THE EFFECT OF A COMMUNITY-DRIVEN DEVELOPMENT PROJECT (FADAMA II) ON RURAL FARMING COMMUNITIES IN ADAMAWA STATE, NIGERIA

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ABSTRACT
The major thrust of this study is to assess the impact of Fadama II project, which uses community-driven development approach, is the first of its kind and largest agricultural and rural development project in Nigeria. The Project focused on increasing the incomes of fadama users on sustainable by providing capacity building, advisory services, productive assets and rural infrastructure. This study used propensity score matching (PSM) to select 300 comparable project beneficiaries and non-beneficiaries. The combination of PSM and double difference (DD) estimator was used to determine average treatment effect (ATE) on the beneficiaries. T-test analysis was also used to compare means and determine the significant impact of the project. The result shows that participation in the project has significantly increased the income of beneficiaries compared to non-beneficiaries. The findings also indicate that Fadama II has as well successfully implemented its CDD approach, as community members were given voice to take decision on planning and implementation of projects meant to touch their lives. The value of productive assets has increased significantly among the beneficiaries. The project also had positive impacts on road construction and rehabilitation in project communities. As the finding indicates, the rate of adoption of new technologies was large and significant. Conflict has been reduced among the community members as a result of participation. The findings also revealed that the project has enhanced the capacities of the beneficiaries to cope with their activities. The unique feature that could have contributed to the significant impact of the project in a short time is its participatory and demand driven approach that gives voice to the communities. It is concluded therefore, that the strategy of participatory and demand-driven development should take a centre stage in any rural development process.

Keywords: Fadama II, Effect, Community-driven development, Poor, Vulnerable groups, Beneficiaries, Non-beneficiaries.

INTRODUCTION
The quest for proper development model emerged as a result of strong criticisms of neo-classical development models and theories due to latter’s failure to address issues such as poverty, human welfare, income distribution, unemployment, environmental health, security, popular participation and equitable distribution of growth benefits (Eboh et al, 1999; Dennis, 2007). After several decades of emphasis on rapid economic growth, there is an increasing awareness that development is not just higher growth of national income, but a means of achieving basic human needs and development particularly those related to individual and collective wellbeing (Helleiner, 1992). This is debated to be made possible through self-reliance and with the use of the community or society’s own resources (Sweindell et al, 1981; Nwanes, 2007). In this context, a community that discusses its needs, plans to meet these needs, organizes its resources for action and carries out that action and continues its efforts to meet these needs or solve new...
problems will, through its efforts improve itself. This is what is regarded as community-driven development (CDD) or people oriented development. Community-driven development emerged against the conventional “top-down” syndrome which never had any sustainable impact on the living conditions of community members especially in rural Nigeria. The model is currently the most widely used method by both government and development assistance programmes (Gillespie, 2004; Mansuri and Rao, 2004; Platteau, 2004). This is due to its impending ability to develop programmes and projects that empowers the local communities to take charge and manage their development agenda and moreso, sustainable, conforms to local demand, and above all, consider the poor and vulnerable groups above and over all other groups of the society (Dongier et al., 2001; Gillespie, 2004).

The importance of rural community development can better be appreciated by noting that 75 percent of the total population of developing countries lives in the rural areas, and these rural majorities are small scale farmers who produce about 90 percent of the total food requirement of the nations (Olusegun, 1991; Igboeli, 1992). Thus, policy makers in Nigeria face the challenge of reversing the cycle of rural poverty. Since over 75 percent of the rural populations are small scale farmers, rural community development for a country like Nigeria whose population is mainly farmers cannot be achieved without sustained growth in rural income and living standard primarily from agriculture (Illesanmi, 2002). It was based on this principle that Fadama II was introduced in 2004.

Fadama II project which is the largest agricultural and rural development project in Nigeria was designed to reduce poverty by providing support to the communities to acquire infrastructure and productive assets, providing demand-driven advisory services and enhancing the capacity of communities to manage economic activities, and reducing conflicts among resource users (Nkonya & Davis, 2008). These laudable objectives were to be achieved by adopting people centered development approach as set against the mandate of the project. It is important to note here that this CDD project is first of its kind in the study area. The focus of this study therefore is to assess the effect of this CDD project on the benefiting rural farming communities in Adamawa State, Nigeria,

Background of the Fadama II Project
Fadama is a Hausa word for low-lying flood plains, usually having accessible shallow groundwater (Ingawa et al 2004). Fadama lands are normally waterlogged during the rainy seasons and retain moisture during the dry season. It has high potential for economic development if supported with proper infrastructure, productive assets, and needed technologies (NFDP II, 2003; Ingawa, et al, 2008). In order to tap the potential benefits of fadama resources in Nigeria, National Fadama Development Project (Fadama I) was established in 1993 and ran though 1999. The design of Fadama I was mainly to encourage poor farmers to embark on dry season cropping in order to generate increased income and alleviate poverty (Ingawa et al, 2004; Bajoga, 2007). The project basically focuses on crop production paying less or no attention to postharvest activities such as processing, preservation, and marketing. Fadama I did not also take into account the provision of rural infrastructure to ensure efficient transportation of farm output to markets (NFDP II, 2003). The focus on crop producers contributed to increased crop production, contributing to reduced crop prices and increased storage losses (Ingawa et al, 2004). And above all, the project employed service oriented and supply- driven approach (top-down strategy).

The establishment of Fadama II came as a follow-up to Fadama I implementation, and seeks to address the noted shortcomings in the design and implementation of the Fadama I. Fadama II’s strategy represents a shift from public sector dominated service oriented strategy (top-down) to a community-driven development approach (bottom-up). The project activities were centred on Fadama User Groups (FUGs) having common economic interest, termed economic interest groups (EIG). This is one of the unique features of the project since collective action helps to overcome many problems that face poor farmers in production and marketing.
The major enterprises that Fadama II supports include crops, livestock production, agro forestry, fishing and fish farming. It also support non-productive activities that are directly connected with productive activities such as agro processing, rural marketing and financial management practices at the community level. As part of its targeting strategies, Fadama II also provides special preference to groups of youth, women (especially widows), physically challenged, the elderly and people with HIV/AIDS. The targeted groups can belong to any of the productive or service sectors supported by the project (NFDP II, 2003). Under CDD approach, beneficiaries are given the chance to choose the kind of activities they want to pursue. However, the project does not support activities that could lead to degradation of natural resources or large-scale change of land use. All the beneficiaries are encouraged to develop participatory and socially inclusive Local Development Plans (LDPs). This means that all the beneficiaries have a stake in the design and implementation of the sub-project meant for the whole group within the communities.

Eighteen (18) out of thirty (36) states were selected to participate in the project. Of these, 12 states were supported by the World Bank, while the remaining six were supported by the African Development Bank. The benefiting under the World-Bank assisted aspects of Fadama II are Adamawa, Bauchi, Gombe, Federal Capital Territory, Imo, Kaduna, Kebbi, Lagos, Niger, Ogun, Oyo, and Taraba. Fadama II was designed to operate for six years (2004 – 2009) with a goal of contributing to poverty reduction in Nigeria. The project set targets to achieve the following outcomes at the end of its six-year period:

- 50 percent of male and female fadama resource users who benefit from the project supported activities should increase their average real income by at least 20 percent compared to the baseline.
- At least 60 percent of Fadama Community Associations (FCAs) should successfully implement their local development plans (LDPs) and other project supported activities.
- Conflict among fadama users should be reduced by at least 50 percent compared to the baseline.

To achieve these outcomes, the project designed four major components (NFDP II, 2003):

1. **Rural infrastructure investment component**: to support creation of productive economic infrastructure capable of improving the productivity of households using Fadama resources: the beneficiaries are required to pay 10 percent of the costs of constructing rural infrastructure, including rural roads, culverts, market stalls, cold storage, boreholes, and irrigation infrastructure, among others.

2. **Pilot productive asset acquisition component**: to help improve productivity and income for Fadama resource users: under this component, Fadama User Groups (FUGs) or individuals are encouraged to acquire productive assets by paying counterpart fund of 30 percent of the cost of the productive assets acquired.

3. **Demand-responsive advisory services**: This is to support the beneficiaries to access advisory services that will enable them to adopt technologies that enhances output and more profitable marketing practices in their enterprises.

4. **Capacity building component**: to enhance the ability of its beneficiaries to assess their needs, participate in planning, and implement and manage economic activities, and to increase the capacity of the project coordinators to monitor and evaluate projects. Fadama II provides capacity building through trained facilitators. In addition, fadama user group members are trained to negotiate and manage contracts and to conduct basic financial analysis.

**Community-Driven Development Nature of the Project**

CDD approach empowers local communities to have a voice in decision making and take control over their development activities (Dasgupta and Beard, 2007; Dongier et al, 2001). This strategy operates in different ways from programmes and projects that consider target beneficiaries as just a passive aid recipient (Labonne et al, 2007). According to Dasgupta & Beard (2007) and Labonne et al, (2007), most community-driven development (CDD) projects that focuses on reducing poverty, demonstrates five main characteristics:
1. Empower local communities and authorities: Community-driven development (CDD) project gives power to local communities and local authorities to participate fully in decision making and gain control over their development priorities. This strategy also strengthens the capacity of the local community to manage planning and implementation of development projects.

2. Demand driven design: Community-driven development (CDD) projects operate based on the needs of local communities and governments, which allow them to determine what types of development activities the project should include to make it effective for them as beneficiaries.

3. Social inclusion: Most CDD projects fail to involve vulnerable groups such as women, youth etc. into the mainstream of their activities. CDD projects that target large scale and successful farmers for instance, do not include poor farmers into the framework of their activities. However, CDD projects focusing on poverty reduction normally include the poor and vulnerable.

4. Collective action: CDD projects are normally made to be implemented collectively through community members by consensus rather than individuals (Binswanger and Aiyar, 2003; Dasgupta and Beard, 2007). The beneficiaries of CDD project plan and implement project activities collectively. CDD projects are also supported by public funding from central governments or donors that support the communities or local authorities. However, it is important to note that CDD projects may not be successful if the beneficiaries have significant income inequalities and other factors of poverty measures (Dongier et al., 2001; Labonne et al., 2007).

5. Support from external institutions and organizations: Most CDD projects receive support from outside the communities (funding from governments and other donor agencies). This characteristic differentiates the CDD model from strategy used by community-based organizations (CBOs), which may not receive external support. The support include; empowering the beneficiaries to plan, implement, and take control over management of development activities. Others include: access to services, and to strengthen the link with organizations such as nongovernmental organizations (NGOs), traders among others (Dongier et al, 2001).

METHODOLOGICAL FRAMEWORK

Study Area
This study was conducted in Adamawa State. The state is located in the moist agro-ecological zone of Nigeria and lies between latitude 7° 28”N and 10° 55” N of the equator and longitude 11° 30” E and 13° 45” E of the Greenwich Meridian. The State has a land mass of 39,743.12 sq. km. with a population of 3,194,781 (NPC, 2006). Subsistence agriculture forms the major source of livelihood for a majority of the population. Ten local government areas (LGAs) participated in the project activities. This study was conducted in five participating Local Government Areas and five non-participating LGAs. The participating LGAs includes: Ganye, Gombi, Mubi North, Fufore, and Guyuk. while non-participating LGAs include: Maiha, Hong, Girei and Jada and Numan.

Sample Selection
To analyze the effects of Fadama II on the benefiting rural communities, the respondents were classified into two categories. These categories are: Direct Fadama II participants and Non-Fadama II participants living outside Fadama II LGAs. The non-participants have comparable socio-economic characteristics to the Fadama II communities. This categorization is to allow for determination of the actual benefits of Fadama II project.

A multi-stage sampling technique was used for selecting respondents for this research. The first stage involved purposive sampling of five out of the ten Fadama II benefiting LGAs at 50 per cent (5 LGAs). The second stage was the selection of 50% of FCA (20 FCAs) from each of the five LGAs, while the last stage involved purposive selection of five (5) households from each FCA, making a total of 100 Fadama II Project beneficiaries. This sampling procedure also applied to project non-beneficiaries outside Fadama II LGAs. In all, a total of 200 comparable beneficiaries and non-beneficiaries were selected for the study. All the economic interest groups (EIGs) such as crop farmers, fisher folks, pastoralists, hunters, widows, processors among others including those involved in non-farm activities were represented in the
sample of the beneficiaries and non-beneficiaries alike. The sampling frame of household was also stratified by gender and vulnerable groups. This choice is to ensure that not less than 25% of respondents from each FCA are female.

**Survey Instruments for Data Collection**

To collect a reliable data, a structured survey instrument was used to collect the required information from households. Structured questions were used to determine the effect of project among the project participants and non-participants. The survey instrument was administered by trained enumerators under the supervision of the researchers.

**Baseline Data Collection**

Double difference analysis (explained later in the text) employed in this study requires baseline data. The baseline data was collected using recall information, one year before the inception of *Fadama II* – i.e. for the cropping year 2004. The recall information includes data on income, involvement in decision making, productive assets, infrastructure and conflict status.

**Data Analysis**

An experimental approach was used to construct an estimate of the counterfactual situation by randomly assigning households to treatment and control groups. Random assignment ensures that both groups are statistically similar in observable and unobservable characteristics, thus avoiding project placement and self-selection biases.

Propensity Score Matching (PSM) and Double-difference (DD) were used in this study to address the challenges faced by impact studies of this kind as outlined above to determine average treatment effect (ATE) on the beneficiaries. The PSM method matches project beneficiaries and comparable non-beneficiaries using propensity score; which is the estimated probability of being included in the project. 

\[
\text{ATE} = \left[ E(Y_1 | p = 1) - E(Y_0 | p = 0) \right] - \left[ E(Y_0 | p = 1) - E(Y_0 | p = 0) \right].
\]

Where ATE = average treatment effect; \( p \) = participation in the project (\( p = 1 \) if participated in the project, and \( p = 0 \) if did not participate in the project); \( Y_1 \) = outcome (income, in this example) of the project beneficiary after participation in project; \( Y_0 \) = outcome (income) of the same beneficiary if he or she had not participated in the project. In this study, only beneficiaries and non-beneficiaries with comparable propensity scores were used to determine the effect of the project. Double–difference on the other hand, compares changes in outcome from before and after the project between beneficiaries and non-beneficiaries, instead of just comparing outcome levels at one point in time.

\[
\text{DD} = (Y_{p1} - Y_{p0}) - (Y_{np1} - Y_{np0})
\]

Where \( Y_{p1} \) = outcome (e.g., income) of beneficiaries after the project started; \( Y_{p0} \) = outcome of beneficiaries before the project started; \( Y_{np1} \) = outcome of non-beneficiaries after the project started; and \( Y_{np0} \) = outcome of non-beneficiaries before the project started.

To estimate the effect of the project on the beneficiaries, mean values and their corresponding standard deviation were used. Statistical test (T-test) for difference between the project participants and non-project participants was also used to determine statistical significance.

**RESULTS AND DISCUSSION**

**Change in Income**

The finding of this study indicates that household incomes improved significantly more for *Fadama II* beneficiaries than for non-beneficiaries. *Fadama II* has enhanced the capacity of the beneficiaries to realize significant increases in income. The findings have attributed the income increases to participation in the project with considerable confidence. The estimated average treatment effect (ATE) is positive (49540), indicating significant increase (Table 1). Further comparability test (t-test) shows that there is significant increase in income at \( P = 0.05 \) (Table 1). This means that *Fadama II* project has succeeded in achieving its income goal within its period of operation, and subsequently improved wellbeing among the beneficiaries. Olaniyan (2000) observes that income is an important contributor to the improvement of rural wellbeing, and that nonwage income source is the major contributor to welfare increases in the rural areas than the wage income.
Participatory Nature
The findings of this study also suggest that beneficiaries of Fadama II were directly involved in the planning of development of projects conceived by them, indicating that there was bottom-up approach in project planning which is typical of community-driven development. As the field data indicates, the estimated average treatment effect (ATE) is positive (0.715) and comparability test between beneficiaries and non-beneficiaries shows that decision-making among beneficiaries as it regards to planning and implementation of projects is significant at P = 0.05 (Table 1). One of the benefits of a community-driven development (CDD) is its obvious objective of changing power relation in such a way that it gives voice for the poor people, allowing them to take charge of the development assistance (Mansuri & Rao, 2004). This result suggests that while there is an element of bottom-up planning in the project communities, there is still evidence of top-down approach in non-project communities.

Productive Assets Acquisition
It was evident from findings that participation in Fadama II has made concerted effort at providing productive assets among the beneficiaries. The change in the value of productive assets was large and significant among the beneficiaries compared to their counterparts of the non-beneficiaries. ATE shows positive value (36311.23) indicating large increases in the value of productive assets among the project participants (Table 1). Comparability test also indicates significant increases at P = 0.05 (see Table 1). This result demonstrates that the project has helped the beneficiaries to acquire more productive assets to facilitate their economic activities. It is expected that these assets contributes immensely to increase in productivity and consequently increase in income as reflected in the previous section.

<table>
<thead>
<tr>
<th>Variable type</th>
<th>Beneficiaries</th>
<th>Non-beneficiaries</th>
<th>ATE</th>
<th>T-test</th>
<th>P(value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>91818(111535)</td>
<td>42278(17429)</td>
<td>49540</td>
<td>2.038</td>
<td>0.023**</td>
</tr>
<tr>
<td>Participatory Nature (decision-making process)</td>
<td>0.952(1.2910)</td>
<td>0.242(0.3823)</td>
<td>0.715</td>
<td>0.112</td>
<td>0.000**</td>
</tr>
<tr>
<td>Value of productive assets</td>
<td>126009.14(15083)</td>
<td>61405.00(99195)</td>
<td>36311.23</td>
<td>1.231</td>
<td>0.014**</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>0.669(0.9449)</td>
<td>0.267(1.0250)</td>
<td>0.4017</td>
<td>2.514</td>
<td>0.011**</td>
</tr>
<tr>
<td>Advisory services</td>
<td>0.935(1.158)</td>
<td>0.274(0.458)</td>
<td>0.661</td>
<td>0.520</td>
<td>0.010**</td>
</tr>
<tr>
<td>Conflict resolution</td>
<td>2.3065(1.40944)</td>
<td>0.6855(0.91391)</td>
<td>2.0114</td>
<td>8.232</td>
<td>0.000**</td>
</tr>
<tr>
<td>Capacity building</td>
<td>0.613(0.739)</td>
<td>0.145(0.284)</td>
<td>0.468</td>
<td>0.431</td>
<td>0.011**</td>
</tr>
</tbody>
</table>

Note: Number in bracket are standard deviation of the corresponding mean.

Rural Infrastructure Development
As the field data indicte, average number of roads were provided by Fadama II project. There is an evidence of roads construction and rehabilitation after the establishment of Fadama II project. Even though not much has been achieved, the estimated average treatment effect (ATE) is positive (0.4017) indicating significant difference in number of roads constructed and rehabilitated between project communities and non-project communities (see Table 1). Further analysis using comparability test (t-test) shows that road provision in project communities is significant at P = 0.05 (Table 1). The study further established that the beneficiaries’ distance and travel time to the nearest town has been reduced. One of the major contribution of infrastructure is its capability to enhance market access and marketing of agricultural products, thus encouraging a structural departure from subsistence-based agriculture to commercialisation (Iheanachu et al, 2007)

Advisory Services
The use and demand for proven technologies by farmers has increased as a result of participation. The adoption of new technologies has increased among the beneficiaries compared to non-beneficiaries. The rate of adoption of new and improved technologies shows positive value (0.661) for the estimated average treatment effect (ATE) (see Table 1). The statistical test for significance (t-test) between the beneficiaries

and the non-beneficiaries shows that there is significant impact at $P = 0.05$ (Table 1). Nigeria has used unified extension system as promulgated by donors and projects (Oladele et al, 2004). As it strives to reform its extension system toward more pluralistic system, the government need to harmonize the existing approaches and seek to use those that are complementary rather than conflicting (Oladele et al, 2004).

**Capacity Building**

The findings also indicate that the capacities and abilities of the beneficiaries were enhanced through capacity building to assess their needs, participate in planning, implementation and manage economic activities. Project participants were trained to negotiate and manage contracts, then handle basic financial management and book keeping. The beneficiaries’ skills and know-how is strengthened and can take charge of their development agenda as prescribed in community-driven development (CDD) strategy. Fadama User Groups (FUGs) and Fadama Community Association (FCAs) can design and implement local development plan (LDPs). The estimated average treatment effect is large and positive (0.468) signifying huge difference between the beneficiaries and non-beneficiaries of the project (see Table 1). Statistical test for significance (t-test) as shown in Table 1 above, indicates that the impact on capacity building is large and significant at $P = 0.05$. UN (2004) realized that community-driven development (CDD) is a process through which local community improves its capacity to use social capital and participate in development process. Such process would ultimately pave way for the empowerment of the poor communities and consequently to the reduction of poverty.

**Conflict Resolution Mechanism**

One of the major findings in this study suggests that conflicts among large group of farmers over natural resources is reduced or eradicated. The finding also indicates that there is harmonious relationship among fadama user group (FUG) and fadama community association (FCA) members and as such, regard themselves as partners in progress. Conflicts over natural resource use were reduced to its minimum level or completely non-existent among the participating communities compared to non-participating communities. As the result shows, the ATE is positive (2.0114). The comparability test between the participants and non-participants also show significant difference at $P = 0.05$ (Table 1). There is no doubt that harmonious relationship enhances productivity, better output and high standard of living (Mansuri and Rao, 2004). The level of community cohesion, or social capital, is also expected to improve the quality and sustainability of projects.

**CONCLUSION AND POLICY IMPLICATION**

From the foregoing results, it can be drawn that this CDD project (Fadama II) has really achieved its goal of increasing the incomes of the beneficiaries in the first five years of its operation. Experience according Nkonya et al (2008), demonstrates that by directly relying on poor people to drive development activities, CDD project has demonstrated ability to make poverty reduction efforts to meet local demands, more inclusive, more sustainable and more cost-effective than traditional service oriented projects. CDD project like Fadama II project fills a critical gap in poverty reduction efforts, achieving immediate and lasting results at the grassroots level and complementing public sector-run projects. This attributes, gives CDD projects to play an important role in poverty reduction. Fadama II has achieved its objectives through the provision of productive assets, advisory services, rural infrastructure, capacity building and by reducing conflict among fadama resource users.

The project has also succeeded in empowering the poor and vulnerable to have voice in decisions affecting their lives and take charge of their development agenda. The unique feature that have contributed to the significant impact of the project in a short time is its broad-based approach, which addresses the short comings of the previous top-down approach and major constraints limiting the success of CDD projects that address only one or two constraints.

This results have implication on planning poverty reduction efforts in low-income countries. There is the need for the policy makers/ authorities to consider community-driven development approach for projects
meant to benefit the rural communities. Given that the poor face numerous constraints, a CDD project that simultaneously addresses many constraints, like Fadama II will likely build synergies that will lead to larger impacts than will a project that addresses only one or two constraints. This initiative suggests the need for the government and donors to pool resources and initiate multipronged CDD projects rather than many isolated projects.

REFERENCES


