

Fadama III Development Project and Sustainable Income of Rural Farmers in Akwa Ibom State, Nigeria (2009 – 2022)

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Abstract

The study focused on Fadama III and the sustainable income of rural farmers in Akwa Ibom State. Agriculture from the antediluvian times has been the fulcrum of human growth and development, hence, its inexplicability in a state development. Given this, many climes and organizations have instituted policies, programmes, and projects to ensure its development. In Nigeria, agricultural development has hit a continuous low since the discovery and commercialization of crude oil in 1956 hence, the broadening food insecurity in the country, and indeed, Akwa Ibom State. Therefore, the main objective of the study was to examine the impact of the Fadama III project on agricultural development in Akwa Ibom State, with an emphasis on the income of rural farmers. The comparative advantage and the group theory were used for the study. The descriptive survey research design was adopted for the study. The sources of data were both primary and secondary. Primary data were sourced using a questionnaire and interview method. Secondary data were sourced from textbooks, journal publications, and online sources. The population of the study was 2730 Fadama users in Akwa Ibom State. Using the Taro Yamane formula, a Sample size of 400 was determined and administered, out of which 354 were successfully retrieved. The Simple linear regression analysis was the method of data analysis. It was discovered that there is a significant relationship between Fadama III and a sustainable increase in the income of rural farmers in Akwa Ibom state. The study recommended, among others, that the government expand the scope of the Fadama III project on agriculture beyond cultivation, rearing and production of agricultural produce to include agro-business to boost the income of farmers and beneficiaries in the State.

Keywords: Fadama III, susustainable income, Agriculture development and rural farmer.

Introduction

There is an increasing desire for agricultural development in Nigeria particularly in rural areas of Nigeria and by extension, Akwa Iboms state because of its strategic importance. Despite the efforts by successive governments to reposition rural development through agricultural policies, Njoku (2011) has noted that rural poverty and underdevelopment have persisted, apparently because it has been difficult for Nigeria to dismantle all structures which have tended to prevent rural dwellers from complete realization of their full potentials.

The problem of rural development in Nigeria has been an issue of concern to different tiers of government due to the alarming rate of rural-urban migration and rural poverty. The consensus among

scholars is that rural development is faced with the paradox that the development-oriented rural economy relies heavily on non-productive people who are ill-equipped with outdated tools, lack technical information, lack scientific and cultural training and whose traditional roles and access to resources pose problems for their effective incorporation into modern economic system (Onyenechere, 2010; Olawepo, 2010; Ike & Uzokwe, 2011; Nchuchuwe, 2012; Yusuf, 2014). Thus, there is a need for rural development in this direction to contribute meaningfully to the socio-economic development of Nigeria. The irony of this scenario is that the bulk of Nigeria's wealth is derived from oil and agriculture which lies in abundant quantity in rural communities. The rural population in Nigeria was reported at 51.4% in 2016, according to the World Bank collection of development indicators compiled from official recognized sources (Ekong, 2003).

In recent years, the actions of government and international bodies have been focused on the debate of agriculture and rural development especially, on the area of food production and increase income of farmers. Again, some impediments to agricultural development and poverty alleviation of rural dwellers include poor access to production resources and poor/lack of entrepreneurial and technical skills. These factors have made international organizations like the World Bank and other donor agencies embark upon some programmes, like Fadama Projects in collaboration with developing nations including Nigeria aiming to improve the socio-economic standards of the rural dwellers (Olawepo, 2010). The Fadama project is a World Bank development programme which collaborates with the Nigerian government. The National Fadama Development Project (NFDP) has been executed in three phases – Fadama I, II, and III. The current Fadama III project is designed to increase the production efficiency of Fadama users (farmers, pastoralists, hunters, among others) and consequently their incomes (Olaolu et al., 2012).

1.2 Statement of the Problem

Agriculture was the backbone of the Nigerian economy at independence in 1960 as it accounted for over half of the Gross Domestic Product (GDP). It was seen as the key driver for growth and development. The sector contributed about 55% of gainful employment and almost 40 % of the share of GDP before the discovery of oil. This GDP share of the agriculture sector was quite high when compared with the average of 27% for low-income nations in Sub-Sahara Africa (Amire & Temitope 2016). But with the oil boom in the early 1970s, successive governments neglected the agricultural sector and since then, poor performance characterized the Nigerian agricultural sector which resulted in food scarcity and insufficiency. The major reason for the poor performance of the agricultural sector is that the majority of farmers in Nigeria are engaged in primitive and traditional methods of agricultural production.

To ensure food sufficiency and the reduction of poverty occasioned by food scarcity, the government of Nigeria has introduced various agricultural programs, policies and projects aimed at encouraging mass involvement in agriculture. The National Fadama Development Project (NFDP) is one such intervention program. The National Fadama Development Project (NFDP) has been executed in three phases – Fadama I, II, and III so far. Our concern in this study is Fadama III. The current Fadama III project is designed to increase the production efficiency of Fadama users (farmers, pastoralists, hunters, among others) and consequently their incomes. The project was designed to focus on increasing the income of the rural poor. It was also designed to increase food security, reduce poverty and contribute to the achievement of a key Millennium Development Goal (MDG). Financing of the Fadama project comprised \$250 million from the World Bank through International Development Agency (IDA) credits and \$200 million counterpart contribution from Nigeria's federal, state and local governments and beneficiaries (Oredipe, 2014).

Sadly, most of the government policies on agriculture are characterized by backward flips, lip service, inconsistencies, poor implementations and mismanagement of funds. The Federal and state governments of Nigeria and other multinational organizations like the World Bank, have spent huge sums of money in implementing some agricultural policies, one of which is Fadama III. Unlike the first

and second phases of the programmes, the Third National Fadama Programme was designed to accommodate all the states in Nigeria. The Project Development Objective (PDO) of Fadama III was to increase the incomes of farmers, increase in yield of primary agricultural produce, rehabilitate community-owned agricultural infrastructure, maintain/utilize assets and savings of participating groups and farmers to enhance the development of agriculture sector in Nigeria as well as Akwa Ibom State. It is argued that the goals of Fadama III have not been met due to some inadequacies in its implementation. Thus, this study aimed to investigate the effect of Fadama III in developing the agriculture sector in Akwa Ibom State.

1.3.1 Objective of Study

The objective of this study was to examine the relationship between the Fadama III Development Project and the sustainable income of rural farmers in Akwa Ibom State.

Hypotheses of the Study

H₀₁: There is no significant relationship between the Fadama III Development Project and the sustainable income of rural farmers in Akwa Ibom State.

Conceptual Review

Fadama Agricultural Project

The word “Fadama” is a Hausa name for irrigable land which is in flood plains and low-lying areas underlined by shallow aquifers and found along Nigeria’s river systems. Fadama areas are typically waterlogged in the rainy season but retain moisture during the dry seasons. These areas are considered to have a high potential for economic development through appropriate investments in productive assets, rural infrastructure and some technical assistance. The desire to harness the vast potential of Fadama in Nigeria culminated in the design of National Fadama Development Projects I, II and III. It is called Fadama in Hausa, Akuro in Yoruba and “Ude” or ‘Ala-mmiri in Igbo. Fadama in Hausa describes irrigable land, usually low-lying plains underlined by shallow aquifers found along Nigeria's major river systems (Blench & Ingawa, 2004). Additionally, the Ibibios in Akwa Ibom State called it “Ibiok” or “Ndioho” or “Edep-asat”.

According to Iwala (2014), Fadama is a Hausa word for wetland, internationally accepted in soil science literature as wetland soils or hydromorphic soils which are the seasonally or permanently poor drained soils of river valleys and flood plains of the coastal and Delta swamps. These productive soils can be utilized in both wet and dry seasons. The World Bank through its Fadama Projects has consistently supported the development of agriculture in a bid to help Nigeria achieve food self-sufficiency in the near future. The Nigerian Government, with the active involvement of the States and Local Governments, initiated quick and sustainable agricultural and rural development projects with a nationwide spectrum targeted at dry season farming activity and related to agro-processing activities (Ovharhe, 2016).

The essence of the National Fadama Development Project (NFDP) was to ensure all-year-round production of crops, in all the states of the federation through the exploitation of shallow aquifers and surface water potentials in each state using tube wells, wash boreholes and petrol-driven pumps technology. The project was an idea conceived by the World Bank.

The programme was projected to last for five years, from 23rd March, 2009 -31st December, 2013. It was a nationwide programme and covered twenty Local Government Areas in each of the thirty-six states of the federation, targeting small-holder farmers involved in pastorals, fisher folks, traders, processors, hunters and gatherers, the disadvantaged and physically challenged. Besides capacity building, the National Fadama Development Project was multidisciplinary in nature, which involved capacity building, communication and information support, asset acquisition and market system development, small-scale community infrastructure (roads, markets, boreholes, culverts, pumps and sprayers), processing and storage centre, advisory services and training. Pertinent about the project

was that its services were offered on a grant basis with the Community Driven Development (CDD) principle where the rural farmers determined their needs, and it was all about inclusive (production, processing, marketing, and storage) in areas of agriculture. The project used trained facilitators to ensure that various Economic Interest Groups (EIG's)/Fadama User Groups (FUGs) and Fadama Community Associations (FCA's) were guided (Chukuemeka et al., 2022). The National Fadama Development Project is divided into three phases:

Fadama Phase I: Fadama phase one focused mainly on production activities but largely neglected downstream activities such as processing, preservation or conservation and rural infrastructure to ensure the efficient evacuation of farm out-putto markets (National Fadama Development Office (NFDO), 2004) The Federal Government established the Fadama 1 Project to improve and increase the farmland for agricultural production (Akwa Ibom State Fadama Development Project Report, 2023).

Fadama Phase II: The second phase of Fadama came up as a result of the success recorded in the first National Fadama Development Project (NFDP I) by some of the States that participated in the project. Out of the six states that participated in Fadama I, only Jigawa State was among the "Core States" i.e. states in which Fadama I was implemented in full (Nwachukwu et al., 2008, World Bank Report, 2009). The Fadama II which covered from 2004-2009 was a follow-up to the first phase of the project (Fadama I). The NFDP II had as its main thrust the sustainability of increased incomes of the Fadama users through empowering communities to take charge of their development agenda.

Fadama Phase III: The third phase tagged Fadama III project came fully into operation in 2009 as a follow-up to the Fadama II project which was assessed to have impacted the lives of rural farmers, raising their incomes by 63 per cent (Olaolu et al., 2013). A project like Fadama II took the CDD approach, which places beneficiaries in the driver's seat where local community members under the umbrella of Fadama Community Associations (FCAs and Fadama Users Groups (FUGs) oversee the design and implementation of the project and were empowered through skills and capacity building to improve their livelihoods by increasing income generating activities.

Fadama III project established standardized procedures and steps to guide the local people on how to take part in the decision-making process. It established platforms for participation, such as local consultation meetings to identify and select the needed infrastructure to be funded by the project.

Agricultural Development

Agricultural development, according to Nwachukwu & Ezech (2018) is a multi-sectional activity that supports and promotes positive change in the rural and urban areas. However, the main objectives of agricultural development are the improvement of the material and social welfare of the people (Okorie et al., 2020). Therefore, agricultural development is seen as synonymous with rural development, the two terms are different but intrinsically related. Agricultural development is a part of rural development. Rural areas cannot develop without agriculture being developed because about 90% of the rural dwellers are engaged in agricultural practices as their major source of income. Cardno (2017) noted that agriculture plays a key role in food security and economic development. However, most of the world's population in rural areas depends directly or indirectly on agriculture for their livelihoods. Yet as the world's population increases and migration to towns and cities intensifies, so also is the proportion of people not producing food not growing.

Agwu et al. (2012) noted that agricultural development addresses vital contributions to farm work, improved seeds, better techniques and technologies, and markets, yields per plot output. Addressing this gap can help the nation to become more productive and reduce malnutrition within poor families. Economic growth is seen as a long-term rise in the capacity to supply increasingly diverse economic goods to its population. It also entails a sustainable rise in national output with a manifestation of economic growth. Therefore, the role of agriculture in transforming both the social

and economic framework of an economy cannot be over-emphasized. It has been the source of gainful employment from which the nation can feed its teeming population, providing the nation's industries with local raw materials and as a reliable source of government revenue.

Income of Rural Farmers

Major efforts have been undertaken in the last decade to improve the availability and quality of data on personal income. The original focus of much of this work stemmed from the perception of the problem of poverty and the need to expand the stock of information on which decisions could be made for the allocation of resources toward economic relief of the poverty population (World Bank Annual Report, 2010). Income is the consumption and saving opportunity gained by an entity within a specified timeframe, which is generally expressed in monetary terms (Barr, 2004). McCaffery (2012) noted that income is difficult to define conceptually and the definition may be different across fields. For example, a person's income in an economic sense may be different from their income as defined by law. An extremely important definition of income is Haig-Simons income, which defines income as Consumption Change in net worth and is widely used in economics (McCaffery, 2012).

Olawepo (2010) noted that the majority of the rural populace in Nigeria either depends entirely on farming and farming activities for survival and generation of income or depends on these activities to supplement their main sources of income. The validity of this statement becomes evident when it is realized that over 90% of the country's local food production comes from farms, which are usually not more than 10 ha in size, with at least 60% of the population earning their living from these small farms.

Ogunmuyiwa & Adelowokan (2018) suggested that the income levels of rural communities may be attributed to certain crucial factors, and understanding these factors may hold the keys to effective rural development policy-making. This in part led to the submission of Olatona (2007) that a closer look at the determinants of rural income provides an in-depth knowledge of the factors that explain low-income yields and poverty in rural regions where these rural farmers constitute about 90% of the total population. (Olayemi, 2001; Olatona, 2007). Segun & Adedayo (2018) have also suggested that any rural development policy aimed at poverty alleviation should concentrate on farming, which is the main occupation of the poor, who lack access to credit, farm input and implements and are unable to save or own production infrastructure. It is worthy of note that the elimination of poverty, though always an aim of development assistance, has been brought more sharply into focus in Nigeria's development policies. For such communities of farmers, there is a fresh emphasis on delivering outputs which have verifiable impacts on their standard of living. There is therefore the need to investigate more on those aspects that affect their incomes positively.

To Olawepo (2010), the consideration of inventories of farmers' income in Nigeria has always been problematic. This is because most of the rural farmers do not keep records and a host of them are not literate. Meanwhile, the Federal and State Governments have been trying to alleviate farmers' problems through various agricultural development programmes.

Fadama III and Income of Rural Farmers

The greatest problem of developing countries, such as Nigeria is poverty. Although the country may have favourable balance of trade and huge foreign exchange reserves, the income per capita remains very low with many people living below the poverty line of one USD per day (Atakpa, 2023). Poverty has persisted in Nigeria especially, among rural dwellers, who are predominantly farmers because of neglect even though 70 per cent of Nigerians are rural dwellers. Hence, they constitute the neglected majority. Various government agricultural and rural development programmes and projects have been undertaken to boost food production and incomes of rural dwellers, and consequently their standard of living but with little results. Poor yields are obtained from crops, and when good yields are obtained, spoilage due to a lack of storage facilities tends to maintain the vicious cycle of poverty (Agbarevo & Okwoche, 2014).

The Fadama III project is a follow-up to Fadama I. Fadama III is more like an agricultural diversification programme, which is a paradigm shift under the Fadama project. Its target beneficiaries are the private economic units/smallholders who earn their living directly or indirectly from the exploitation of natural resources in a given area. It empowers Fadama communities with resources and needed technical training and support to properly manage and control their resources for their benefit in particular and community development in general. The approach used in Fadama III is the Community Development Approach/Community Driven Approach (CDA), which is bottom-up as against top-bottom. Participating community associations are empowered to develop participatory and socially inclusive Local Development Plans (LDPs) (World Bank report, 2013).

Under the Fadama project, participants collectively identify their development priorities and agree on their investment activities. Funding is by the World Bank contributing 55.6%, the Federal Government of Nigeria, 5.1%, State Governments, 17.1% and Local Governments 8.9%. The World Bank has decided to extend its funding of the Fadama Project in Nigeria. It provided the sum of \$200m US Dollars for Nigeria in August 2013 (World Bank, 2013). Agbarevo & Obinne (2010) observed that community development assumes that rural development would be better achieved by assisting people to identify, define and limit their problems and needs, and then plan and implement selected actions to arrive at a solution. It takes a problem-solving approach by the community or group facilitated by government/NGOs. The model has the advantage of active participation of people in projects of which they are the beneficiaries. Previous government efforts aimed at reducing rural poverty and hunger were not very impressive. They largely used a top-down approach in implementing programmes designed to increase food production, income and the standard of living of rural people (Baldwin cited in Agbarevo, 2005). Fadama project, on the other hand, is demand-driven in which the beneficiaries or participants determine their priorities, analyze their problems, plan how to solve them, choose between alternative courses of action, and implement the chosen course of action with government officials acting as facilitators in a very participatory manner.

The finding from the study conducted by Agbarevo & Okwoche (2014) showed that the crop yield of the farmers increased significantly as a result of their participation in the Fadama III project is heart-warming because it shows that the Fadama Fadama III project is succeeding in empowering rural dwellers through increased crop yield. An increase in yield translates into an increase in income. Hence, helping farmers to meet their financial needs since finance appears to be the greatest limiting factor in rural agriculture as the farmers are no longer conservative but lack mainly financial resources.

The increase in farmers' yield as found by the study arising from better application of technology and management skills by the farmers is in line with the findings of Okunade et al. (2005) who reported an increase in farmers' yield leading to increased income as a result of the adoption of improved agricultural practices. An increase in farmers' yield or income as a result of the application of better technologies can be used to measure the success of an agricultural development programme, or project because the increase in yield translates to increased income, which further translates into an improved standard of living (Agbarevo, 2010). The significant increase in farmers' crop yield as reported by the study means that the Fadama III project is a success. This does not, however, vitiate the fact that there are other indicators used to assess the success of an agricultural development programme or project.

Fadama III project succeeded in alleviating rural poverty arising from recorded significant increase in the crop yield of the participating farmers. An increase in farmers' yield leads to higher income, which is expected to be accompanied by an improved standard of living for farmers' households. The success of the Fadama III project is largely attributed to the Community Development Approach, which puts the participants in charge of the implementation with government agents acting as facilitators, providing the needed technical and logistic support.

The increase in farmers' yield as found by the study arising from better application of technology and management skills by the farmers is in line with the findings of Nwosu (2005), Okunade et al. (2005), who reported an increase in farmers' yield leading to increased income as a result of the

adoption of improved agricultural practices. An increase in farmers' yield or income as a result of the application of better technologies can also be used to measure the success of an agricultural development programme, or project because the increase in yield translates to increased income, which further translates into an improved standard of living (Agbarevo, 2010).

This view is equally supported by Haggmann et al. in Agbarevo (2012) who concluded that participatory approaches such as the Community Development Approach involved farmers/participants as equal partners in generating and testing new ideas, technologies and practices, leading to a more dynamic development and commitment, with better results achieved at community level. Fadama III project succeeded in alleviating rural poverty arising from recorded significant increase in the crop yield of the participating farmers. An increase in farmers' yield leads to higher income, which is expected to be accompanied by an improved standard of living for farmers' households.

Theoretical Framework

Theory of Comparative Advantage

The theory of comparative advantage was propounded by David Ricardo in 1817 (Schumacher 2012). He was an 18th-century English Economist renowned for his contributions to economic theory. He developed the comparative advantage theory, labour theory of value and the theory of rents, which have founded other schools of thought and form the basis of current economic policies and decisions. The theory of comparative advantage explains the tendency for advanced nations to specialize in capital-intensive activities, while less developed areas (nations) focus on labour-intensive products by emphasizing the activities that yield the greatest return on investments. The theory states that an agricultural region or area tends to produce those goods or crops for which it is perceived to have a special or physical advantage or have the least disadvantage when compared to another area. This theory also rests on the following simplifying assumptions that a state of perfect competition exists in which there is complete flexibility of wages and processes.

Ricardo introduced the concept of "comparative advantage", suggesting that nations should concentrate resources only in industries where they have the greatest efficiency of production relating to their alternative resources. He argued that international trade is always beneficial, even if one country is more competitive in every area than its trading counterpart. Ricardo opposed protectionism for national economics and was concerned about the short-term impact of technological change on labour. Assessing the validity of comparative advantage on a global scale with the examples of contemporary economies is analytically challenging because of the multiple factors driving globalization: indeed, investment, migration, and technological change play a role in addition to trade.

2.2.3 Group Theory

Group theory was propounded in 1846 by Evariste Galois and was popularized by Author Bentley's (1948) book "The Process of Government", Charkson & Tuggle's (1966) "Toward a Theory of Good Decision Behaviour" and Bruce (1976). For the group theories, politics in any given society is to be understood by looking at the various groups and their activities within that society. Arthur Bentley, a prominent group theorist, argues that politics is a high-level activity carried on largely by groups that somewhat reflect or represent the underlying forces in society. Bentley further stated that there is no idea which is not a reflection of social activity. There is no feeling that the individual can fix upon, except in a social form (Bentley, 1948). Invariably, action is always a group process never found in one man, but in groups. Thus, society, nation, government, legislation, politics and administration, all are composed of groups of men, each group cutting across many others.

A group, according to Bentley (1948) represents "a pattern of process rather than a static form, as such, could emerge only when the interactions among its members are both relatively frequent and sufficiently patterned to produce directional activity". This differentiates a genuine group such as the businessmen's association from a co-incidental collection or a categoric group such as a group of spectators watching a football match, or a group of people gathered around an accident scene.

It means, therefore that if a group is defined in terms of activity rather than a collection of individuals, then, there is something which gives direction to this activity, something the members of the group share in common, feel strongly about and seek to protect. "This is interest", which for the researcher is the central point to the understanding of rural development.

The choice of the group theory of policy formulation for this study was necessitated by the fact that the National Fadama III Development Project (NFDP) adopted the Community Driven Development (CDD) approach which makes the projects not an individual affair/programme or one-man show. The World Bank (2013) defines CDD as a development approach that gives control over planning, division, strategies and investment resources to communities, groups and Local Governments. Because CDD provides the community with a voice and control over all project stages, it is therefore believed to (a) enhance sustainability, (b) improve efficiency and effectiveness, (c) allow poverty reduction efforts to be taken to a scale, (d) make development more inclusive, (e) empower rural dwellers to build social capital and strengthen governance and (f) complement market and public sector activities.

This theory is most appropriate because rural communities will become the most important actors in their development. The rural people are hardly allowed to identify and analyze their problems, opportunities and constraints, and develop a list of programmes and activities they would like to undertake, thereby changing from passive recipients to active managers of their destiny.

Empirical Literature

Bature et al. (2013) in their study – Analysis of Impact of National Fadama Development Projects on Beneficiaries Income and Wealth in FCT, Nigeria, evaluated the impact of Fadama in Gwagwalada Area Council in FCT. The methodology adopted included descriptive and analytical methods using primary data. Data were obtained from two hundred (200) Fadama users and non-Fadama user farmers respectively. The findings of the study showed that the value of productive assets of Fadama beneficiaries increased from N81,240.97 before Fadama III to N84,9577.5. The study recommended, among others, that strategies such as rotating saving and credit associations that can help the poor to access productive assets should be promoted, the low capacity of the poor and the vulnerable in managing productive assets efficiently could be addressed through training and development of complementary services.

Research carried out by Amadia et al. (2019) titled "Evaluation of National Fadama III Development Project: Catalysim for Rural Development in Rivers State, Nigeria", confirmed that agriculture is the bedrock for combating poverty and developing rural areas. The motivation was to reveal the concept, approaches and implementation process of economic interest groups and government financial commitments to various farming activities in local government areas. Materials for the study were provided through secondary sources, Fadama office reports and published materials. The study adopted a descriptive method of analysis. Findings revealed that there are remarkable improvements in rural development in the participating local government areas. The assessment further revealed committed efforts by officers and management of the programme which ensured the effective implementation of rural infrastructure in participating communities. It was recommended that expenditure control measures adopted by the management of the Fadama programme in Rivers State should be applied in future agricultural projects to ensure quality deliverables; the government should pursue only rural development-oriented agricultural policies, and finance projects that have certified Local Development Plans; seeming difficult criterion that delay the release of funds should be relaxed for agricultural programme managers to be proactive to beneficiaries' requests and function effectively. Finally, the Fadama programme should be extended to increase communities' dual opportunities of experiencing both agricultural and rural development.

Madu (2019) assessed the effects of Fadama III on rural farmers in Shelleng Local Government Area (LGA), Adamawa State, Nigeria. Sixty women beneficiaries and 60 non-beneficiaries were sampled for the study. The questionnaire was used to obtain information from the respondents on the

adoption rate of technology, change in income, change in farm size, increase in output and livelihood. Data were analysed using descriptive and inferential statistics. Findings of the research revealed that the adoption of technologies was huge and significant at $P=0.05$ except for water pump and harrowing. The findings also revealed that there was a significant increase in farm size, output and subsequently, income at $P=0.05$ among the women beneficiaries compared with non-beneficiaries alike. Also, the beneficiaries had better livelihoods than the non-beneficiaries in terms of consumption expenditure. Contribution to consumption expenditure was significant among the women participants compared to non-participants. In conclusion, Fadama III has made a significantly positive impact on the livelihood of the rural women farmers in the study area. It was recommended that credit service providers be involved to help offer credit at competitive interest rates to poor women using collateral substitutes such as group repayment incentives.

Similarly, Sanusi & Gado (2021) examined the Fadama III intervention project and its effects on beneficiaries' livelihood in Kware Local Government Area of Sokoto State. A purposive sampling technique was used in selecting the benefiting local government area and twenty participants were also chosen from the area. The study used both primary and secondary sources of data. Focus Group Discussion (FGD) was used as a source for primary data while the secondary data were derived from various secondary sources. The primary data were analyzed metrically, transcribed and presented verbatim in the report. The secondary data were analyzed through content analyses. The study found that the Fadama III intervention project in the study area has a significant positive effect on the livelihoods of the beneficiaries such as moderate success in individual ability to own assets.

Agunloye et al. (2017) studied the effects of the National Fadama III Programme on the scope and scale of beneficiaries' farming activities in South West, Nigeria using descriptive statistics, revealing a significant increase in beneficiaries' crop production and agro-processing. A significant increase was also found in livestock production. Sustainance of the programme at its expiration was advocated to also sustain the increased food production experienced in the programme.

Ja'afar-Furo et al. (2013) studied the role of Fadama III in improving the income of Fadama User Groups (FUGs) through agro-processing and market accessibility in Adamawa State, Nigeria. Concentrating on 20 LGAs, they discovered that there was a 10.54% increase in income as a result of Agro-processing or value addition on agricultural commodities between 2011 and 2013.

Izuogu & Atasi (2015) studied the impact of the Fadama Project on the income and productivity of Fadama users in Okigwe agricultural zone of Imo State, Nigeria. The prevalent food shortage and food insecurity in Nigeria can largely be attributed to over-dependence on oil. Data collected were analyzed using descriptive statistics. It was observed that Fadama users had a mean output of 5158(kg) of cassava and 6456 (kg) of Yam. Non-Fadama users had a mean output of 1950 (kg) of cassava and 3621 (kg) of yam. Experts have highlighted the challenges confronting adequate food production to include poor infrastructural base, low-capacity utilization, capital constraint, technical know-how, labour and manpower constraints, as well as policy, environmental and cultural constraints.

Materials and Methods

The mixed research designs were adopted for the study. The descriptive research design was used in explaining in qualitative forms the major variables of the subject under study and their relationships. The survey research design was used in the collection of data and analysis using the quantitative approach. The population of the study was 2,730. This was the total population of Fadama III Development Programme participants in Akwa Ibom State (Akwa Ibom State Fadama Coordination Office, 2024). A well-structured questionnaire was used in collecting data for the study. After the return of the questionnaire by the respondents, the data was coded and analyzed using the Statistical Package for Social Science (SPSS) with interpretation made using frequency tables and percentages. The simple linear regression analysis was used in testing the hypotheses of the study. Simple linear regression was used to estimate the relationship between two quantitative variables. The sample size of the study was 400. It was determined using the Taro Yamane (n) Formula. The sampling techniques used for this study were the stratified sampling technique and purposive sampling techniques.

Table 2: Population Distributions in Twelve (12) Fadama III Participating LGAs in Akwa Ibom State

S/ N	SENATORIAL ZONE	LOCAL GOVT.	NAME OF FGAs/FUGs	DISTRIBUTION		
	Uyo	Uyo	United Progressive Farmers	15		
			Nieba Farmers MPCs	10		
			Good Life Farmers	10		
		Nsit Atai	Nda Nsit	10		
			Mboho Mbon Uto Eyop	10		
			Ikot Essien Nsit MPCs	10		
		Nsit Ubium	Ibiakpan Obotim I	15		
			Redemption Women	10		
			Mfoniso Farmers MPCs	10		
		Etinan	Mfonabasi	15		
			Nung Umana Umoh	10		
			Nka Unwam	10		
			Ikot Ekpene	Essien Udim	Usug Ima	15
					Uforo Palm Oil Processing	10
					Ukoette Fishers MPCs Ltd	10
Ikot Ekpene	Ima Abasi			10		
	Ibong Ikot Akpan Palm Oil/Kernel MPCs Ltd			10		
	Unemployed Youth MPCs Ltd			10		
Abak	Midim			15		
	Thank God Cassava Processing			10		
	Uforo Oil Palm Processing			10		
Etim Ekpo	Edidiana Kiet			10		
	Mfonobong MPCs (Uruk Ata II)			15		
	Usung Inwang Widows MPCs			10		
3.	Eket			Mkpat Enin	Nung Obio Nteng	10
					Nka Uforo Ikot Ekpang MPCs	10
					Uforo Ikpa Ibom Palm Processing MPCs Ltd	10
		Eket	Ikot Ikpe	15		
			Divine Grace	10		
			Standard farmers MPCs	10		
		Onna	Nung Oku Itina MPCs	10		
			Computed Friends	15		
			Unity NOE MPCs Ltd	10		
		Oron	Eyo – Odiong	10		
			Nka Idorenyin Ini Iso MPCs	10		
			Oron Nation Women	10		
					Total	400

Source: Ministry of Agriculture and Natural Resource, Akwa Ibom State (2011)

Table 2 indicates Population Distributions in Twelve (12) Fadama III Participating LGAs in Akwa Ibom State. Four local government areas were randomly selected in three senatorial districts in Akwa

Ibom State based on population (highest population. In Uyo senatorial district - Uyo, Nsit Atai, Nsit Ubium and Etinan; three FGAs/FUGs were selected from each of the Local Government Areas, and 150 respondents were selected. In Ikot Ekpene senatorial district, Essien Udim, Ikot Ekpene, Abak, Etim Ekpo; three FGAs/FUGs were selected from each of the Local Government Areas, and 120 respondents were selected. In Eket senatorial district; Mkpato Enin, Eket, Onna and Oron; three FGAs/FUGs were selected from each of the Local Government Areas, and 100 respondents were selected. In Eket senatorial district - Mkpato Enin, Eket, Onna and Oron; three FGAs/FUGs were selected from each of the Local Government Areas, and 100 respondents were selected.

Data Presentation and Analysis

Table 3: Completed and returned copies of Questionnaire

Senatorial District	No. of questionnaires distributed	No. of questionnaires completed and returned	Percentage (%) of Questionnaires completed and returned
Uyo Senatorial District	150	130	32.5%
Ikot Ekpene Senatorial District	130	114	28.5%
Eket Senatorial District	120	110	27.5%
Total	400	354	88.5%

Source: Field Survey, 2024

Table 4: Type/Nature of Agricultural engagement

Type/nature of livestock reared	Frequency	Percentage (%)
Livestock	58	16.4
Birds	57	16.1
Cassava processing	97	27.4
Palm oil processing	89	25.1
Aquaculture	53	15
Total	354	100%

Source: Field Survey, 2024

Table 4 shows the type/nature of agricultural engagement of the participants. 58 respondents representing 16.4% are engaged in livestock rearing. 57 participants representing 16.1% are engaged in bird rearing. 97 participants representing 27.4% are engaged in cassava processing, while 89 participants are engaged in palm oil processing. 53 participants representing 15% are engaged in aquaculture.

Testing of Hypotheses

The simple linear regression analysis was used in testing the hypothesis of the study. In simple regression analysis, when the significant value is less than 0.05 at a 95% level of confidence or less than 0.01 at a 99% level of confidence, we accept the Alternative hypothesis (H1) and reject the Null hypothesis (Ho), and vice versa.

Null Hypothesis 1: There is no significant relationship between Fadama III and sustainable increase in the income of rural farmers in Akwa Ibom State.

Table 4.3.1a: Model Summary

Model	R	R Square	Adjusted Square	R	Standard Error of Estimate
1	0.56	0.55	0.53		0.48

Source: SPSS, 2024

Predictor: Fadama III Programme

Table 4.3.1a shows that there is a significant relationship between Fadama III Programme and the income of rural farmers at R = 0.56. The R square at 0.55 indicates that Fadama III accounts for 55% of variations which implies a significant effect on income of rural farmers in Akwa Ibom State.

Tablet 4.3.1b: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Significance
1						
	Regression	30.12	3	6.87	57.45	0.000b
	Residual	35.61	350	0.67		
	Total	65.73	353			

Source: SPSS, 2024

Dependent Variable: Income of Rural Farmers

Predictor: (Constant): Fadama III Programme

Table 4.3.1b reveals that the F value (which is the mean square regression of 6.87) divided by the Mean Square Residual of 0.67 yields F at 65.73. From these results, the model is significant (Sig=0.000). Therefore, Fadama III is a significant predictor of income of rural farmers at 3 degrees of freedom (df).

Table 4.3.1c: Coefficients^a

Model		Unstandardized Coefficients		Standardized coefficients	T	Significance (Sig)
		B	Standard Error	Beta		
	Constant	0.67	0.337		4.41	0.001
	EW	0.33	0.034	0.377	5.38	0.000

Source: SPSS, 2024

Dependent Variable: Income of Rural Farmers

The table above shows the degree of effect Fadama III Programme has on the income levels of rural farmers and the level of significance. The result is given as (Fadam III; $\beta=0.23$; $t=4.28$; $p<0.01$). This implies that Fadama III Programme is a significant predictor of the dependent variable which is the income of rural farmers.

Linear Regression Model is represented thus:

$$Y = a + \beta X$$

Where Y = income of rural farmers

a = Constant

βX = Coefficient of X

Therefore, income of rural farmers = $0.67 + 0.33EW$

Decision: Based on the results in the ANOVA table above, the level of significance for all the items is less than 0.01. Hence, we accept the alternative hypothesis (H1) and reject the null hypothesis (Ho). Therefore, there is a significant relationship between Fadama III and the sustainable increase in income of rural farmers in Akwa Ibom state.

Discussion of Findings

After the analysis of primary data from the respondents, it was discovered that there is a significant relationship between Fadama III Programme and the sustainable increase in income of rural farmers in Akwa Ibom State. The significant income increases achieved by beneficiaries arose from a combination of productivity improvements, investments that supported agricultural intensification (irrigation, soil, land, and water management; advisory services; technology), activities with high returns (horticultural crop production, agricultural processing), and participation in non-farm activities to diversify sources of growth in household income. Apart from the additional income obtained as a result of higher yields, beneficiaries also increased their incomes through the project's support for formal off-taker arrangements that pay better prices for produce. Ultimately, project beneficiaries concluded memorandums of understanding (MoUs) with 281 off-takers, resulting in sales of 487,084.77 metric tons of produce; (226,531.13 tons of rice, 215,282.62 tons of cassava, 11,174.50 tons of sorghum, and 34,096.52 tons of tomatoes), greatly easing the marketing constraints on farmers in Akwa Ibom State (Akwa Ibom State Fadama Construction Office Ministry of Agriculture and Natural Resources, 2024).

Corroborating the finding above is an interview granted by Mr. Eyo Abia from Ammamong community in Okobo Local Government Area. As a beneficiary of the programme, he had this to say:

"I run a large-scale cassava farm and cassava processing unit. I deal in the cultivation of cassava and the processing of cassava into garri. I started benefitting from the project in 2018. I have received funds for irrigation and water management, especially in times of drought. I also received lessons in land management and soil fertilization. I used to occupy all my land with only cassava, but now, I'm operating a mixed cropping system, which has helped me diversify and invest in other crops. As you can see, I plant yam and plantain on the same land. It has helped in increasing my income over time, and I intend on expanding as long as the support comes. (**Interview conducted on Mr. Eyo Abia, 12th February, 2024**).

Supporting the stance above is an excerpt from a Focused Group Discussion in Essien Udim Local Government Area involving 5 participants including Mr. Umoh Afaha, Mr. Atia Usoro, Mrs. Eno Udok, Mrs. Ima-Obong Ukofia, and Mr. Effiong Etukidem:

Mr. Umoh Afaha: "Palm oil processing has become very easy for us as participants of the Programme. You see, before this time, the cost of palm fruits was a major problem. The other difficulty was the transportation of these fruits to the mills for processing and the cost involved in processing. The Fadama Project III has reduced these costs, first, by providing incentives through the supply of fruits and helping the community to obtain 2 new oil processing machines. The cost of processing has been reduced greatly. We are now able to produce in massive quantity, while also saving enough money" (17th February 2024).

The finding above is supported by Izuogu & Atasic (2015) who observed that the income levels of 72 Fadama users were higher than those 62 of non-Fadama users from 2011 to 2014. Similarly, the finding is supported by Ja'afar-Furo et al. (2013) that there was a 10.54% increase in income as a result of agro-processing or value addition on agricultural commodities between 2011 and 2013. Also, this finding is in agreement with that of Kudi et al. (2008) that there was little improvement in the income of farmers.

The implication is that better income gives better purchasing power and hence the improvement of living standards.

Conclusion

The challenges of food inflation and food insecurity in Nigeria have placed agricultural development at the peak of recent academic studies. With food inflation in the country reaching 35.41% in January 2024, and 64.3 million Nigerians said to be food insecure, agricultural development remains central to other aspects of socio-economic development in Nigeria (Jaiyeola, 2023; Trading Economics, 2024). It is also pertinent to state that over 70% of food products are cultivated in rural areas, which also house 42% of Nigeria's population. The geometric growth in the country's population calls for particular investment in general agricultural development, which is the purpose of the Fadama III project, as well as the research interest of the study.

The Fadama III Project has benefitted various aspects of agricultural development. These include a sustainable increase in the income of rural farmers, an increase in production levels, and the availability of agricultural infrastructure. It was discovered that the Fadama III project in the selected areas of the state has augured well for rural participants who have been able to save as a result of a reduction in costs of production. The Fadama III project in these areas facilitated the provision of both personal and general incentives like cash and agricultural infrastructure which has also increased yields to farmers in the State.

Recommendations

From the findings above, the following recommendations were made:

- i. The government of Akwa Ibom State should expand the scope of the Fadama III Agriculture Development Programme beyond cultivation, rearing and production of agricultural produce and also include agro-business to boost the income of farmers and beneficiaries.
- ii. Rural farmers in Akwa Ibom State should be educated on how to keep appropriate financial records of proceeds realized from their farm produce during farming seasons.
- iii. Akwa Ibom State Government should assist rural farmers in the acquisition of tractors and other farm equipment, as well as the new technology of farming to enable them to be transformed from primitive methods of farming to mechanized systems for improved yield.

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