities of Nigeria and Africa at large. This is in consistent with the findings of Quaye (2009), who said that about 70% Nigerians are farmers. The result on the educational attainment of the respondents showed that Secondary school certificate holders had the highest 78 (52.0%) followed by those with primary school certificate 33 (22.0%), uneducated had 23 (15.3%) and those with tertiary education had the least 16 (10.7%). This implies that the respondent's level of education could Influence their living activities or potentials in the forest zone on their Socio-economic status which should be used to boost production. This also indicates that agricultural activities in this area are mostly dominated by the respondents who had formal education. According, Adekunle (2009), pointed out that education is one of the important human capitals which play important roles in determining status in society. Education is expected not only to contribute to people's ability to read and

understand instructions but also help them to adopt new techniques. This could lead to more direct employment generation, better economic empowerment and well-being of the populace. Correspondingly, World Bank, (2006) quoted that education is one of the potentials rural residents have in improving their socio-economic rank. It is understood that most people in these settlements under study have attempted to acquire some formal education but the majority stopped at secondary school and this cuts across the various age category.

Table 2 depicts the respondents' opinion on major causes of deforestation. The findings indicate that the respondents with the moderate percentage 58 (38.7%) acknowledge that decrease in soil fertility and drought are the consequences of deforestation. The assertion by Hope (2007), indicates that environmental degradation made people poorer through lack of availability of natural resources. The responses of the participants on cutting down and forest clearing for agricultural purposes causes of deforestation realized that 52 (34.7%) strongly agreed the assertion. This result is in consistent with the findings of Asfaw (2003), who described deforestation as continued land clearing for agriculture due to an exploitive farming system, tree cutting for fuel, logging due to population growth accompanied by stagnating agricultural production. According to Ogunleye *et al.*, (2004), also identified farming activities such as bush clearing and burning, shifting cultivation as causes of deforestation in Nigeria. However, This perspective is not entire different from the argument advanced by Insaidoo *et al.*, (2012) who acknowledged the bush fires, indiscriminate logging and conversion of forest to farmland as the main causes of deforestation. The respondents view on expansion of market for timber or firewood has encouraged forest clearing. The result indicated that 49 (32.7%), while 52(34.7%) disagreed with the claim. This is in consistent with the work of Yasuoka and Levins (2007) who described cutting tree those not increase economic activities of a community but rather threatens the living standard of the populate and lead to food insecurity. The respondents' opinion on natural causes of deforestation such as flooding and soil erosion showed that the strongly agreed had the highest 96 (64.0%) while the strongly disagreed had the least with 4 respondents representing 2.7%. This result is in line with findings of Annan (2013), who stated that deforestation affects economic activity and threatens the livelihood and cultural integrity of forest dependent people by reducing the supply of forest products and causes siltation, soil erosion, desertification, drought and flooding. This is also in consistent with the work of Anyadike (2009) who opined that deforestation, over grazing, bush burning, and unplanned development have impact on climate change and environmental sustainability.

The respondents' perception on low literacy level among the populace will lead to removal of the forest. The findings showed that 62 respondents representing 41.4% strongly agreed, while 14 respondents representing 9.3% disagreed with the claim. On the perception of respondents on poverty which cause most houses to resort to the forest resource showed that 58 respondents representing 38.7% strongly agreed, while 28 respondents representing 18.7% strongly disagreed with the claim. The result identified clearing of forest for agriculture, logging for fuel wood, poverty, low literacy level, expanding global market for timber and natural disaster as the major cause of deforestation in the study area. This is in agreement with the findings of Adebayo (2010), who opined that that poor living conditions and illiteracy are causes as well as consequences of environmental degradation. The high level of poverty and illiteracy in Africa particularly Nigeria is directly related to the current level of environmental pollution and degradation in the continent. The poor and the uninformed are often more interested in issues related to their daily survival than environmental management; this lack of interest and awareness often lead to more reckless environmental behavior which in turn varieties more environmental problems and leads to a vicious cycle of poverty.

Table 3 depicts the respondents' opinion on biodiversity loss as a major effect of deforestation indicated that the agreed had the highest with 104 (69.3%) while the disagreed had 4 (2.7%). The result agrees with the findings of Osoba *et al.*, (2019), stated that forests clearance and the subsequent agricultural development has a detrimental effect on every element of local ecosystems such as microclimate, soil and aquatic conditions, and most significantly, the ecology of local plants and animals including human disease factors. Omofonmwan and Osa-Edoh (2008), further opined that depletion of wildlife and biodiversity leading to loss of many non-timber forest products which sustain majority of the rural population is one of the effects of deforestation. The result is also in consistent with the findings of Sukumaran and Jeeva, (2008) who stated that loss of biodiversity of tropical forests is mainly due to degradation and destruction of habitat by human activities. The respondents' opinion on deforestation as a cause of climate change showed that the agreed had the highest with 52 (34.7%) followed by the strongly disagreed who had 15 (10.0%). Environmentalists argue that when trees are cut, the forest no longer supports the same wildlife or maintains clean water as effectively as it did before and this may place its inhabitants at risk and eventually leads to climate change (Knox and Marston, 1998). Osoba *et al.*, (2019), also agreed that depletion of wildlife and biodiversity upsets the ecological balance leading to loss of many non-timber forest products which sustain most of the rural population is one of the effects of deforestation. The perception of the respondents on planting of trees and attending awareness creation programs as one of the preventive measures for deforestation indicated that the agreed had the highest 95 (63.3%) followed by the strongly agreed with 50 (33.3%), the disagreed had 4 (2.7%) while the undecided had 1 (0.7%). Osoba *et al.*, (2019) opined that forestry extension programmes should be designed to increase the knowledge base of rural household land owners and managers to plan and implement advanced natural resource management.

CONCLUSION

The study concludes that majority of the public have little or no know-how of the consequences of deforestation. Some of those engaged in wood logging, farming and other land users are aware of the trends of deforestation and status of land as a result of human activities, they perceived that environment is changing due to reduction in rainfalls, increase in temperature and land degradation. Hence, Measures of reducing deforestation needs to go collectively with improving the environmental knowledge of the populace.

Therefore, it is recommended that forestry extension programmes should be intensified in rural communities to minimize deforestation activities and promote eco-consciousness among the local people.

Among the recommendations suggested were enforcement against logging, education on effects of deforestation, re-introduction of tree planting programs, as well as nurseries should be established in each community to enable them raise seedlings for planting.

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