



IMPACT OF *FADAMA* DEVELOPMENT PROJECTS ON POVERTY ALLEVIATION AMONG FARMERS IN KADUNA STATE, NIGERIA

Yohanna, M., Iliya, M. A., Adefila, O. and Yusuf, R. O.

Department of Geography and Environmental Management, Ahmadu Bello University, Zaria

Corresponding Author's E-mail: mariayohanna23@gmail.com **Tel.:** +234 08033879252

ABSTRACT

The study assessed the impact of the *fadama* project on the poverty status of both the beneficiary and non-beneficiary farmers in Kaduna State, Nigeria. Questionnaire was randomly administered among 2,144 respondents in four (4) Local Government Areas (LGAs) namely, Giwa, Birnin Gwari, Kauru and Zango Kataf. Descriptive statistics, gross margin analysis, Foster-Greer-Thorbecke (FGT) model, regression analysis were employed in analyzing the data. The result showed that 72% of the respondents were males and married. More than 82% of the *fadama* beneficiaries had a positive perception of the program. The *fadama* beneficiary farmers had a mean income of ₦613,323 and ₦419,643 for the non*fadama* beneficiary farmers. It was also disclosed that age, gender, dependency ratio and farming experience had significant relationship with their income, 40% of the *fadama* beneficiaries were poor, 69% of the non- *fadama* beneficiary farmers were poor. It was therefore, concluded that *fadama* program had a significant impact in reducing the poverty status of the beneficiaries. The study recommended that for sustainability, the farmers should be included as the drivers of *fadama* program with the government and private sector as collaborators. The women should also be helped to form functional cooperatives so that poverty among them can be significantly reduced.

Keywords: Alleviation, Beneficiaries, *Fadama*, Farmers, Poverty.

INTRODUCTION

Poverty is endemic in Nigeria, it has been described as widespread and severe with several dimensions and complexities (Khan, 2000). It is a condition of being poor and incapable of satisfying oneself with the basic needs of food, shelter and clothing. Poverty is generally referred to scarcity or dearth, or the state whereby an individual lacks a certain amount of material possessions or money. It also encompasses low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice, and insufficient capacity and opportunity to better one's life (World Bank, 2011). In order to alleviate poverty in rural parts of Nigeria, some policies and programmes have in recent years been directed at improving agricultural production. These have not led to the desired impact. Rather more resources are directed to the extraction of mineral resources especially oil. As a result, there has been a decline in agricultural output (National Bureau of Statistics [NBS], 2010). This has impacted negatively on food production and increased poverty level amongst a majority of Nigerians especially those that make a living from the sector. This necessitated the Federal Government of Nigeria in collaboration with the World Bank, Africa Development Bank and State governments to embark upon *Fadama* Programmes with the sole objective of improving the poor farmers' income and food security for the nation.

Recent statistics indicate a worsening poverty situation in the country which is a cause for concern. For instance, the United Nations Development Program (UNDP) Human Development Index (HDI) ranked Nigeria as the 137th among the 174th countries listed



with a HDI of 0.384 in 1996; by 2015 Nigeria's HDI was 0.527 which ranked the country in the low human development 152th out of 188th countries and territories (UNDP, 2016). Abdullahi Aliyu in Daily Trust of 12 February 2013 reported that the poverty level in Kaduna State increased from 67% in 2001 to 95% in 2013 and by 2017, it dropped to 84.90% (Kaduna State Bureau of Statistics [KDBS], 2017).

The agricultural sector is not only the most important non-oil economic activity in Nigeria; it is also the single largest employer of labour. It has been empirically established that low agricultural productivity in Nigeria is the cause of high incidence of poverty in the country (Raufu and Masuku, 2013). Thus, the agricultural sector is often seen as the pivot for alleviating poverty (Agenor *et al.*, 2004). This is obvious, since it contributes about 40% to total GDP and employs about 70% of the labour force (NBS, 2012). The contribution of agriculture to the national GDP however, has declined through the years to 21.06% in 2017 (NBS, 2018) but still employs more than 70% of the national labour force.

Since the inception of the *fadama* projects, several studies have been conducted on their impact on beneficiary communities. The results from these studies are however, inconclusive. For example, while some of the findings show positive impact (Anyebe and Mudi, 2015; Folorunsho, 2016; and Moses, 2017 etc.) and others revealed that no appreciable gains have been made (Bature *et al.*, 2013; and Iwala, 2014 and Okechukwu, 2015). The variation in the results could no doubt be due to variation in location of study, differences in study objectives, time of study and study design among others. Given the cumulative nature of development and transient nature of poverty, there are gaps which need to be filled by investigating the last two phases of the NFD in Kaduna State. This study is therefore conducted to assess the impact of *fadama* Development Project on the poverty alleviation among farmers in Kaduna State. The objectives of the study were to:

- i. assess the poverty status of the farmers;
- ii. determine the socio-economic characteristics of the project beneficiary farmers that influence their income;
- iii. examine the influence of socio-economic characteristics of the *fadama* beneficiaries that influence their poverty status.

MATERIALS AND METHODS

The Study Area

The study was conducted in Kaduna State. Kaduna State is located between Latitude 9⁰03'N and 11⁰32'N, and on Longitude 6⁰05'E to 8⁰48'E of the Greenwich meridian (Udo, 1970). The State occupies an area of approximately 48,473.2km² and has a population of more than 6 million (National Population Commission [NPC], 2006). The soils are classified as leached ferruginous tropical soils developed on weathered regolith overlain by a thin deposit of windblown silt from the Sahara Desert following many decades of Tropical Continental air mass movement into the area (Wright and McCurry, 1970).

The annual average rainfall in the State is about 1323mm. The spatial and temporal distribution of the rain varies, decreasing from an average of about 1733mm in the Southern part of the study area (Jema'a) to about 1032 mm in the northern part (Giwa). The vegetation consists of the tropical grassland known as Guinea Savannah to the Sudan Savannah in the North. Much of the woody shrubs in the northern parts of the State have been felled for wood fuel. Annual bush fires during the long dry season, have destroyed most of the grass straw traditionally used for roofing in the rural areas. In the south, there are good stands of hard tropical trees such as mahogany and raffia palm bushes. These are still being exploited for building construction.



Sample Size and Sampling Procedure

The study covered four (4) Local Government Areas (LGAs) of Kaduna State namely, Birnin Gwari, Giwa, Lere and Zangon Kataf LGAs. One (1) LGA area was sampled from each of the four (4) agricultural zones. Birnin Gwari, Maigana, Lere and Samaru zones. The sample design was multi-stage, one LGA was randomly sampled from each of the four (4) agricultural zones in the State making a total of four LGAs sampled for the study. The second stage is the listing of the *Fadama* II and *Fadama* III in the sampled LGAs where 5% of the beneficiary farmers were randomly selected from the total number of FCAs in each LGA. An equivalent number of non-*fadama* beneficiary farmers were equally sampled from the same communities as with the *fadama* beneficiary farmers.

Method of Data Collection

Data for the study were collected over a period of eight (8) months from August 2014 to April 2015. This cut across two seasons, the raining and dry season. Primary and secondary data were used for this research. Primary data were collected with the help of a questionnaire. The respondents were NFDP beneficiaries, members of the FUGs, and non NFDP beneficiaries.

Method of Data Analysis

Data collected were subjected to descriptive, regression model, gross margin analysis, and Foster Greer Theoecke (FGT) were employed in analysing the data. The multiple regression model employed is stated as:

$$A_i = \gamma_0 + \gamma_1 X_1 + \gamma_2 X_2 + \gamma_3 X_3 + \gamma_4 X_4 + \gamma_5 X_5 + \gamma_6 X_6 + \gamma_7 X_7 + \gamma_8 X_8 \quad \dots(1)$$

where;

A_i = The gross margin generated from the sale of harvest crops /ha

X_1 = Age (years)

X_2 = Gender (Dummy)

X_3 = Marital Status (Dummy)

X_4 = Household Size

X_5 = Dependency Ratio

X_6 = Level of Education (Dummy)

X_7 = Farming Experience (Years)

X_8 = Contact with Extension

X_9 = Farm Income (₦)

γ_0 = Constant term in the equation

$\gamma_1, \dots, \gamma_8$ = Coefficients of the independent variables

Following Olukosi and Erhabor (1988), therefore, the Gross Margin (GM) model used is as follows:

$$GM = GR - TVC \quad \dots (2)$$

where;

GM = Gross margin

GR = Gross revenue

TVC = Total Variable cost



According to Foster et al. (1984) and Osowole and Bamiduro (2013), the traditional poverty analytical approach which involves the setting of a poverty line, z , for classifying households into poor and non-poor is defined as

$$P_{\alpha} = \frac{1}{N} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^{\alpha} |(y_i \leq z) \quad \dots (3)$$

where;

z = poverty line,

y_i = per capita income for individual i

α = sensitivity of the index to poverty

q = number of individuals in the sample with income at or below z

N = sample size

$|(y_i \leq z)$ = indicator function

RESULTS AND DISCUSSION

Effects of Socio-economic Characteristics of Fadama Farmers on Income

Table 1 presents the income levels of the *fadama* and non-*fadama* participants or groups. The income was calculated as the gross margin (GM) /ha. The yield of the farmers was multiplied by the prevailing average price of the crop at the time of the data collection in the study area to get the revenue that was used in calculating the GM. Table 1 indicates that though non-*fadama* participants recorded the highest income per hectare, the *fadama* participants recorded the highest average income per hectare. This is in accordance with the findings of Oladunni and Aduba (2014).

The result in Table 1 shows that there is a significant change of 46% income ($P < 0.05$) between *fadama* and non-*fadama* participants. This represents an increase which was far above the target of 20% set by the project to achieve at the end of its life span (Agbarevo and Okwoche, 2014). According to Inam and Effiong (2017), the income of the *fadama* beneficiaries has increased tremendously as *fadama* beneficiaries had improvements in their income compared to non-*fadama* beneficiaries. Figure 1 shows that more than 88% of *fadama* male farmers earned ₦500,000 and above as compared to 58% of the non-*fadama* male farmers. Figure 1 also shows that 78% of the female *Fadama* farmers earned ₦500,000 and above compared to 26% of their non-*fadama* counterparts.

Table 1: Farm Income of Fadama and Non-Fadama Beneficiaries per Hectare

Variables	<i>Fadama</i> beneficiaries				<i>Non-fadama</i> beneficiaries			
	Male		Female		Male		Female	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Level of Income								
0-100,99,000	0	0.00	3	0.99	14	2.31	86	18.42
100,000-199,000	3	0.39	9	2.98	56	9.26	76	16.27
200,000-299,000	17	2.21	21	6.95	34	5.62	61	13.06
300,000-399,000	18	2.34	11	3.64	97	16.03	77	16.49
400,000-499,000	47	6.10	22	7.28	49	8.10	43	9.21
500,000-599,000	29	3.77	154	50.99	135	22.31	97	20.77
600,000-699,000	282	36.62	35	11.59	36	5.95	27	5.78
700,000-799,000	197	25.58	47	15.56	111	18.35	0	0.00
800,000-899,000	177	22.99	0	0.00	72	11.90	0	0.00
900,000-999,000	0	0.00	0	0.00	1	0.17	0	0.00
Number of Respondents	770	100	302	100	605	100	467	100
Maximum Gross Margin	885,000		735,000		923,153		667,311	
Minimum Gross Margin	135,000		63,750		45,631		36,722	
Mean Gross Margin	686,800		539,846		522,579		316,707	

Source: Author’s fieldwork (2015)

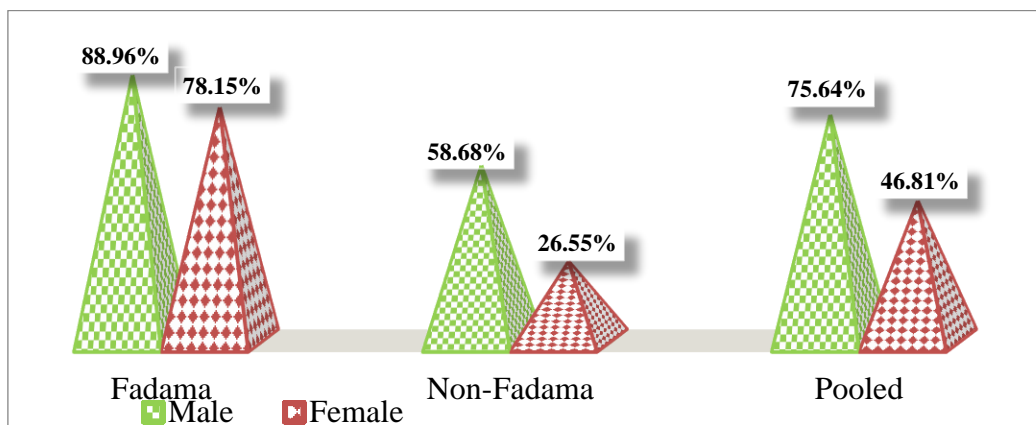


Figure1: Percentage distribution of farmers with income of ₦500,000 and above

Factors Influencing the Income of *Fadama* Beneficiaries

Table 2 shows the determinants factors influencing the income of the *fadama* beneficiaries by gender. The coefficient of multiple determination (R^2) explains how the explanatory variables have been able to explain the variation in the dependent variable. The value is 0.81, 0.89 and 0.86 for male, female and pool results, respectively, implying that 81%, 89% and 86% of the variation in the endogenous variable for the male, female and pooled

results is, respectively, explained by the exogenous variables included in the relevant models. In other words, 19%, 13% and 14% of the variation of the endogenous variables is explained by variables not included in the respective models. The F-test explains the general fitness of the regression model employed in the analysis and this is significant ($P < 0.01$). Table 2 showed that not all the variables included in the model were statistically significant ($P < 0.05$) for all the gender categories.

Age, gender and farming experience is directly and statistically ($P < 0.05$) related to income generated from crop cultivation. The household size is directly related to gross margin of farmers, however the GM of the female group a statistically significant ($P < 0.01$). The household dependency ratio had an inverse and statistically significant relationship with the gross income generated from crop cultivation. Education and extension contact had an inverse relationship with the GM of the farmers.

Table 2: Factors Influencing the Income of the Fadama Beneficiaries

Variable	Male		Female		Total	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Age (II ₁)	0.420** (0.205)	2.044	.320** (0.155)	2.060	0.310** (0.147)	2.105
Gender (II ₂)	NA	NA	NA	NA	1.253** (0.616)	2.034
Marital Status (II ₃)	0.416 (0.369)	1.126	0.201 (0.245)	0.820	0.304 (0.211)	1.445
Household Size (II ₄)	0.222 (0.352)	0.632	0.421* (0.114)	3.693	1.633** (0.621)	2.632
Dependency Ratio (II ₅)	-0.180* (0.0601)	-2.997	-0.290* (0.086)	-3.892	-0.180* (0.601)	2.997
Level of Education (II ₆)	-0.328* (0.113)	2.900	-0.278 (0.317)	-0.877	-1.183* (0.326)	-3.632
Farming Experience (II ₇)	0.343** (0.170)	2.022	0.324* (0.115)	2.829	0.454** (0.225)	2.022
Contact with Extension (II ₈)	-0.111 (1.485)	-1.044	-0.462* (0.144)	3.216	0.462* (0.144)	3.216
Constant	7.356** (3.356)	2.192	5.645** (2.030)	2.781	6.245** (2.245)	2.781
R-Squared	0.812		0.893		0.866	
F-test	3.986		4.451		4.243	

Note: ^aDependent Variable: Amount (Gross Margin) Derived from Crop Cultivation; values in parentheses are the standard errors; * $P < 0.01$; ** $P < 0.05$

Source: Author's fieldwork (2015)

Poverty Status of *Fadama* and *Non-fadama* Beneficiaries

The internationally acceptable poverty line as at 2016 is US \$1.90. However, when converted to the Naira taking into consideration the purchasing power parity (PPP), this value reduces to ₦151.1/day (World Bank, 2016). The poverty status of the farmers in Kaduna State was analysed based on the incidence of poverty, poverty gap and severity. Incidence of poverty prevailing among the crop farmers presented in Table 3 shows that the incidence of poverty (percentage of respondents below poverty line) ranged from 42.9% for the *Fadama* group to 71.3% for the *non-fadama* group. This means that on the average, 43% of the *fadama* beneficiaries and 71% of the *non-fadama* beneficiaries are generally living below the poverty



line of ₦151.1/day. Figure 2 clearly shows that when disaggregated by gender, the women are worse off. This is contrary to the findings of Olowa (2012) and Anyanwu (2013) who reported that the incidence of poverty in Nigeria is more pronounced among male-headed households than female-headed households.

The result however, conforms to KDBS (2017). Poverty in Kaduna State when compared to Nigeria as a whole which according to KDBS (2017) is above the national average. While the national average was placed at 56.6% in 2011, that of Kaduna State was placed at 61.8%. In the household study conducted by Kaduna State in 2017, the poverty level in the state was found to have deteriorated to 84.90%. By disaggregating the 2017. It was also realized that the female were 85.10% poor and their male counterpart, 84.90% poor; thereby indicating that poverty in Kaduna is experienced most frequently by female than male.

Table 3: Poverty Status of the Respondents

Status	Poverty head count index (%)			Poverty gap index			Poverty severity		
	Male	Female	Pool	Male	Female	Pool	Male	Female	Pool
Fadama Group	39.1	43	40.2	27.6	37.1	32.4	13.2	19.2	17.9
Non-fadama Group	62.3	78.4	69.3	48.8	53.2	51.0	32.3	39.9	35.6
Pooled	49.3	64.5	54.8	37.4	46.9	40.5	25.6	34.5	28.8
t-Statistics			2.847**			2.873**			1.639

Note: *Poverty line is assumed to be US \$1.90 /day (₦151.10); P<0.05

Source: Author’s fieldwork (2015)

Figure 2 shows that only 57% of female *fadama* beneficiaries and 21.6% of the female non-*fadama* beneficiaries live above the poverty line as against 60.9% and 37.7 of the male *fadama* and non-*fadama* beneficiaries, respectively. This therefore means that most of the respondents in the study are poor. This result reflects the weaker state of the economy in the north of the country. Nonetheless, Kaduna’s poverty rate may be somewhat lower than other states in the north. The state has lower poverty rates than all the other states in the northeast and northwest except Borno (NBS, 2011). This finding is in agreement with that of Oke and Adeyemo (2007) that persons working in agriculture constitute a higher proportion of the poor. The NBS (2012a) calculated the level of households living below the poverty line in Kaduna State to be 61.8%. The *Fadama* project was however, able to improve the poverty status of the beneficiaries particularly that of the women by more than 23% for men and 35% for women.

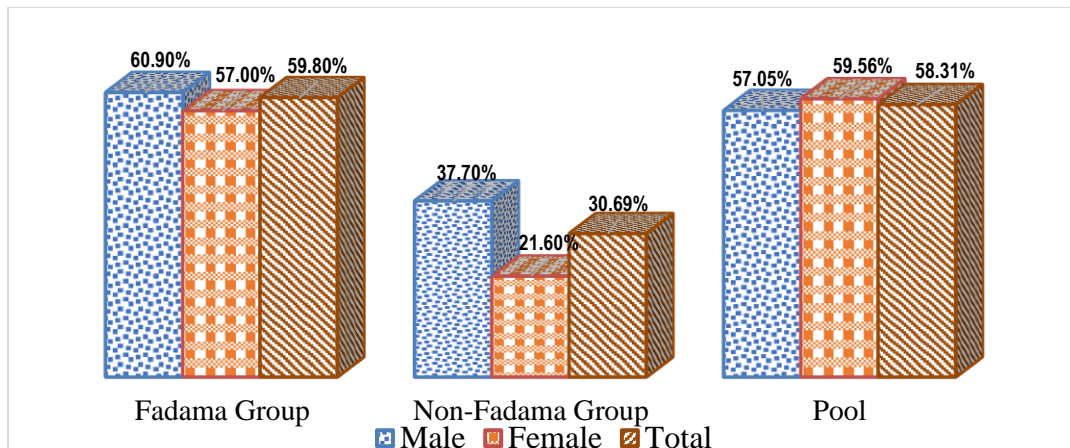


Figure 2: Percentage distribution of respondents above the poverty line

Poverty Gap Index in Kaduna State

The poverty gap index (PGI) is shown in Table 4 reveals a value of 32.37 for the *fadama* beneficiaries and 51.01 for the non-*fadama* beneficiaries. This implies that on average, the poor *fadama* beneficiaries have an expenditure shortfall of about 32% of the poverty line compared to 51% of the non-*fadama* beneficiaries

Table 4: Poverty Status of the Respondents

Status	Poverty head count index (%)			Poverty gap index			Poverty severity		
	Male	Female	Pool	Male	Female	Pool	Male	Female	Pool
Fadama Group	39.1	43	40.2	27.6	37.1	32.4	13.2	19.2	17.9
Non- <i>fadama</i> Group	62.3	78.4	69.3	48.8	53.2	51.0	32.3	39.9	35.6
Pooled	49.3	64.5	54.8	37.4	46.9	40.5	25.6	34.5	28.8
t-statistics			2.847**			2.873**			1.639

Note: *Poverty line is assumed to be US \$1.90/day (₦151.10); P<0.05

Source: Author’s fieldwork (2015)

Severity of Poverty among the Respondents in Kaduna State

Table 5 shows that the SPGI is higher with the non-*fadama* beneficiaries (36) than with the *fadama* beneficiaries (23) thus implying that the intensity of poverty is higher with the non-*fadama* beneficiaries than with the *fadama* beneficiaries. When disaggregated by gender, the intensity of poverty is higher among the female farmers than the male farmers. This findings is in consonance with the work of Akpan *et al.* (2016a) who reported that the depth (intensity) of poverty is more with the female than with the male farmers.

Figure 3 however, shows that the *fadama* projects was able to uplift the poverty status of the female *fadama* beneficiaries above the status of the male and female non-*fadama* beneficiaries. There is less incidence of poverty among the female *fadama* beneficiaries compared to the male non-*fadama* beneficiaries. The marginal effect of the *fadama* project on the poverty status of the beneficiaries is therefore very high. The difference in the incidence of poverty between the *fadama* beneficiaries and non-*fadama* beneficiaries is however, not statistically significant even at 10% level of significance. The implication of this is that, though the phases of *fadama* projects were able to lift a significant number of farmers as indicated by

the head count index in Table 5 out of poverty; the farmers were however, placed just at the threshold of the poverty line.

Table 5: Impact Assessment Result of *Fadama* on the Poverty Status (Headcount Index) of the Respondents

Details	Male		Female		Total	
	Beneficiary	Non-beneficiary	Beneficiary	Non-beneficiary	Beneficiary	Non-beneficiary
Mean	0.391	0.623	0.430	0.784	0.402	0.693
Variance	0.245	0.235	0.239	0.170	0.244	0.213
Observations	770	605	302	467	1072	1072
Hypothesized Mean Difference	0		0		0	
Degrees of Freedom	1309		564		2132	
t Statistic	7.266		11.566		13.289	
P(T<=t) one-tail	3.169 E-13		3.278 E-28		4.448 E-39	
t Critical one-tail	1.646		1.648		1.646	
P(T<=t) two-tail	6.338 E-13*		6.556 E-13*		8.897 E-39*	
t Critical two-tail	1.962		1.964		1.961	

Note: *significant at P<0.01

Source: Authors fieldwork (2015)

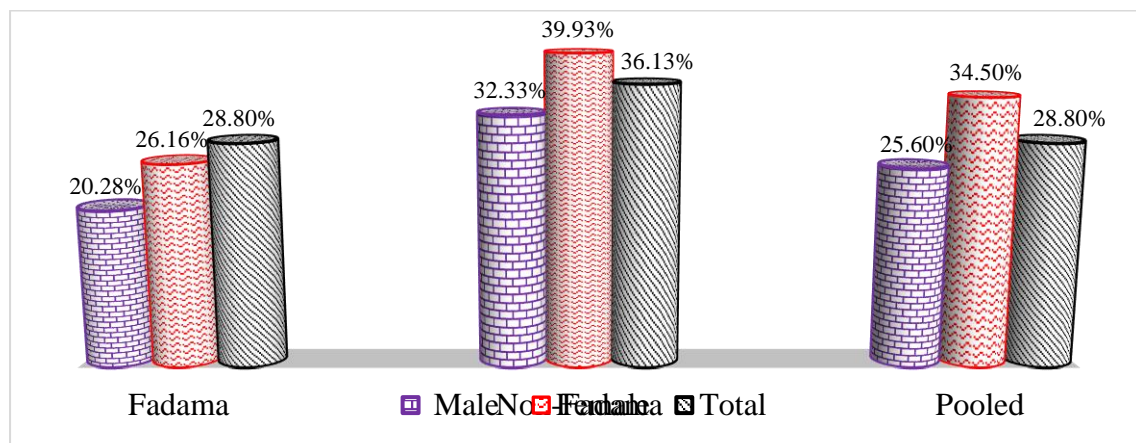


Figure 3: Squared poverty gap index of the farmers

Source: Author’s fieldwork (2015)

Impact of *Fadama* on the Poverty Status of the Respondents

The calculated poverty status indices of the respondents were used in the analysis to determining the impact of *fadama* II and III on the poverty status of the respondents. These calculated poverty indices are the poverty headcount ratio, poverty gap and poverty severity as indicated in Table 6. The result of the pool data for *fadama* and non-*fadama* project beneficiary groups in Table 6 showed that the *fadama* project beneficiaries have about 29% more respondents above the poverty line than the non-*Fadama* project beneficiaries and this difference is statistically significant (P<0.01).

The variation is also statistically significant (P<0.01) even when segregated according to gender. In fact, when segregated according to gender, *fadama* has been able to take more than 35% of the female and 23% of the male *fadama* beneficiary farmers above the



internationally accepted poverty line of ₦151.1 /day. It has been able to lift the poverty status of the beneficiaries up to the poverty line. It can then be argued that *fadama* project have a positive impact on the poverty status of the farmers. It has been able to alleviate the poverty of the beneficiaries when compared to those of the non-*fadama* beneficiaries. Many reasons accounted for the good performance of the *fadama* project so much that it was able to reduce the number of the poor beneficiary farmers. Chief among these is the ability of the *fadama* projects to increase the yield of the beneficiary farmers as well as enabling them to engage in prompt conduct of farm operations.

Table 6: Impact Assessment Result of *Fadama* on the Poverty Severity/Intensity (Squared Poverty Gap Index) of the Respondents

Details	Male		Female		Non-beneficiaries	Total Beneficiaries	Non-beneficiaries
	Beneficiaries	Non-beneficiaries	Beneficiaries	Non-beneficiaries			
Mean	0.1318	0.3233	0.1916	0.3913	0.1794	0.3564	
Variance	0.245	0.235	0.239	0.170	0.244	0.213	
Observations	770	605	302	467	1072	1072	
Degrees of freedom	1309		564		2132		
t-statistics	1.7814		1.6951		1.7133		
P(T<=t) one-tail	0.4285		0.4316		0.4480		
t-critical one-tail	1.6849		1.6839		1.6449		
P(T<=t) two-tail	0.8570		0.8460		0.8232		
t Critical two-tail	1.962		1.964		1.961		

Source: Authors fieldwork (2015)

In other words, the *fadama* beneficiaries can be said to be not too poor but not too rich. It failed to reduce the severity of poverty among the beneficiaries. It was only able to save the marginal poor and not the extreme poor. In other words, *fadama* was able to lift those who were closest to the poverty line out of poverty but the extreme poor (those farthest away from the poverty line) were still left as poor (since they were still below the poverty line), improvement in their income notwithstanding. It failed to reduce the inequality (gap) in the wealth status among beneficiaries.

According to the World Poverty Clock, created by Vienna-based World Data Lab, 91.16 million Nigerians were living below a dollar a day as on February 13, 2019. In June 2018, the Brookings Institution projected that Nigeria (Kharas *et al.*, 2018; and Anonymous, 2019, Vanguard). This was further confirmed by Theresa May, the British Prime Minister, who said “Much of Nigeria is thriving, with many individuals enjoying the fruits of a resurgent economy, yet 87 million Nigerians live below \$1 and 90 cents a day, making it home to more very poor people than any other nation in the world,” (Anonymous, 2019, Vanguard).



According to the Anonymous (2018), the outlook for poverty alleviation in Nigeria is weak: extreme/severe poverty in the country is increasing by nearly six (6) people every minute. If the trend persists, it is expected that this poverty “escape rate” will improve modestly over the next decade, to approximately 3 people every minute. By 2030, it is estimated that the percentage of Nigeria’s population living in extreme /severe poverty will increase from 44.2% to 45.5%, representing a total of some 120 million people living under \$1.90 per day.

CONCLUSION AND RECOMMENDATIONS

Fadama project had significant impact on the income and poverty level of the project beneficiary farmers. It was able to increase the income of the *fadama* farmers up to the level of bringing them and their households to the poverty line threshold. This therefore, means that *fadama* and any other NGO can only bring about the desired reduction in the poverty status of the farmers by embarking on programmes that will enhance the productivity of the farmers. Such programmes include yield enhancing crop varieties, livestock breeds and farming practices backed by easy access to market. Based on the findings of the study, the following recommendations were made:

1. For sustainability, farmers should be included as the drivers of the solution for their problems with the government and private sector as collaborators.
2. There is the need for the FGN to invest more in agricultural programmes like the *fadama* that has the capacity of reducing the poverty status of over 70% of the Nigerian population.

REFERENCES

- Agbarevo, M. N. B. and Okwoche, A. V. (2014). Evaluation of the Effect of the Third National Fadama Development Project (Fadama III) on Food Production among Farmers in Kwande Local Government Area of Benue State, Nigeria. *European Journal of Agriculture and Forestry Research*, 2(2): 27-32.
- Agenor, P. R., Izquierdo A. and Fofack, H. (2004). *A Quantitative Macroeconomic Framework for the Analysis of Poverty Reduction Strategies*. The World Bank, Washington D.C.
- Akpan, S. B., Patrick, I. V. and Amama, A. (2016a). Level of Income Inequality and Determinants of Poverty Incidence among Youth Farmers in Akwa Ibom State, Nigeria. *Journal of Sustainable Development*, 9(5): 162-174.
- Anonymous (2018). *The Percentage of Nigerians Living in Extreme Poverty Could Increase by 2030*. World Poverty Clock-World Data Lab.
- Anyebe, A. A. and Mudi, I. K. (2015). A Reflection on the Implementation of Second National Fadama Development Project in Kaduna and Katsina States of Nigeria. *Business and Management Studies*, 1(2): 97-108.
- Bature, Y. M., Sanni, A. A. and Adebayo, F. O. (2013). Analysis of Impact of National Fadama Development Projects on Beneficiaries Income and Wealth in FCT, Nigeria *Journal of Economics and Sustainable Development*, 4(17): 11-23.
- Folorunsho, S. T. (2016). *Impact of Fadama III on Productivity, Food Security and Poverty Status of Tuber Farmers in Central States of Nigeria*. Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University, Zaria. An Unpublished PhD Thesis.
- Foster, J., Greer, J. and Thorbecke, E. (1984): A class of Decomposable Poverty Measures. *Econometrica*, 52: 761-766.
- Inam, U. S. and Effiong, E. A. (2017). *Fadama III Project and Output Performance of Agricultural Enterprises: An Empirical Evaluation*. *Archives of Business Research*, 5(8): 160-169.



- Iwala, O. S. (2014). Economic impact, viability and sustainability of Fadama III small-scale Community-owned infrastructure in Ondo State, Nigeria. *American Journal of Research Communication*, 2(5): 60-70.
- KDBS (2017). *Kaduna State Bureau of Statistics (KDBS)*. In: Kaduna State Sustainable Development Goals Report 2017. Kaduna State Planning and Budget Commission. State Secretariat Complex, Independence Way, Kaduna, Nigeria.
- Khan, M. H. (2000). *Rural Poverty in Developing Countries*. Finance and Development, December 2000. Washington: IMF.
- Kharas, H., Hamel, K. and Hofer, M. (2018). *The Start of a New Poverty Narrative*. Brookings.
- Moses, J. D. (2017). The Impact of *Fadama III* on the Poverty Status of Food Crop Farmers in Yobe State, Nigeria. *Sky Journal of Agricultural Research*. 6(4): 78-84
- NBS (2010). *The Review of the Nigerian Economy*. National Bureau of Statistics (NBS). Central Business District, Abuja.
- NBS (2012). *Nigeria Poverty Profile 2010*. Federal Republic of Nigeria. National Bureau of Statistics (NBS). Abuja, Nigeria.
- NBS (2018). *Nigerian Gross Domestic Product Report (Q4 and Full Year 2017)*. National Bureau of Statistics (NBS). Abuja. February, 2018
- Oke, J. T. O. and Adeyemo, R. (2007). Impact of Non-Governmental Organizations (NGOs) on Rural Poverty Alleviation in Southwestern Nigeria. *International Journal of Applied Agriculture and Apicultural Research*, 4(1&2): 1-13.
- Oladunni, O. A. and Aduba, J. J. (2014). Household Income Generation, Progression and Sustainability under *Fadama III* Implementation. *Research Journal of Agriculture and Environment Management*, 3(8): 406-416.
- Olowa, O. W. (2012). Concept, Measurement and Causes of Poverty: Nigeria in Perspective. *American Journal of Economics*, 2(1): 25-36.
- Olukosi, J. O. and Erhabor, P. O. (1988). *Introduction to Farm Management Economics: Principles and Applications*. Agitab Publishers, Zaria, Nigeria. Pp.114.
- Osowole, O. I and Bamiduro, T. A. (2013). On the Derivation of Estimators of Foster-Greer Thorbecke (FGT) Poverty Indices. *CBN Journal of Applied Statistics*, 4(1): 1-13.
- Raufu, M. O. and Masuku, M. B. (2013). The Effect of National *Fadama* Development Project II on Poverty Alleviation of Rural Farming Household in Surulere Local Government of Oyo State, Nigeria. *Applied Science Report*, 4(2): 198-202.
- Udo, R. K. (1970). *Geographical Regions of Nigeria*. Heinemann Educational Books, London.
- UNDP (2016). *Human Development Report 2016*. Human Development for Everyone. United Nations Development Programme (UNDP). UN Plaza, New York, NY. Printed in Canada, by the Lowe-Martin Group.
- World Bank (2011). *Annual Report 2011: Year in Review*. Washington, D. C. World Bank. <https://openknowledge.worldbank.org/handle/10986/2378>.
- Wright, J. B. and McCurry, P. (1970). *Geology: The Geological Map of the Zaria Area*. In: Zaria and its Region, Mortimore, M. J. (Ed.). Ahmadu Bello University, Department of Geography, Zaria, Pp. 5-12.