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IMPACT OF FOREIGN INTERVENTIONS ON FOREST DEVELOPMENT PROJECTS IN JIGAWA STATE, NIGERIA

Jibo, A.U., Salami, K.D., Lawal., A.A. and Dahiru, A.

Department of Forestry and Wildlife Management, Faculty of Agriculture, Federal University Dutse, Jigawa State, Nigeria
*__Corresponding Author__: *foristsalam@yahoo.com;* +234 703 429 4371

ABSTRACT

Since the inception of independent, local interventions have been coming to play in forest development in Nigeria. Therefore, there is need to access the impact of foreign interventions on forest development projects in Nigeria. Therefore, the study examined the impact of foreign interventions on the forest development project in Jigawa State with the view to ascertaining the need. Purposive sampling design employed in the study. A total of two hundred and forty (240) copies of questionnaire were administered and the data were subjected to the descriptive statistical analysis. The mean age of the respondents is 32.7 years. Majority (62.1%) were males, married (48.8%). Most respondents were either students (37.1%), farmers (28.3%) or business men (18.8%). Below average have secondary education (43.3%). On awareness only Tree planting ($\bar{x}$=1.733), Individual Wood Lot ($\bar{x}$=1.558) and Home Garden practices ($\bar{x}$=1.471) were known. There is a low involvement in home garden ($\bar{x}$=0.992), individual wood lot ($\bar{x}$=1.063) while tree planting ($\bar{x}$=1.696) showed high involvement. No positive perception on FDP in the minds of the respondents. FDP has favorable impact on agronomic practices and the environment except pollution (12.9%). Awareness campaign show be instituted to the respondents in the community on the significance of FDP. Proper efforts should be made to involve the respondents more on FDP since the involvement of the respondents in FDP is low. It is recommended that Jigawa State government need foreign invention on forest development project in order to assist the State in arresting the spread of drought and desertification, enhance the productivity of the agricultural land, stimulates and increase the production of fuel wood, poles and other minor forest products in the State through improved perception of the respondents on FDP and bettered to improve the utilization and involvement in FDP as well as addressing, explored and addressed other agronomic practices to help agriculture

Keywords: Foreign Interventions, Forest Development, Impact, Jigawa State and Projects

INTRODUCTION

Forest covers 25-30 percent of the earth's land surface and contains about 80 percent of the world remaining terrestrial biodiversity (FAO, 2000). It helps to maintain the fertility of the soil, protect watersheds and reduce the risk of natural disasters, including the floods and landslides. They also absorb about 15 percent of the planets' greenhouse gas emissions. At the same time, deforestation and forest degradation contribute significantly to some emissions (17.4% in 2004). According to the IPCC 2005 about 13 million hectares of forest were lost worldwide each year. The biological hotspot is also essential in maintaining environmental stability, provision of raw materials for wood based industries and food, livelihood and employment for millions of people, particularly in the rural areas (Food Agriculture Organisation, 2010; Salami *et al.*, 2019). It is worthy to note that in recent times, the concern has been to concentrate on conservation efforts of the savannah because of its relative richness in biodiversity (Salami *et al.*, 2019).

An estimated of 2 billion hectares lost or degraded forest landscape could be restored and rehabilitated (Salami, 2018). If those areas were to be restored to functional and productive ecosystems, they could help delivered a ‘’triple win’’ by improving rural livelihoods and food security, increasing climate resilience, and helping mitigate Green House Gases (GHG) while taking pressure off pristine forests (Channan and May, 2003).Forest is an important safety net for rural populations in times of economic or agricultural stress. About 350 million people who live within or close to dense forests depend on them for their subsistence and income. Of those, about 60 million people (especially indigenous communities) are wholly dependent on forests. World Bank (2012). They are key custodians of the worlds remaining intact natural forests. Apart from this, forest also represents a source of energy in many countries. World Bank (2012) submitted that in 2005, sixty five percent of the total primary was also of the opinion that wood-based fuel will continue to represent a principle source of energy in low income countries and is increasingly viewed as a ‘’green’’ alternative to fossil fuels in developed countries. If supply sustainably and used efficiently to generate heat and power, this renewable energy source could make a major contribution to reducing greenhouse gases.

Development assistance to forestry has been expanding rapidly (FAO, 2002) with external funding for forestry having increase by almost 80.0%. The owner of an asset is only in control according to FAO (2006), when such asset is growing and having positive impacts on the environment. To this end forest resources can only become assets when it is able to balance ecological principles with economic returns in their management strategy. Such resources in developing nations and those with their economics in transition can only be sustainably harnessed with foreign technical and financial support.

Foreign investment in forestry according to Odum(2009) is non-governmental organizations assistance to forestry activities in a given area. Typically, foreign investment denotes that foreigners take a somewhat active role in management as part of their investment. Stanley*et al*., (2009)defined foreign investment in forestry project as the international community support to the developing countries towards achieving their goals in managing forest resources by availing them financial incentive and or encouraging/ supporting research and training.

With these as background, it is imperative that developing nations invest in forestry development projects. However, the long term nature of forestry development project amidst limited fund, make foreign investment in such country inevitable. Foreign investment in forestry is the international community support to the developing countries towards the latter’s achievement of their forest resources management goals. Such foreign investment could be through government or non-governmental organizations or agencies for forestry infrastructural development or to encourage and support research and training, relevant to forestry. Foreign support could also be used to facilitate the collection and dissemination of information relevant to forestry system or assist in the international coordination of agro-forestry land use system and enhance the social, economization and nutritional well being of the people.

Jigawa State in the semi-arid zone of Nigeria needs foreign investment in forestry activities to arrest the spread of drought and desertification within it, as one of the state facing severe environmental problems such as high wind velocity, excessive heat, land degradation, drought and desertification. Such investment is expected to assist the state government in arresting the spread environmental menace and hence convert lands to productive use and by extension, improve the living conditions in the state. This study is therefore designed to take stock of the present status of foreign investment portfolio in Jigawa State, with view to determine the investment needs in forestry development projects of the State.

MATERIALS AND METHODS

Description of the Study area

Jigawa State is located between latitude 12.446^{o}N and longitude 9.7233^{o}E in the Sudan savannah part of Nigeria. The state shares borders with Kano and Katsina State to the west, Bauchi to the south, Yobe State to the east and an international boundary with the Republic of Niger to the north. It has projected

population of 5,828,200(NPC, 2016).Jigawa has a suitable soil for the cultivation of crops like groundnut, millet, guinea corn and cassava. About 70% of the total land area is cultivable with 10% constituting grazing reserve, 5% forest reserve and the remaining 15% settlement and uncultivable areas (Yahaya, 2002).

The state has ninety-seven (97) constituted forest reserves of six hundred (600km^2) and seventeen (17) communal forest areasof 20km^2 to arrest the menace of desertification. Apart from this, a total of 1,750km of protective shelter belts where established and 250km of sand dunes was fixed. To boost industrial development, the forestry department also established 1350 hectare of *Acacia nilotica* plantations and 350 hectare of gum Arabic plantations. The "new generation of forestry projects" started to grow some two decades ago, as project focused increasingly on great variety of issues beyond those associated with traditional industrial timber and wood products production (Yahaya, 2002).

Jigawa falls between the Tropical Continental North. It has an average rainfall of 600-1000mm in the north and southern part of the state annually. Annual mean temperature is 25^{0}C but the mean monthly values ranges between 21^{0}C in the coolest month and 31^{0}C in the hottest month. The region has about 4 - 8 months dry season. The climate in Jigawa State is arduous with rapid changes in temperature and humidity. The weather could change suddenly with humidity rising rapidly up to 100% in an area considered characteristically dry. The season varies into two. Yahaya (2002).

Wet season is roughly four months (June to September) and dry season is seven to eight months (October to May). The rainy season sometimes starts in May but early rains in April are not unusual while the bulk of the rainfall comes in June through September(Darkoh,1993).Jigawa soil is sandy but soil factor introduce local departure from the general pattern in Jigawa where traces of green vegetation are noticeable clay. Here, the soil is clay and frequently water logged. In the wet season because of its impermeability; the whole area turns into sticky mire which carries a carpet of wiry grassing the dry season. However, the grass dies off and the clay dries, shrinks and cracks. Where the soil is composed of very fine material which is often blown by the wind, this erosion leaves bare patches of exposed infertile subsoil which grow a few dwarfed plants and no grass at all. On the flat flood plains of rivers the soil is manually flooded in the flood season, which goes by local name (Fadama). It is very important in rice production and irrigation activities (Yahaya, 2002).Jigawa state is blessed with mineral resources, they are kaolin, tourmaline, amethyst, marl stones, potash, iron ore, copper, gold, white quartz, refractory clay and antimony. The vegetation of Jigawa normally consists of some shrubs and little trees. The actual vegetation is made of short grasses, 1.5-2m high and some trees species ranging from *Azadirachta indica, Adansonia digitata, acacia*, and silk cotton tree, which is the tallest of the group to a height of 9-15 meters (Yahaya, 2002)

Experimental Design

A total of three (3) local government areas of the state namely: Gwaram, Birniwa and Maigatari were purposively selected from the three ecological divisions of the state and Jigawa State Afforestation Program (JIGAP). A proportionate random sampling procedure was used to select 60% of the respondents across the selected local governments and JIGAP. Out of a total of 167, 100, 100 and 33 for Gwaram, Birniwa and Maigatari and JIGAP, 60% of each was obtained to give a total of two hundred and forty (240) sets of questionnaires. These comprises of: one hundred (100) in Gwaram, Sixty (60) in both Birniwa and Maigatari and twenty (20) in Jigawa State Afforestation Program (JIGAP).The total population of the study stands at 667,000 (NPC, 2006). Structured questionnaire was used to derive primary data information about the study. Also, secondary data obtained from Journals, books and internet sourced from Agricultural Programs in Jigawa State such as Jigawa State Ministry of Agriculture and Natural Resources (JARDA), Jigawa State Afforestation Programme.

Data analysis

The data obtained from the research were analyzed using Statistical Package for Social Sciences (SPSS). Descriptive statistics such as frequency counts, mean, percentage, likert type scales were used to determine the proportions of the variables.

RESULTS

Table 1, showed the distribution of the respondents based on socioeconomic characteristics. It showed that majority of the respondents were within the age range of 40-60 (78.4%) with a mean age of 32.7 years. Greater proportion of the respondents was males (62.1%). Slightly above average of the respondents (51.2%) were singled, divorced or widowed, while only about average (48.8%) were married. Table 2 also showed the distribution of the respondents based on awareness of some forest development project. This was measured on a 3-point likert scale of very high (VH=2), Undecided (U=0) and Very Low (VL=1) respectively. Mean score ($\bar{x}$) of 1.00 above implies very high while below implies very low. It can be seen that the respondents were very much aware of the three Forest Development Project component investigated. From the average mean value estimate, Tree planting is the most ($\bar{x}$=1.733) followed by Individual Wood Lot ($\bar{x}$ =1.558) and finally Home Garden practices ($\bar{x}$=1.471) respectively. From table 3, it can be seen as depicted in the table that majority (61.7% almost 2/3) of the respondents were fully aware about forest development project, while about 38.3% of the respondents had very low aware about forest development project. Furthermore, table 4, shows the respondents' involvement in some forest development project activities in the study area. This was measured on a 3-point likert type scale of High Involvement (HI=2), Undecided (U=0) and Low Involvement (LI=1). There is a low involvement in home garden ($\bar{x}$=0.992) and individual wood lot ($\bar{x}$=1.063) while tree planting ($\bar{x}$=1.696) showed high involvement. Table 5, showed the categorization of the respondent's involvement in forest development project. Based on the respondent's awareness of Forest Development Project, it shows that slightly above average (52.6%) of the respondents were involved in the program, while the remaining (47.6%) were not involved in any forest development project. The respondents' perception of forest development project is depicted in table 6 above. This was measured on a 3-point likert type scale of Favorable (FV=2), Undecided (U=0) and Not Favorable (NFV=1). A weighted mean score of 1.000 was obtained which implies favorable. Table 7, shows the distribution of the respondents based on the impact of forest development project on agronomic practices. This was measured on a 3 point likert type scale of favorable (FV=2), undecided (U=0) and not favorable (NFV=1) respectively on some determined agronomic practices. Among the agronomic practices examined; land preparation ($\bar{x}$=1.983) is the most favorably used, followed by planting ($\bar{x}$=1.888) and fertilizer application ($\bar{x}$=1.750). There is also pest control usage practices ($\bar{x}$=1.621) and weeding ($\bar{x}$=1.550). Lastly, table 8, showed the distribution of respondents' based on the environmental impact of forest development project on the community. From the table, it showed that the forest development project has a positive effect mostly on infrastructure (61.7%). This implied that there was more infrastructural development in the community. This was followed in ranking order by minimization of desertification (17.1%) as well as serving as wind break to minimize erosion (15.0%).

Table 1: Socioeconomic Characteristics of the Respondents

Variables	Characteristics	Frequency	Percentage (%)
Age (Years)	≤ 40	145	60.6
	51-60	34	14.2
	61-70	10	4.2
	≥ 70	2	0.8
Sex	Male	149	62.1
	Female	91	37.9
Main Occupation	Students	89	37.1
	Civil servants	38	15.8
	Business	45	18.8
	Farmers	68	28.3
Educational Qualification	Primary	53	22.1
	Secondary	104	43.3
	Tertiary	48	20.0
	Non formal	35	14.6
Marital Status	Married	117	48.8
	Single	57	23.8
	Divorced	40	16.7
	Widow	26	10.8

Table 2: Distribution of Respondents Awareness some forest Development Project

Variables	VH (%)	U (%)	VL (%)	Mean ($\bar{x}$
Tree planting	197(82.1)	21(8.8)	22(9.2)	1.733
Individual wood lot	178(74.2)	44(18.3)	18(7.5)	1.558
Home garden	161(67.1)	48(20.0)	31(12.9)	1.471

Table 3: Categorization of Level of Awareness of Forest Development Projects and Types

Variables	Frequency	(%)
Yes	148	61.7
No	92	38.3

Table 4: Distribution of Respondents Involvement in Some Forest Development Project

Variables	HI (%)	U (%)	LI (%)	Mean ($\bar{x}$
Tree planting	198 (82.5)	31(12.9)	11 (4.6)	1.696
Individual wood lot	19(79.2)	4(1.7)	217(90.4)	1.063
Home garden	3 (67.1)	5 (20.0)	232 (12.9)	0.992

Table 5: Categorization of Level of Involvement in Forest Development Projects

Variables	Frequency	(%)
Yes	133	52.6
No	107	47.4

Table 6: Distribution of the Respondents based on Perception of Forest Development Project

Variables	FV(%)	U (%)	NFV (%)	Mean ($\bar{x}$
Mgt of forest is for tree production only	20 (8.3)	11 (4.6)	209 (87.1)	1.038
Mgt of forest is for environmental use	17 (7.1)	29(12.1)	194 (80.8)	0.950
Mgt of tree is where ever they are found	23 (9.6)	09 (3.8)	208 (86.7)	1.058
Have you heard of FDP for tree Mgt	19 (7.9)	10 (4.2)	211 (87.9)	1.038
Is mgt of FDP beneficial to mankind	41 (17.1)	7 (2.9)	192 (80.0)	1.142
Does mgt have any value to your livelihood	21 (8.8)	15(6.3)	204 (85.0)	1.025
Does it have positive impact of agriculture	13 (5.4)	21 (8.8)	206 (85.8)	0.967

Table7:Distribution of the Respondents based on the Impact of Forest Development Projects on Agronomic Practices

Variables	FV (%)	U (%)	NFV (%)	Mean ($\bar{x}$)	Rank
Land Preparation	237 (98.8)	1 (0.4)	2 (0.8)	1.983	1st
Planting	220 (91.7)	7 (2.9)	13 (5.4)	1.888	2nd
Fertilizer Application	191 (79.6)	11 (4.6)	38 (15.8)	1.750	3rd
Pests Control	177 (73.8)	28 (11.7)	35 (14.6)	1.621	4th
Weeding	169 (70.4)	37 (15.4)	34 (14.2)	1.550	5th

Table 8: Distribution of the Respondents Based on Environmental Impact of FDP on Communities

Variables	Frequency	Percentage (%)
Controlling of soil erosion	33	13.8
Serves as wind break	36	15.0
Minimize desertification	41	17.1
Causes environmental pollution	31	12.9
Infrastructural impact	99	61.7

DISCUSSION

Socioeconomic Characteristics of the Respondents

The results of the socioeconomic characteristics of the respondents indicated in table 1 above. This finding corroborates that of Oladipo *et al.,* (2017) that majority of farmers in Niger State was married. Marriage confers social responsibility and commitment. Marriage confers responsibility according to Vogelstein (2013); Ehien, Orifah and Oloruntoba, (2017) and UNICEF (2014a & b). Also, Akinbile (2007) conceded that marriage confers responsibility because respondents have responsibility to cater for their households through the various livelihood activities they engage in perfectly. Most of the respondents were students (37.1%), farmers (28.3%) and business men (18.8%). Below average proportion of the respondents have secondary education (43.3%) followed by primary education (22.1%) and tertiary education respectively (20.0%). This implies that the respondents in the study area were not really educated judging from their educational levels. is in line with that of Ogunlade, Agbeniyi and Oluyole, (2010) who found that literate respondents stand a chance of understanding the accruing benefits of poultry production as a means of livelihood and this would assist their information seeking habits, behavior and adoption.

Respondents Awareness some forest Development Project

Looking at the awareness index of these forest development project practices, it showed a very high awareness ($\bar{x}$=1.587) among the respondents in the study area. This explained the popularity of such project among the respondents based on the result achieved. This is in line with the submission of Owolabi (2019) that most of the farmers' in Nigeria has good awareness of forest development projects.

Level of Awareness of Forest Development Projects

Table 3, shows the categorization of the level of awareness of forest development projects in order to support the findings of the study. The study revealed that awareness about forest development project is popular among respondents, as indicated in the table. It can be seen as depicted in the table that majority (61.7% almost 2/3) of the respondents were fully aware about forest development project, while about 38.3% of the respondents had very low aware about forest development project. This is in line with the work of Owolabi (2019) and Eugene (2004) that over 60% of farmers in Nigeria have favorable awareness level of forest development projects.

Respondents involvement in Some Forest Development Project

The result of the respondent's involvement in forest development project showed from table 5**.** A weighted mean score of 1.000 was obtained which implies that mean values of ≥1.500 implies high involvement like below ≤1.000 implies low. It showed even based on the high level of awareness seen among the respondents on forest development project activities there were low involvement of the respondents in the program. There is a low involvement in home garden ($\bar{x}$=0.992) and individual wood lot ($\bar{x}$=1.063) while tree planting ($\bar{x}$=1.696) showed high involvement. The involvement of the respondents may probably be due to their perception of the forest development projects. This is in line with the work of Osemeobo (1987) who agreed that there were fair involvement of farmers in forest development projects in Bendel State, Nigeria.

Level of Involvement in Forest Development Projects

The result of level of involvement in Forest Development Projects showed in table 6. This variation in involvement of the respondents could probably be based on perception of on forest development project as shown in table 6, on the perception of the respondents on forest development project. This corroborated the study of FDF (2002) and Shuaibu (2015) that the involvement of farmers in forest development projects is not all that encourage as a lot is needed to be done in line with this.

Respondents' Perception of Forest Development Project

The respondents' perception of forest development project is depicted in table 6 above. This was measured on a 3-point likert type scale of Favorable (FV=2), Undecided (U=0) and Not Favorable (NFV=1). A weighted mean score of 1.000 was obtained which implies that mean values of ≥1.500 implies favorable perception while below ≤1.000 implies not favorable. It can be seen that from all the perception statement evaluated, showed a positive response in the minds of the respondents. It implies that the respondents have an unfavorable attitude towards forest development projects in the study area judging from the mean values obtained. That all variables investigated gave a mean value ($\bar{x}$) of 0.950-1.142. This supported the evidence of FDF (2002) and Shuaibu (2015) that most farmers in Africa had an unfavorable attitude and perception to forest development projects.

Impact of Forest Development Projects on Agronomic Practices

The result of the respondents on the impact of forest development projects on agronomic practices showed that land preparation ($\bar{x}$=1.983) is the most favorably used, followed by planting ($\bar{x}$=1.888) and fertilizer application ($\bar{x}$=1.750). This could be so because land preparation is inevitable in agricultural cropping as well as other silvicultural practices. This supported the findings of Shuaibu (2015) that forest development projects have positive impacts on agronomic practices of most farmers in host communities where projects are sited.

Environmental Impact of FDP on Communities

Desertification is an agent of soil erosion which if reduced to its barest minimum will help agricultural development so does wind break function to the community. It implies in general that the forest development project has given positive impact in terms of food security to the community in recent times according to the table. Other positive impact is serving as erosion control (13.8%). While the negative and dangerous function of the forest development project is the fact that it causes a lot of environmental pollution to the inhabitant of the community. This means that the community ecosystem will be endangered in this situation. It is a known fact that ecosystem is an important factor

of human existence and survival without which life will not thrive. This further implies that ecosystem is the key to sustainable life and it should not be destroyed. This is in line with Owolabi (2019) that forest development project impact positively on agricultural practices of any area located.

CONCLUSION

Based on the research, the following conclusions can be drawn;

- **i.** Majority (61.7%) of the respondents were fully aware about forest development project, while about 38.3% of the respondents had very low aware.
- **ii.** Slightly above average (52.6%) of the respondents were involved in the Forestry Development Programme (FDP), while the remaining (47.6%) were not involved.
- **iii.** None of the respondents showed a positive response to FDP. It implies that the respondents have an unfavorable perception towards FDP.
- **iv.** Among the agronomic practices examined; land preparation ($\bar{x}$=1.983) is the most favorably used, as well as planting ($\bar{x}$=1.888) and fertilizer application ($\bar{x}$=1.750).
- **1.** On environmental impact of FDP, there was more infrastructural development (61.7%) in the community, minimization of desertification (17.1%) and wind break to minimize erosion (15.0%). It also reduced desertification and wind break function to the community.

Recommendations

a) The following recommendations were suggested;
b) Awareness campaign should be instituted to the respondents in the community on the significance of (Forestry Development Programme),
c) Proper efforts should be made to involve the respondents more on FDP since the involvement of the respondents in FDP is low.
d) The perception of the respondents on FDP should be improved and bettered to improve the utilization and involvement in FDP.
e) Other agronomic practices should be explored and addressed to help agriculture.

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