

SOCIOECONOMIC DETERMINANTS AND LIVELIHOOD SUSTAINABILITY: AN IMPACT ASSESSMENT OF THE FADAMA III ADDITIONAL FINANCING PROJECT (F3AFP) IN AKURE NORTH LGA, ONDO STATE, NIGERIA

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ABSTRACT

This study examined the impact of the Fadama III Additional Finance Project (F3AFP) on the sustainability of livelihoods and agricultural development in the Akure North Local Government Area, Ondo State, Nigeria. Using a survey research design, 220 cassava farmers were selected through a multistage sampling process, with data collected via structured questionnaires using a 5-point Likert scale. The research employed descriptive statistics, the relative importance index (RII), paired sample t-tests, and multiple regression analysis. The results revealed contrasting outcomes across different metrics. While the project had positive effects on agricultural productivity, with increases in crop output (0.35 tons), farm size (1.09 ha), and input supplies (N780), its impact on livelihood sustainability was less favourable. Household indicators showed notable decreases in feeding (-0.82), children's education (-0.82), the electricity supply (-1.13), healthcare services (-1.08), and the water supply (-1.04). Labour source emerged as the predominant socioeconomic factor (mean = 3.90) influencing project participation, whereas cooperative duration was the least influential (mean = 2.89). Multiple regression analysis indicated that, at the 95% confidence level, asset acquisition ($\beta = 0.253$) and advisory services ($\beta = 0.174$) had minimal effects on environmental sustainability, although the project's overall impact on productivity was significant ($p = 0.014$). The study concludes that F3AFPs make partial contributions to beneficiaries' development, highlighting the need for comprehensive needs assessments, infrastructure investments, timely fund releases, and enhanced farmer awareness to ensure sustainable outcomes and food security.

Keywords: Fadama III additional finance project, Livelihood sustainability, Agricultural development, Impact assessment, Cassava farmers

INTRODUCTION

Agriculture serves as the cornerstone of development, economic expansion, and poverty alleviation in emerging economies, particularly in Nigeria, where it plays a vital role in social and economic advancement. A significant portion of the population depends on farming for their livelihoods, with more than 70% of the rural population primarily engaging in agriculture as their main occupation (Osabohien *et al.*, 2019). The Federal Ministry of Agriculture and Rural Development in Nigeria (FMARD, 2010) reported that crop farming is the predominant agricultural activity, accounting for approximately 85% of the agricultural gross domestic product (GDP).

Despite being Africa's largest economy, Nigeria faces significant agricultural challenges, with approximately two-thirds of its population living below the national poverty line according to the Agricultural Extension Transformation Agenda (AETA, 2013). The sector is characterized by small-scale farming, insufficient financial support, low yields, and limited earnings (Osondu *et al.*, 2014). The rural community particularly struggles with underprivileged socioeconomic status and substandard living conditions, including inadequate sanitation facilities, restricted healthcare accessibility, dependence on basic agricultural equipment, low earnings, and often a lack of formal education (Muhammad *et al.*, 2011).

To address these challenges, the Fadama III Additional Financing Project was established. "Fadama," derived from the Hausa language, refers to periodically inundated regions used for cultivation in dry months, known as "Akuro" in Yoruba and "Ani-Nmiri" in the Ibo dialect (Oyeniyi, 2019). Recent studies have evaluated the effectiveness of projects across regions. Ovharhe (2020) examined efficiency differentials in Fadama III program areas, whereas Adeomi (2023) evaluated the project in the Niger Delta region. Badewa and Dinbabo (2022) assessed the effects of livelihood diversification on poverty levels in rural farming households. Kolo and Sani (2019) observed the ameliorative impact of a project on the livelihood dynamics of local farmers in Gombe State.

Additional research by Thavarasasingam and Balagobei (2020) on the Samurdhi Program in Sri Lanka and Amadi *et al.* (2019) on the National Fadama III Development Project in Rivers State, Nigeria, has contributed to understanding the effects of agricultural development interventions on the sustainability of livelihoods. Most recently, Ogunjobi *et al.* (2024) reported that the Fadama III AF project had mixed effects on sustainable agricultural development in Akure, enhancing productivity but providing limited benefits in terms of environmental sustainability and comprehensive livelihood enhancement.

The central objective of establishing Fadama in Nigeria was to foster collaboration between smallholder and commercial farmers in partnership with the Federal Government of Nigeria, aiming to increase earnings and productivity efficiency and ensure an adequate domestic food supply while maintaining an export surplus (Williams, 2015). However, Moguluwa *et al.* (2021) noted that while agriculture contributes significantly to foreign earnings through the export of surplus products, there remains a need to evaluate the specific impact of such interventions on the sustainability of beneficiaries' livelihoods, particularly in regions such as Akure, Ondo State.

METHODOLOGY

Research Design and Study Area

This study employed a survey research design to systematically describe and assess the impact of the Fadama III Additional Finance Project (F3AFP) in the Akure North Local Government Area, located within Ondo State's Central Senatorial District in Nigeria. The survey design was selected for its ability to collect representative data that could be generalized to the larger population. The Akure North LGA was purposively chosen because of its significant involvement in F3AFP activities and engagement with Fadama farming.

Study Population and Sampling

The study population comprised 485 crop farmers who were beneficiaries of the F3AFP in Akure North, Ondo State. According to the State Fadama Coordinating Office (SFCO, 2019), in Ondo State, the Fadama III AF intervention specifically targeted cassava and rice farmers. The sample size was determined via Yamane's formula (Uzoagulu, 2011):

$$n = \frac{N}{(1+N(e)^2)}$$

Eqn. 1

where n represents the sample size, N equals 485 (total beneficiaries), equals 0.05 (significance level), and 1 is a constant. The calculation yielded 219 participants, which were rounded to 220 participants.

A multistage sampling technique was implemented

1. First stage: Purposive selection of five production clusters
2. Second stage: Selection of twenty-two production groups and purposive selection of cassava crop farmers
3. Third stage: Random sampling of 10 farmers from each production group

The distribution across production clusters was as follows: Iju (70 farmers), Isanlu (30 farmers), Toluwa (60 farmers), Obatedo (30 farmers), and Isinigbo (30 farmers), totalling 220 participants.

Data collection and instrument validation

Data collection utilized a structured questionnaire that was self-administered to selected cassava crop farmers. The questionnaire consisted of closed-ended questions and employed a 5-point Likert scale (5 = very high to 1 = very low). The instrument's reliability was assessed via Cronbach's alpha coefficient through SPSS to measure internal consistency and scale homogeneity (Ferketich, 1991). Field checks were conducted to identify and rectify inconsistencies.

Calculating/Estimating Mean Scores

Data Collection via Likert-Scale Survey:

A structured questionnaire was administered to the valid respondents to assess the influence of socioeconomic factors on participation in the Fadama III AF project. Each respondent rated the influence of eight socioeconomic factors (Source of Labor, Gender, Household Size, Income Level, Age, Farm Size, Education Level, Cooperative Membership Duration) using a 5-point Likert scale, where:

1 = No Influence; 2 = Low Influence; 3 = Moderate Influence; 4 = High Influence; 5 = Very High Influence. This scale assigns numerical values to qualitative perceptions, enabling quantitative analysis.

Data Compilation:

Responses for each factor were collected and recorded for all 207 respondents. For each socioeconomic factor, the frequency of responses (i.e., the number of respondents who selected 1, 2, 3, 4, or 5) was tallied.

Mean Score Calculation:

The mean score for each socioeconomic factor was calculated using the formula for the arithmetic mean:

$$\text{Mean score} = \sum \left(\frac{x_i + f_i}{N} \right) \quad \text{Eqn. 2}$$

Where:

x_i = The Likert scale value (1, 2, 3, 4, or 5).

f_i : The frequency of respondents selecting x_i for the factor.

N : The total number of respondents ($N = 207$)

Decision Criteria for Interpretation

The interpretation of mean scores as "High Influence," "Moderate Influence," or "Low Influence" was based on predefined thresholds applied to the 5-point Likert scale. The decision criteria are as follows:

High Influence (Mean Score ≥ 3.70):

Mean scores of 3.70 or higher indicate that, on average, respondents rated the factor's influence as approaching or exceeding "High Influence" (4 on the Likert scale).

This threshold captures factors perceived as having a strong impact on participation.

Applied to: Source of Labor (3.95), Gender (3.88), Household Size (3.86), Income Level (3.71).

Moderate Influence (Mean Score 3.00 to 3.69):

Mean scores between 3.00 and 3.69 suggest an average rating around "Moderate Influence" (3 on the Likert scale), indicating a notable but not dominant effect on participation.

Applied to: Age (3.47), Farm Size (3.43), Education Level (3.29).

Low Influence (Mean Score < 3.00): Mean scores below 3.00 imply that the factor's influence was rated closer to "Low Influence" (2) or "No Influence" (1), suggesting minimal impact on participation. Applied to: Cooperative Membership Duration (2.89).

Rationale for Thresholds

The thresholds (3.70 for High, 3.00–3.69 for Moderate, <3.00 for Low) are derived from standard practice in Likert-scale analysis, where the scale's midpoint (3.00) represents a neutral or moderate effect. A threshold of 3.70 for High Influence ensures that only factors with responses skewed toward "High" or "Very High" qualify, while scores below 3.00 indicate responses leaning toward "Low" or "No Influence."

These cutoffs align with the distribution of mean scores, which range from 2.89 to 3.95, and provide clear differentiation between influence levels.

ETA Squared (η^2) Calculation:

Definition: ETA Squared (η^2) measures the effect size, representing the proportion of variance in the dependent variable (productivity indicator) explained by the intervention (pre vs. post).

Formula for ETA Squared in a Paired t-test:

$$\eta^2 = \frac{t^2}{t^2 + (N - 1)}$$

Eqn. 3

Where:

(t): The t-statistic from the paired t-test.

(N): Sample size (207).

Data analysis

The Statistical Package for Social Sciences (SPSS) version 25 was employed for data analysis, addressing missing data, assessing normality and linearity, and conducting descriptive analyses.

Two primary models were developed:

1. Livelihood impact model:

$$LIV = \beta_0 + \beta_1HF + \beta_2T + \beta_3EC + \beta_4HC + \beta_5JO + \beta_6WS + \beta_7EL + \beta_8AO + e_2$$

Eqn. 4

where LIV represents livelihood, and the variables include household feeding (HF), transportation (T), education for children (EC), healthcare (HC), job opportunity (JO), water supply (WS), electricity (EL), and assets owned (AO).

2. Productivity impact model:

$$PD = \beta_0 + \beta_1OUT + \beta_2IN + \beta_3FS + e_1$$

Eqn. 5

where PD represents productivity, OUT represents output, IN represents input, and FS represents farm size.

Hypothesis Testing

Two null hypotheses were tested:

1. H_0^1 : F3AFFs have no significant effect on beneficiaries' productivity.

2. H_0^2 : F3AFP does not affect beneficiaries' livelihoods.

For both hypotheses, if coefficients (β) ≥ 0 and $P \leq 0.05$, the null hypothesis would be rejected, indicating significant project effects. The analysis employed descriptive statistics, frequency distributions, means, the relative importance index (RII), and multiple linear regression to comprehensively evaluate the project's impact on both productivity and livelihood sustainability.

RESULTS AND DISCUSSION

Response rates and demographic characteristics of the respondents

Out of 230 questionnaires distributed to cassava farmers benefiting from the Fadama III AF project in Akure North, 217 were retrieved, and 207 were duly completed, yielding an 82.8% valid response rate, which is significant for analysis (Moser and Kalton, 1971). The demographic analysis revealed that 71.5% of the respondents were male, reinforcing the dominance of men in agriculture. The most active age group was 41–50 years (38.2%), whereas only 3.4% were between 21 and 30 years, indicating limited youth involvement. Most respondents were married (79.7%), implying reliance on family labour, as supported by Ogunjobi *et al.* (2024). In terms of educational level, 48.8% of the participants held secondary school certificates, ting adequate literacy for agricultural advancements. Farming experience exceeding 20 years was reported by 38% of the respondents, affirming their agricultural expertise. Farm sizes were predominantly between 1 and 2 ha (68.6%), and cooperative participation spanned 10–20 years for 52.7% of the respondents. Income levels largely fell between ₦200,000 and ₦400,000 (75.4%), underscoring the project's financial impact.

Additionally, Table 1 shows an average age of 45.4 years, indicating that the farmers are middle-aged and have significant experience. The farming experience reflects nearly two decades of expertise. A mean farm size of 2.1 hectares suggests smallholder agriculture. A 14.0-year cooperative membership highlights long-term community involvement, and an average annual income of ₦280,300 points to modest earnings typical of small-scale farming. These figures portray experienced farmers with strong cooperative ties but limited farm size and income.

Respondents' Perception of Socioeconomic Factors Influencing Participation

Descriptive analysis identified key factors influencing participation in the Fadama III AF project. The highest-ranked factors were the source of labour ($M = 3.95$), followed by gender ($M = 3.88$), household size ($M = 3.86$), and income level ($M = 3.71$). Gender differences revealed male dominance in participation, aligning with Musa's (2011) findings, which reported that men lead farm production, while women manage domestic responsibilities. Household size was significant, as larger families provided labor support, ensuring sustained agricultural productivity (Gambo *et al.*, 2016). Age ($M = 3.47$), farm size ($M = 3.43$), and education level ($M = 3.29$) were also substantial influencers, indicating that farmers' maturity, landholding size, and literacy levels impacted their involvement. Cooperative membership duration ($M = 2.89$) had the least influence, indicating that long-term affiliation with cooperatives was not a primary determinant of participation.

Table 1: Response rates and demographic characteristics of Fadama III AF project beneficiaries in Akure North (N=207)

Characteristics	Frequency	Percentage (%)
Questionnaire Response		
Distributed	230	100.0
Retrieved	217	94.3
Valid for Analysis	207	82.8
Gender		
Male	148	71.5
Female	59	28.5
Age (Years)		
21-30	7	3.4
31-40	55	26.6
41-50	79	38.2
Above 50	66	31.8
Mean: 45.4 years		
Marital Status		
Married	165	79.7
Single/Others	42	20.3
Educational Level		
Secondary School	101	48.8
Others	106	51.2
Farming Experience (Years)		
≤ 20	128	62.0
> 20	79	38.0
Mean: 18.1 years		
Farm Size (Hectares)		
1-2	142	68.6
> 2	65	31.4
Mean: 2.1 hectares		
Cooperative Membership (Years)		
10-20	109	52.7
Others	98	47.3
Mean: 14.0 years		
Annual Income (₦)		
200,000-400,000	156	75.4
Others	51	24.6
Mean: 280,300 ₦		

Source: Field Survey, 2024

Table 2: Ranking of socioeconomic factors influencing farmer participation in the Fadama III AF project

Rank	Socioeconomic Factor	Mean Score	Interpretation
1	Source of Labor	3.95	High Influence
2	Gender	3.88	High Influence
3	Household Size	3.86	High Influence
4	Income Level	3.71	High Influence
5	Age	3.47	Moderate Influence
6	Farm Size	3.43	Moderate Influence
7	Education Level	3.29	Moderate Influence
8	Cooperative Membership Duration	2.89	Low Influence

Mean score interpretation: > 3.50 = high influence; 3.00--3.49 = moderate influence; < 3.00 = low influence. (Source: Field Survey, 2024)

Effect of the Fadama III AF Project on Farmers' Productivity

A paired-sample t-test was used to assess the project's impact on productivity, comparing outcomes from the pre-intervention period (2017–2019) with those from the post-intervention period (2020–2022). The results revealed a significant increase in output (M=1.39 to M=1.73; $p=0.000$), farm size (M=1.57 to M=2.65; $p=0.000$), and input availability (M=1.04 to M=1.83; $p=0.000$). Eta squared values (>0.14) confirmed a large intervention effect. These findings align with those of Idris and Jabo (2021) and Isah and Muhammad (2017), who reported significant yield improvements among Fadama III AF beneficiaries. Expanded farm sizes indicate better land acquisition, ensuring agricultural sustainability. Financial intermediation theory supports this, as the project facilitated access to credit, enabling farmers to increase their productivity. The illustration in **Table 3** clearly demonstrates the positive impact of the Fadama III AF Project across all three key productivity indicators, with statistically significant improvements in output, farm size, and input availability. The large eta squared values (>0.14) provide strong evidence of the project's substantial effect on agricultural productivity during the study period.

Table 3: Comparative Analysis of Farmers' Productivity Before and After Fadama III AF Project Implementation

Productivity Indicator	Pre-Intervention (2017-2019)	Post-Intervention (2020-2022)	Mean Difference	P value	ETA Squared	Statistical Significance
Output (tons)	1.39	1.73	+0.34	0.000*	>0.14	Highly Significant
Farm Size (hectares)	1.57	2.65	+1.08	0.000*	>0.14	Highly Significant
Input Availability (scale)	1.04	1.83	+0.79	0.000*	>0.14	Highly Significant

Significant at the $p < 0.05$ level. Eta squared values >0.14 indicate a large effect size of the intervention. Input availability was measured on a standardized scale. Analysis conducted via paired sample t-test. Source: Field Survey, 2024.

Effect of the Fadama III AF Project on Farmers' Livelihoods

Livelihood dimensions were evaluated via a paired sample t-test, which compared pre- and post-intervention social and infrastructural benefits. A statistically significant decline was observed in household feeding (M=3.13 to M=2.30; p=0.000), transportation (M=3.00 to M=2.39; p=0.000), education (M=2.70 to M=1.87; p=0.000), healthcare (M=2.13 to M=1.04; p=0.000), job opportunities (M=1.96 to M=1.09; p=0.000), water supply (M=2.09 to M=1.04; p=0.000), and electricity access (M=2.17 to M=1.04; p=0.000). These declines highlight infrastructure deficits, limiting the project's contribution to sustainable livelihoods. Sanusi and Gado (2021) corroborate this, noting that Fadama III failed to increase household assets and access to social services, in contrast to Adesiji *et al.* (2015), who reported significant improvements in educational and employment outcomes among beneficiaries.

Table 4: The impact of the Fadama III AF Project on Farmers' livelihoods
Productivity and Livelihood Model Analysis

Livelihood Dimension	Pre-Intervention (M)	Post-Intervention (M)	p value
Household Feeding	3.13	2.30	0.000
Transportation	3.00	2.39	0.000
Education	2.70	1.87	0.000
Healthcare	2.13	1.04	0.000
Job Opportunities	1.96	1.09	0.000
Water Supply	2.09	1.04	0.000
Electricity Access	2.17	1.04	0.000

Regression analysis was used to assess the impact of the Fadama III AF project on sustainable agricultural development. Capacity building had a significant influence on productivity ($\beta = 0.382$; $p = 0.011$), reflecting the role of training in fertilizer application, improved seed usage, and enhanced market access. However, input support ($\beta = 0.048$; $p = 0.741$) and community-owned infrastructure ($\beta = -0.169$; $p = 0.227$) were insignificant, indicating poor access to essential farm inputs and infrastructure, as supported by Ogunjobi *et al.* (2024). The ANOVA model for productivity yielded a significant F-value ($p = 0.014$), confirming the project's positive impact. However, the livelihood model had an insignificant effect ($p = 0.597$), indicating that the project did not substantially improve the living conditions of the beneficiaries.

Table 5: Productivity and livelihood model analysis of the Fadama III AF project

Feature	Coefficient (β)	Std. Error	p value	Significance	Interpretation
Productivity Model					
Capacity Building	0.382	0.147	0.011	Significant	Farmers benefited from training in fertilizer use, improved seedlings, and market information.
Input Support	0.048	0.145	0.741	Insignificant	The project's input support did not significantly enhance productivity due to quality and quantity limitations.
Community- Owned Infrastructure	-0.169	0.140	0.227	Insignificant	Inadequate access roads, drainage, and water facilities limited productivity impact.
ANOVA (F value)	N/A	—	0.014	Significant	The overall productivity model confirms a positive effect of Fadama III AF on agricultural productivity.
Livelihood Model					
Overall Effect (on Livelihood)	N/A	—	0.597	Insignificant	The project did not significantly improve beneficiaries' living conditions, indicating limited livelihood benefits.

The impact of Livelihood and Productivity Model Outcomes for the Fadama III AF Project

The Fadama III AF project yielded contrasting outcomes in its impact on farmers' livelihoods and productivity in Akure North. The Livelihood Impact Model revealed a significant decline in all dimensions—household feeding, transportation, education, healthcare, job opportunities, water supply, electricity access, and assets owned ($p=0.000$)—with an insignificant overall effect ($p=0.597$), indicating the project failed to enhance living conditions, likely due to inadequate social and infrastructural support, as noted by Sanusi and Gado (2021). Conversely, the Productivity Impact Model demonstrated significant improvements in output (+0.34 tons), farm size (+1.08 hectares), and input availability (+0.79 scale points) ($p=0.000$, eta squared >0.14), driven by effective capacity building ($\beta=0.382$, $p=0.011$), though input support and infrastructure were insignificant ($p>0.05$). The significant ANOVA result ($p = 0.014$) confirms the project's positive impact on agricultural productivity, aligning with Idris and Jabo (2021). These findings highlight the project's success in boosting productivity but underscore the need for enhanced infrastructure and social services to achieve sustainable improvements in livelihoods.

Table 6: Livelihood and Productivity Impact Model Outcomes for the Fadama III AF Project

Model	Key Indicators/Variables	Statistical Results	Significance
Livelihood Impact Model	Household Feeding, Transportation, Education, Healthcare, Job Opportunities, Water Supply, Electricity Access, Assets Owned Overall Effect	Pre- vs. Post-Intervention: Significant decline in all dimensions (e.g., Household Feeding: M=3.13 to 2.30; p=0.000) No significant improvement in living conditions	Insignificant (p=0.597)
Productivity Impact Model	Output (tons), Farm Size (hectares), Input Availability (scale) Regression Variables: Capacity Building, Input Support, Community-Owned Infrastructure	Pre- vs. Post-Intervention: Significant increase (Output: M=1.39 to 1.73, +0.34, p=0.000; Farm Size: M=1.57 to 2.65, +1.08, p=0.000; Input Availability: M=1.04 to 1.83, +0.79, p=0.000; eta squared >0.14) Capacity Building: $\beta=0.382$, p=0.011 (Significant); Input Support: $\beta=0.048$, p=0.741 (Insignificant); Community-Owned Infrastructure: $\beta=-0.169$, p=0.227 (Insignificant)	Highly Significant Significant (ANOVA p=0.014)

Source: Field Survey, 2024

Note: Livelihood dimensions measured on a standardized scale; productivity indicators assessed via paired-sample t-tests; regression analysis used for productivity model; $p < 0.05$ indicates significance; eta squared >0.14 denotes large effect size.

Hypothesis Testing

The hypothesis that the Fadama III AF project has no effect on farmers' productivity was rejected, as statistical evidence confirmed its positive impact. Conversely, the hypothesis stating that the project does not significantly influence beneficiaries' livelihoods was retained, signifying infrastructural shortcomings. While the project increased agricultural output and facilitated farm expansion, it failed to provide essential social amenities, thereby limiting its overall developmental impact.

Conclusion

The study concluded that while the Fadama III Additional Financing (F3AFP) project aimed to support beneficiaries, its impact on their livelihoods was limited. Although there was a reported increase in cassava farmer yields, key socioeconomic factors such as labour source, gender, household size, and income level influenced participation. However, statistical analysis revealed a decline in various livelihood indicators, including household welfare, infrastructure, and essential services, suggesting that the project did not deliver the expected social and economic benefits.

Recommendations

- i. Involve farmers in planning and implementation to ensure their needs and insights shape project design and execution.
- ii. Raise awareness in underserved areas to increase participation and equitable access to project benefits.
- iii. Invest in critical infrastructure, such as roads, electricity, and water supplies, to address foundational barriers to productivity.
- iv. Strengthen stakeholder collaboration to align efforts and resources for greater project efficiency and impact.
- v. Conduct regular impact assessments to monitor progress and ensure sustainable improvements in beneficiaries' livelihoods.
- vi. Strengthen financial access to support sustainable investments that promote long-term agricultural and economic growth.
- vii. Improve social services to complement economic gains, fostering holistic rural development and enhancing overall well-being.

REFERENCES

Adesiji, G. B., Falola, A., & Abikoye, O. G. (2015). Effect of agricultural programmes on the livelihood of the vulnerable group: A case study of the Fadama III programme in Kwara State, Nigeria. *Journal of Agricultural Extension and Rural Development*, 7(9), 273-280.

Agricultural Extension Transformation Agenda (AETA), (2013). Draft report. Federal Ministry of Agriculture.

Amadi, C., Nyanwanyu, H., Amadi, N., & Nkoro, E. (2019). Evaluation of National Fadama III Development Project. *Bussecon Review of Social Sciences*, 1(1), 24–41. <https://doi.org/10.36096/brss.v1i1.93>

Badewa, A., & Dinbabo, M. (2022). Multisectoral intervention on food security in complex emergencies: A discourse on regional resilience praxis in Northeast Nigeria. *GeoJournal*, 88(2), 1231–1250. <https://doi.org/10.1007/s10708-022-10679-4>

Federal Ministry of Agriculture and Rural Development. (2010). Updated national food security programme (2010–2020). FMARD.

Ferketich, S. (1991). Focus on psychometrics: Aspects of item analysis. *Research in Nursing & Health*, 14(2), 165–168. <https://doi.org/10.1002/nur.4770140211>

Gambo, D., Zahran, B. B. H., & Sidahmed, M. B. B. A. (2016). Socioeconomic factors influencing the participation of the marginalized and vulnerable farmers in the IFAD–Community Based Agriculture and Rural Development Programme in Katsina State, Nigeria. *Journal of Resource Development and Management*, 24, 50–57.

Idris, I. A., & Jabo, M. S. M. (2021). Impact of Fadama III Additional Financing (AF) on the yield and income of beneficiaries in some selected LGAs of Sokoto State, Nigeria. *Journal of Agricultural Extension and Rural Development*, 13(1), 44–50.

<https://doi.org/10.5897/JAERD2020.1203>

Kolo, A., & Sani, R. (2019). Impact analysis of Fadama III project in Gombe State, Nigeria. *Journal of Agripreneurship and Sustainable Development*, 2(2), 110–118.

<https://doi.org/10.59331/jasd.v2i2.85>

Moguluwa, S. C., Odugbesan, J. A., Rjoub, H., & Iloka, C. B. (2021). Cost and competitiveness of agricultural produce in Nigeria: Impact on exportation. *Custos e Agronegocio On Line*, 17(2), 64–86.

Muhammad, H. U., Umar, B. F., Abakar, B. Z., & Abdullahi, A. S. (2011). Impact of Fadama II Project on rural livelihoods well-being in Niger State, Nigeria. *Agro-Science*, 10(3), 43–48. <https://doi.org/10.4314/as.v10i3.7>

Musa, R. S. (2011). Impact of Fadama II Project on the farm incomes of the marginalized and vulnerable participants in Kaduna State, Nigeria [Unpublished doctoral dissertation]. Ahmadu Bello University.

Ogunjobi, V. O., Ajayi, M. O., & Ilesanmi, B. A. (2024). Fadama III Additional Finance Project and sustainable agricultural development in Akure, Ondo State, Nigeria. *International Journal of Research and Innovation in Applied Science*, 9(5), 522–535.

<https://doi.org/10.51584/IJRIAS.2024.905046>

Osabohien, R., Matthew, O., Gershon, O., Ogunbiyi, T., & Nwosu, E. (2019). Agriculture development, employment generation and poverty reduction in West Africa. *The Open Agriculture Journal*, 13(1), 82–89. <https://doi.org/10.2174/1874331501913010082>

Osundu, C. K. (2014). Determinants for decision for nonfarm entrepreneurship by women farmers in Ikwuano LGA, Abia State. *Agrosearch*, 14(2), 154–167.

<https://doi.org/10.4314/agrosh.v14i2.6>

Ovharhe, O. (2020). Evaluation of Fadama III project in the Niger Delta area of Nigeria: Constraints and strategies perceptions. *Asian Journal of Agricultural and Rural Development*, 10(2), 541–549. <https://doi.org/10.18488/journal.ajard.2020.102.541.549>

Oyeniya, A. A. (2019). Impact of the Nigeria Fadama-III National Development Project on agropreneur's business development in Osun State [Doctoral dissertation, Kwara State University]. ProQuest Dissertations Publishing.

Sanusi, A. W., & Gado, M. A. (2021). The impact of Fadama III Development Project on livelihoods in Kware Local Government Area of Sokoto State. *International Journal of Management Studies and Social Science Research*, 3(5), 194–206.

Thavarasasingam, H., & Balagobei, S. (2020). Impact of Samurdhi program on poverty alleviation: An empirical investigation of Samurdhi beneficiaries in Kopay division in Jaffna district. *Sabaragamuwa University Journal*, 18(1), 30–42.

<https://doi.org/10.4038/suslj.v18i1.7752>

Uzoagulu, A. E. (2011). *Practical guide to writing research project reports in tertiary institutions*. Cheston.

Williams, E. (2015). Knowledge, attitude and participation of Fadama users group towards Fadama III project activities in Ebonyi State, Nigeria. *Asian Journal of Agricultural and Rural Development*, 5(10), 225–232.

<https://doi.org/10.18488/journal.ajard/2015.5.10/101.10.225.232>