



**EFFECT OF LIVELIHOOD DIVERSIFICATION STRATEGIES ON ENVIRONMENTAL
DEGRADATION IN KANAM LOCAL GOVERNMENT AREA OF
PLATEAU STATE, NIGERIA**

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ABSTRACT

The study examined the effect of livelihood diversification strategies among rural farming households on environmental degradation in Kanam Local Government Area of Plateau State, Nigeria. A multistage random sampling technique was used in selecting 90 respondents and data were collected through the administration of structured questionnaire. Data were analyzed using descriptive statistics such as frequency, percentage and mean. The result reveals that majority (78.9%) of the respondents fell within the age of 18-37 years and 62.2% of them were male. Also 62.2% were married with the mean household size of 11 persons. In addition majority (76.6%) of the respondents had tertiary education and 64.4% are members of one association or the other. The result also reveals that majority (83.3%, 93.3% and 90%) of the respondents had access to basic health services, educational services and market respectively. Also more than half (57.8%) of the respondents had access to credit. The result also showed that 52.2% had contact with extension agent and majority (65.6%) were beneficiaries of extension services. The result further reveals that, 74.4%, 66.7% and 68.9%, of the respondents were engaged in firewood, charcoal making and mining activities, respectively. The result also showed that livelihood diversification activities have several effects on environment such as deforestation (90%), limited availability of forest products (82.2%) and diminishing land for farming (75.6%) to mention few. The major constraints to livelihood diversification were inadequate funds, infrastructure, capacity building and land holdings which were ranked 1st, 2nd, 3rd and 4th respectively. Emanating from the findings it can be concluded that livelihood diversification activities like mining, charcoal making and firewood business has led to environmental degradation in the study area. Based on the constraints highlighted, the following recommendations were made: implementing prevention and control policies for reducing deforestation, and government should establish annual afforestation program among others.

Keywords: Livelihood, Diversification, Environmental and Degradation

INTRODUCTION

Livelihood diversification is a survival strategy that has become an integral component of income generating activities among rural and urban households and can be broadly categorized into a farm(on and off farm) and non-farm activities and Non-farm employment includes self or wage employment in manufacturing, craft, artisan work, commerce, and services (Onuwa, *et al*, 2022). Amidst increasing population in Nigeria and other developing countries, agriculture remains the primary livelihood source for the majority of the people, offering options for growth, overcoming poverty, unemployment and enhancing food security, though the income generated is not sufficient to sustain the standard of living conditions in an effective manner (FAO, 2023; Okezie *et al.*, 2021). Livelihood diversification strategies include on-farm (crop, livestock, fisheries) activities, off-farm and non-farm activities or market and non-market activities to cushion risks inherent in unpredictable agro-climatic, political, and economic circumstances (Onuwa, *et al*, 2022). According to Karki (2021) livelihood comprises the capabilities, assets and activities required for a means of living. There are various components of livelihood. It includes tangible and intangible assets. Asset can be human capital (skills, knowledge and ability to work), social capital (informal networks and membership of groups and other similar relationships that facilitate cooperation and economic opportunities), natural capital (land, soil, forest, water and fisheries), physical capital (basic infrastructure such as roads,



water and sanitation, schools, markets and producer goods) and financial capital (savings, credits, income from employment and trade).

According to FAO, (2023), Sub-Saharan Africa has the highest percentage of population of hungry people in the world (22.5%) and Nigeria has a level of hunger that is serious with a global score of 28.3% (GHI, 2023). Nigeria has over 24.9 million people in a state of hunger and poverty is said to be mainly a rural phenomenon where 72% of people are poor, compared to 42% of people in urban areas and the intensity of rural poverty is also higher in rural areas 42% compared to 37% in urban areas with agricultural sector accounting for the highest incidence over the years (IPC, 2023; Dial *et al.*, 2023 and NMPI, 2022). The growth of non-farm income sources if accessible in rural areas might reduce the need for landless dwellers to carry out extractive practices in local environments for their survival. This has been called the “substitution of employment for the environment” and has received quite a lot of attention in the policy literature. In addition, livelihood diversification is an effective way of solving the problems caused by poverty and environmental degradation. Therefore, livelihood diversification can be used as an efficient indicator to evaluate the success and sustainability of the rural community, which is, for instance, true in China (Liu and Liu, 2016). Livelihood diversification helps to reduce households’ dependence on environmental resources, thereby helping environment restoration. Off-farm employment causes the outflow of the rural population and reduces regional population and environmental pressures, which is beneficial for maintaining rural development achievements (Wang *et al.*, 2016). The reduction in households’ engagement to the environment is mainly caused by less dependence on environmental resources after the improvement of livelihood diversity. As an external “pull” factor, the rapid development of overall economy effectively promotes the non-agricultural transfer of the rural labor force and improvement of household livelihoods, so as to indirectly facilitate the restoration of the ecological environment (Wang *et al.*, 2016). Sequel to the above, this study has become a necessity considering the pressure mounted on environment as an alternative source of income to rural farming households. Previous studies have shown that, there is little or no literature on effects of livelihood diversification on environmental degradation among rural farming households.

The study was therefore carried out to assess the effect of livelihood diversification strategies on environmental degradation in the study area. The specific objectives were to;

- i. identify the socio-economic characteristics of farmers in study area;
- ii. identify the different livelihood activities and income source of the farmers;
- iii. determine the effects of livelihood diversification activities on environment by the farmers and
- iv. identify the constraints to livelihood diversification activities in the study area

RESEARCH METHODOLOGY

The Study Area

Kanam is located at latitude N. 09.22427° and S. 009.91438° of the Greenwich meridian, it covers an area over 2,600km² and has a population of 165,898 people (2006 census). Kanam enjoys a total annual rainfall of up to 1091.4 mm most of the rainfalls fall between June and December. Although, the rainy season begins actually in May, its hottest month is usually April with a maximum temperature of 40.56°C while the coldest months are December and January with average temperature of 19°C and 20°C respectively. The minimum and maximum annual temperatures in the area are 19°C and 33°C. The area has estimated livestock population of 1,077,390 in which cattle have over 750,000 thousand which contributed to nutritional development of the state. The contributing factor to high livestock population was the grazing reserved and federal cattle routes. It shares borders with some neighboring local governments within and outside the state. Local government like Kanke in the west, Wase in the south, Bogoro and Alkaleri of Bauchi State in the north and some Local Government of Taraba and Gombe States in the east. Kanam is distance by 200km away from the state capital (Jos). The indigenous people of Kanam are boggom (burmawa) and jhar (jarawa) and they are practicing both the religions. While others like Fulani's, Yoruba, igbos, ngas, tarok, hausas and many more which are non-indigens of Kanam. Many are attracted to settle as a result of large and good market, good agricultural lands, absolute peace and tranquility in the area and some as a result of civil services.



Kanam people are initially engaged in primary sources of earnings, most of their incomes was hooping and tapping from hunting and gathering, farming, lumbering, blacksmith, trading, crafting, carving etc. Then, the farming system was at small scale and mostly in traditional and subsistence level. The trading were just at petty level. They also pay more emphasis on hunting and gathering foods for the survival. The marketing activities is at a larger scale, large industrial activities, effective technological know-how on constructions, and they are well established by good governance, which consists both the traditional rulers and political leaders). It's unanimously engaged and practice by youths. Leading to the economic growth of the local government, the state and nation at large.

Sampling Technique

A Multi-stage random sampling technique was used in selecting respondents for the study. In the first stage, three districts were randomly selected from the four districts of the local government. In the second stage, three communities were randomly selected from the selected districts which are; Wase Road, Ung Goje, Ung Galadima, Kantana, Jom, Jarmai, Garga, Munbutbo, and Kyaram. In the third stage, 10 respondents were selected from each community making a total of 90 respondents as the sample size of the study.

Data Collection and Analysis

Primary data were collected using questionnaire. Data were analyzed using descriptive statistics. The descriptive statistics used were frequency, percentage and Mean.

RESULTS AND DISCUSSIONS

Socio-economic Characteristics of the Respondents

The results in Table 2 showed that, majority (78.9%) of the respondents fell within the age of 18-37 years, while 10%, 7.8%, and 3.3 % of the total respondents fell within the age of 38-47, 48-57 and 58 and above years, respectively. This indicates that most of the respondents were within their active age of production. This is in line with the findings Mohammad (2006) who asserted that, at intra-household level, younger household members tend to diversify better than older ones. The result also shows that, majority (62.2%) of the respondents were male and 37.8% of the respondents were female. This may be as a result of religious or cultural restriction on women participation of outdoor activities. Gender is one of the institutional factors that also determine the individuals and households' livelihood diversification (Ellis and Freeman, 2005; Barret, 1997; Barret *et al.*, 2001). At gender level, women involve in less remunerative activities than their male counter parts (Mohammad, 2006). The implication of this is that male households prefer to have more than one source of income when compared with their female households.



Table 1: Distribution of Respondents based on their Socioeconomic Characteristics (n=90)

Variables	Frequency	Percentage	Mean
Age			
18-27	41	45.6	34
28-37	30	33.3	
38-47	9	10	
48-57	7	7.8	
58 and above	3	3.3	
Gender			
Male	56	62.2	
Female	34	37.8	
Marital Status			
Single	34	37.8	
Married	56	62.2	
Household Size			
1-10	52	57.8	11
11-20	26	28.9	
21-30	12	13.3	
Level of education			
Non-formal	2	2.2	
Primary	2	2.2	
Secondary	17	18.9	
Tertiary	69	76.6	
Occupation			
Farming	34	37.8	
Business	33	36.7	
Civil servant	23	25.6	
Occupational experience			
1-10	35	38.9	13
11-20	43	47.8	
21-30	12	13.3	
Income (₦)			
<50,000	39	43.3	45,344
50,000-100,000	31	34.4	
101,000-150,000	7	7.8	
151,000-200,000	5	5.6	
200,000 and above	8	8.9	
Membership of association			
No	32	35.6	
Yes	58	64.4	
Basic Health Service			
No	15	16.7	
Yes	75	83.3	

Source: Field Survey, 2019

The result further shows that more than half (62.2%) of the respondents were married and 37.8% of the respondents were single. This shows that the respondents are responsible according to societal standard. This implies that married farmers believe more in diversification of income sources. Also it is an indication that married farmers have additional household responsibility which will definitely encourage income diversification. The results also reveal that, more than half (57.8%) of respondents had household size of between 1-10 persons in the study area. The result further shows that households in the study area with more than one source of income have large household size. Having more than one source of income may be necessary in order to cater for the needs of members of households. Also, large household size may encourage income diversification due to the availability of labor.



The results in Table 2 also reveals that majority (76.6%) of the respondents had tertiary education with 2.2%, 2.2% and 18.9%, had informal, primary and secondary education respectively. This indicates that the respondents' educational level is high. The education status of households' is an important variable that could determine the livelihood strategies of households. It is, therefore, good to look at the education profile of the households so as to see its implications for livelihood diversification. The results further reveals that, less than half (37.8%) of the respondents were farmers. While, 36.7% and 25.6% were business men/women and civil servants respectively. The result further shows that, majority (86.7%) of the respondents fell within the range between 1- 20 years of experience. While, 13.3% fell within the range between 21-35 years of experience. The implication is that, those with little occupational experience have higher tendency of diversifying their income in to other activities apart from farming compared to those that are old.

On the other hand, the finding further depicts that, majority (77.7%) of the respondents had an income of less than ₦50,000-₦100,000. While 7.8%, 5.6% and 8.9% of the respondents had an income t of ₦101,000-₦150,000, ₦151,000-₦200,000 and ₦200,000 and above respectively. The results also reveal that, majority of the respondents (64.4%) are members of one or more associations. While, 35.6% of the respondents are not members of any association. This implies that in the study area, through their associations, farmers would have access to information needed for income generating activities. The further shows that majority (83.3%) of the respondents had basic health services and 16.7% of the respondents had no basic health services in their areas. Hence the proximity of health service in the area shows that the majority of sample households had easy access to health service.

Livelihood Diversification Activities and Income Source of the Farmers

The result from Table 3 depicts the livelihood diversification activities and income sources of the respondents in the study area, the finding shows that firewood selling (74.4%), mining (68.9%) and charcoal making (66.7%) were the major livelihood activities engaged by the respondents which were ranked 1st, 2nd and 3rd respectively.

Table 2: Livelihood Diversification and Income Activities

Variables	Percentage*	Rank
Firewood	74.4	1 st
Mining	68.9	2 nd
Charcoal making	66.7	3 rd
Wage labor	58.9	4 th
Trading	56.7	5 th
Quarrying	51.1	6 th

Source: Field survey, 2019 *Multiple response

This finding implies that most of the respondents were engaged with one or more activities that generates income to their household in the study area. It is an indication that farming alone without diversification could lead to abject poverty among farming household in the study area. The finding further shows that wage labor (58.9%), trading (56.7%) and Quarrying (51.1%) were ranked 4th, 5th and 6th, respectively. This finding implies that farming household were engaged in several forms of livelihood activities thereby generating additional income and ultimately improve their standard of living in the study area.

Effects of Livelihood Diversification Activities on Environment

The result from Table 4 depicts the effects of livelihood diversification activities on the environment, the finding reveals that deforestation (90.0%), resource conflicts (90.0%), soil degradation (85.6%) and limited availability of forest products (82.2%) were the major effects of livelihood diversification activities engaged by the respondent and were ranked 1st, 3rd and 4th, respectively.

Table 3: Effects of Livelihood Diversification Activities on Environment

Variables	Percentage*	Rank
Deforestation	90.0	1 st
Resource conflicts	90.0	1 st
Soil degradation	85.6	3 rd
Limited availability of forest products	82.2	4 th
Erratic rainfall	80.0	5 th
Reduce vegetation cover	76.7	6 th
Windstorm effect	75.6	7 th
Diminishing land for farming	75.6	7 th
Increase in water pollution	72.2	9 th
Decrease in pasture availability	72.2	9 th
Increase in pest and diseases	67.8	11 th
Increase in water scarcity	55.6	12 th
Wetland depletion	50.0	13 th

Source: Field Survey, 2019 *Multiple response

These were followed by erratic rainfall (80.05), reduce vegetation cover (76.7%), windstorm effect (75.6%), diminishing land for farming (75.6%), increase in water pollution (72.2%) and decrease in pasture availability (72.2%) which were ranked 5th, 6th, 7th and 9th by the respondents, respectively. Others include increase in pest and diseases (67.8%), increase in water scarcity (55.6%) and wetland depletion (50.0%) which were ranked 11th, 12th and 13th by the respondents, respectively. This finding implies that despite the importance of livelihood diversification to rural farming household it is paramount to take precautionary measures toward a sustainable and eco-friendly environment, hence some of the livelihood diversification activities should be changed by the respondents.

Constraints to Livelihood Diversification Activities

The result from Table 5 shows the constraints to livelihood diversification among the respondents, the finding shows that the major constraints faced by the respondents toward livelihood diversification were limited access to capital (92.2%), infrastructure (73.3%) and inadequate awareness/training (63.3%) which were ranked 1st, 2nd and 3rd by the respondents, respectively.

Table 4: constraints to diversifying livelihood activities

Variables	Percentage*	Rank
Limited access to capital	92.2	1 st
Infrastructure	73.3	2 nd
Awareness/Training	63.3	3 rd
Land holdings	60.0	4 th
Distance to market	38.9	5 th
Taxes	28.9	6 th
Cultural issues	8.9	7 th

Source: Field Survey, 2019 *Multiple response

Land holdings (60.0%), distance to market (38.9%), taxes (28.9%) and cultural issues (8.9%) were ranked 4th, 5th, 6th and 7th by the respondents, respectively. This finding implies that though farming household were engaged with different forms of activities for additional income and livelihood sustainability, these activities for diversification of income are constrained by certain factors in the study area.

CONCLUSION AND RECOMMENDATIONS

Emanating from the findings it can be concluded that livelihood diversification activities like mining, charcoal making and firewood business had led to deforestation, resource conflicts, soil degradation and limited availability of forest products among others. Based on the findings of this study, the following recommendations were made:



- i. Farming households should control the indiscriminate cutting of trees for charcoal
- ii. Government should implement preventive and control measures on deforestation,
- iii. Government should establish annual afforestation program

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