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Sustainability of the Benefits Derived from Fadama II Critical Ecosystem Management Project in Eriti Watershed of Ogun State

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Abstract

This study investigated the sustainability of the benefits derived from Critical Ecosystem Management Project in Ogun State. Interview schedule was used to elicit information from 166 respondents randomly drawn from three communities in the project's catchment area. Data on beneficiaries' involvement, benefits derived and satisfaction as well as constraints to benefits derived from the project were collected. Frequency counts and Students't-test were used to analyse data. Many of the beneficiaries (55.4%) generally had high level of involvement in the project, but reported low involvement in the selection of service providers ($\bar{x} = 1.36$) and decision on how much to pay them ($\bar{x} = 0.96$). Meanwhile, bee hives and other honey making equipment recorded the highest proportion (85.0%) of beneficiaries. About 57.2% of the beneficiaries had high level of satisfaction with the benefits derived from the project but were constrained by lack of technical knowledge and maintenance ($\bar{x} = 0.8072$). There were significant differences in the statuses of benefits derived from bee hives ($t = -25.39$) ($p \leq 0.05$), bee making equipment ($t = -33.221$) ($p \leq 0.05$), snail ($t = -33.681$) ($p \leq 0.05$), grasscutter weaners ($t = -136.106$) ($p \leq 0.05$) and plantain plantations ($t = 9.717$) ($p \leq 0.05$) between project intervention period and current period. Benefits derived from the project were not well sustained by the beneficiaries. Future projects should improve on the involvement of beneficiaries in procuring service providers in addition to been exposed to capacity building workshops on asset maintenance to enhance their sustainability.

Keywords: Eriti watershed, Fadama II, Sustainable ecosystem management.

Introduction

Fadama II project was initiated with the aim of reducing poverty by supporting communities to acquire infrastructure and productive assets, providing demand-driven advisory services, increasing the capacity of communities to manage economic activities, and reducing conflicts among resource users (World Bank, 2008). The increased access to factors of production would have ordinarily led to increased pressure on the ecosystem and concomitant environmental implications. This reality informed the mainstreaming of the Critical Ecosystem Management Project (CEMP) into the Fadama II project to mitigate the effect of the Fadama project on the environment.

According to World Bank (2005), the project became disbursement effective in 2006 and came to an end in 2011. Like its sister project Fadama II, the implementation of CEMP was anchored on the Community Driven Development (CDD) concept, using local development planning to enhance the sustainability of benefits accruable from intervention projects. While it lasted, it had a *global objective of enhancing the productivity of Fadama areas and the livelihood systems they support through sustainable land use and water management*.

This was intended to be achieved through the provision of matching grants to support environmentally enriching sub-projects, many of which have economic benefits under the following components:

- (a) Capacity development for sustainable Fadama natural resource management at national, state, local government, and community levels, including strengthening institutional capacity for integrated watershed management, and strengthening community capacity for resource development planning;
- (b) integrated ecosystem management in selected watersheds, through sustainable management of key forest areas, buffer zones, and wetlands, and improved water management; and
- (c) community sustainable land use management, through support for alternative land and/or water use activities, and adoption of indigenous sustainable land management practices.

The project was implemented in few communities drawn from six states of the country namely; Bauchi (Andiwa lake), Imo (Oguta lake), Kebbi (Jega/Dumbegu), Kwara (Ajasse-Ipo), Kogi (Koton Karfe) and Ogun (Eriti) at a budgeted cost of \$63.22 million. Using the then prevailing exchange rate (\$1 = N120), the project budget (N7.6 billion) was more than a quarter of the budgetary allocation of a whole state like Ekiti in the year the project became disbursement effective (N26.2 billion) (Ekiti State Government, 2006).

Implementation status report (World Bank, 2011) showed that Fadama II CEMP was generally successful while, an independent evaluation group's review of the implementation completion report (World Bank, 2014) rated the achievement of the project with respect to its development objective as modest. These findings are very impressive and suggest that the benefits derived from the project would have positively impacted the environment if sustained. The need to ascertain whether the benefits derived from the project was sustained by the beneficiaries necessitated this study.

Objectives

The study had the following specific objectives:

1. describe the socioeconomic characteristics of the beneficiaries;
2. determine the beneficiaries' level of involvement in the project;
3. ascertain the benefits derived by beneficiaries of CEMP;
4. assess the constraints faced by beneficiaries in accessing and sustaining the benefits; and,
5. investigate beneficiaries' level of satisfaction with the implementation of CEMP.

Methodology

The study was carried out in Eriti watershed, Obafemi/Owode Local Government Area of Ogun state. The catchment is blessed with rich alluvial flood plains which made it suitable for dry season crop production. It also supports fishing as well as sand mining businesses. The catchment area is made up of five Fadama Community Associations (FCAs) on which the implementation of CEMP was premised. The FCAs are; Ifesowapo Eriti, Kodarafunwa Itori-Ogunpa, Oba, Legacy Oba and Irewolede Mokoloki FCAs. Three out of the five FCAs were randomly selected for the study while 50% of the beneficiaries from the three selected FCAs were also randomly selected giving a total of 166 respondents who were interviewed for the study.

Sustainability of the benefits derived from Fadama II CEMP was measured as the change in the statuses of benefits derived at project end and currently. Benefits derived was measured at the interval level by asking respondents to tick the type and provide the actual number of such items benefitted from the project from a list of possible project benefits. Meanwhile, Level of involvement was measured at the ordinal level by asking respondents to state their extent of involvement in project activities on a four-point scale of Not Involved (NI), Not So Involved (NSI), Involved (I) and Very Involved (VI).

Constraints to the implementation and sustainability of benefits derived was measured at the ordinal level by capturing the severity of possible constraints using a three-point scale of Not a Constraint (NC), Mild Constraint (MC) and Severe Constraint (SC). In addition,

Level of satisfaction with project implementation and benefits was also measured at the ordinal level using a three-point scale graded as Not Satisfied (NS), Satisfied (S) and Very satisfied (VS) to respond to enquiries about different aspects of the project implementation.

In all the cases, the mean scores were generated and used to categorise the respondents into low and high levels.

Results and Discussion

Socioeconomic characteristics

Table 1 shows that a larger proportion of the study participants (58.4%) were male. This indicates that the Fadama project's affirmative action of 30% women involvement yielded fruitful results (Fadama, 2009).

Mean age was 43.7 years. This implies a proportion of the youth and elderly benefited from the project. The age range is also an indication that the culture of sustainable land management being promoted by the project would be long lasting (Fakoya, Agbonlahor and Dipeolu, 2007).

Majority of the respondents (76.5%) were Christians, while the remaining (23.5%) were Muslims. This suggests that the pulpit can be a veritable platform to mobilise members of the community for positive group action for environmental purposes.

A larger proportion of the study participants (96.4%) were of Yoruba ethnic extraction while few of them were Hausa (3%) and Igbo (0.6%). This is not surprising because the communities are core rural areas which house historical sites like the Lisabi grove. Hence, strangers may not be easily disposed to residing there.

Most of the study participants (88.6%) were married which implies that the benefits derived from the project would not only impact individual beneficiaries alone but the family as a unit.

Educational attainment in the catchment area was fairly low as over a third of the respondents (34.9%) had no formal educational background. Another sizable proportion (38%) had primary education while, about a quarter (27.1%) had secondary and post-secondary education. This has implications on the literacy level of the beneficiaries and may suggest that oral transmission of extension messages through the radio or interpersonal communication would be more effective in the area.

The mean household size in the catchment area was 8 individuals which implies a large household size. This might be one of the factors that prompted the respondents to participate in Fadama II CEMP so as to meet up with family responsibilities financially and in other areas.

Most of the respondents (86.2%) were engaged in farming as a major occupation. This agrees with the general belief that farming is the main occupation of Nigeria's rural dwellers. Hence, the complementarity of the project with farming would naturally boost its acceptance by the beneficiaries.

Finally, the mean income was more than N30, 000 in a month. Using the national minimum wage of N18,000 as a benchmark for living wage in Nigeria, the majority of beneficiaries (91%) could be considered to be earning modest income which may be an outcome of the successful implementation of the Fadama projects in the area (Nkonya, Philip, Pender *et al*, 2008).

Table 1: Socioeconomic characteristics of the respondents

Variable		Percentage	Mean
Sex	Male	58.4	
	Female	41.6	
Age	40 years and below	21.7	
	41-50 years	43.4	43.7
	51-60 years	29.5	
	61-70 years	4.2	
	Above 70 years	1.2	
Religion	Christians	76.5	
	Islam	23.5	
Ethnic background	Yoruba	96.4	
	Hausa	3	
	Igbo	0.6	
Marital status	Single	1.2	
	Married	88.6	
	Divorced	3.6	
	Widowed	6.6	
Educational attainment	No formal education	34.9	
	Primary school	38	
	Secondary school	23.5	
	ND/NCE	1.8	
	Polytechnic	1.8	
Household size	4 and below	6	
	5-8	74.1	8
	9-12	19.3	
	Above 12	0.6	
Major occupation	Civil servant	3.6	
	Artisan	3.6	
	Trader	5.4	
	Farming	86.2	

	Cleric/priest	1.2	
Monthly income	20,000 below	9	
	21,000 – 30,000	35.5	31,783
	31,000 – 40,000	39.2	
	41,000 – 50,000	10.8	
	Above 50,000	5.4	

Level of beneficiaries' involvement in Fadama II CEMP

Tables 2a and b reveal that the respondents were generally involved in most aspects of the project, as more than half of the beneficiaries (55.4%) had high level involvement in the project. This high level of involvement is expected to lead to sustainability of the project benefits (Tandia, 2006). Involvement in the exception of selection of service providers ($\bar{x} = 1.36$) and decision on how much to pay them ($\bar{x} = 0.96$) were however low. This puts a question mark on the transparency of the procurement process in the sub-project implementation and has implications on the sense of ownership as well as sustainability of the project benefits as it flouts four key pillars of the Community Driven Development (CDD) concept which are realigning the centre, community empowerment, accountability and transparency as well as learning by doing (Badiru, 2010).

Table 2a: Distribution of respondents based on involvement in Fadama II CEMP

Statements	NI %	NSI %	I%	VI %	Mean
Attending of meeting regularly	3.6	3	60.8	26.5	2.93
Mobilisation of other people for project activities	4.2	4.2	64.5	27.1	3.15
Group Needs Assessment (participated in PRA)	7.8	3.6	69.3	19.3	3.13
Selection of service providers	49	22.3	19.2	9.6	1.36
Deciding on how much to pay for service provision	51	21.1	18.0	9.6	0.96
Monitoring of service provision	9.6	8.4	70.5	11.4	2.67
Maintenance of benefits derived	4.8	2.4	81.4	9.6	2.63
Giving of resource to sustain project benefits	5.4	6.6	80.8	7.2	2.52
Sourcing of fund in maintaining the adopted benefits	10	7.8	65.9	6.0	2.43
Sales of proceeds from the benefits derived	3.0	2.4	87.3	7.2	2.42
Sharing of proceeds from the project	5.4	6.0	82.5	6.0	2.36

Table 2b: Frequency distribution of respondents based on level of involvement

Level of involvement	%	Score range	Mean	SD
Low	44.6	11 – 29.6	29.7	7.77
High	55.4	29.7 – 55		

Benefits derived from Fadama II Critical Ecosystem Management Project.

Table 3 shows that bee hive (86.1%), plastic equipment (84.3%), hive tools (77.7%), honey extractor (76.5%), grasscutter pens (70.5%), and grasscutter weaners (63.9%) were the most prominent benefits derived by beneficiaries of the project.

Establishment of plantain plantation (34.3%), cashew orchard (25.3%) and citrus orchard (15.7%) also featured prominently among the fruit-bearing items benefitted by the project beneficiaries.

Other major benefits include mushroom (15.1%), and oil palm plantation (12.7%).The prominence can be attributed to the income generating capabilities of these project benefits which attracted the beneficiaries.

Table 3 Distribution of respondents based on benefits derived from Fadama II CEMP

Item	Percentage (%)
Bee hive	86.1
Plastic equipment	84.3
Hive tool	77.7
Honey extractor	76.5
Solar bee wax extractor	1.8
Honey heater	5.4
Snail	59.6
Snail pen	55.4
Grasscutter pens	70.5
Grasscutter weaners	63.9
Adult Grasscutter	16.2
Cashew	25.3
Citrus orchard	15.7
Mango orchard	5.4
Guava orchard	0.6
Woodlots	7.8
Plantain plantations	34.3
Oil palm plantation	12.7
Cocoa plantation	3.6
Mushroom	15.1

Source: Field Survey 2014

Constraints faced by beneficiaries in accessing and sustaining the benefits of Fadama II CEMP

Table 4 reveals that poor technical knowledge of management and maintenance ranked first ($\bar{x} = 0.8072$) while misappropriation of funds by group leaders ($\bar{x} = 0.5301$) ranked second among the constraints faced by beneficiaries in accessing and sustaining the

benefits of Fadama II CEMP in the study area. Tandia, (2006) listed operation and maintenance as well as financial management among the factors affecting the sustainability of projects. Hence, these constraints may be considered crucial. However, the mean scores revealed that none of the constraints was serious enough as they were all less than 1. Hence, the effect of the identified constraints ought not to seriously impact the delivery of the project benefits.

Table 4: Frequency distribution of constraints faced by beneficiaries of Fadama II CEMP

Constraints	NAC (%)	MC (%)	SC (%)	Mean	Rank
Lack of fund	99.4	0.6	0.0	0.0060	15
Lack of cooperation	97.0	2.4	0.6	0.0361	11
Low awareness	98.3	1.8	0.0	0.0181	13
Tedious process of registration	80.7	14.5	4.8	0.2410	5
Cost of registration	69.9	15.1	15.1	0.4518	3
Poor understanding of Fadama II	97.0	3.0	0.0	0.0301	12
Communal conflict	91.0	4.2	4.8	0.1386	7
Low interest	97.0	2.4	0.6	0.0361	11
Payment of beneficiary contribution	84.9	7.8	7.2	0.2229	6
Inadequate sensitisation and orientation	99.4	0.6	0.0	0.0120	14
Poor membership strength	95.2	3.0	1.8	0.0060	15
Low involvement	78.9	7.2	13.9	0.0663	9
Inability of local leaders	92.2	4.2	3.6	0.3494	4
Poor project facilitation	97.0	1.8	1.2	0.1145	8
Poor service delivered by service providers	31.3	56.6	12.0	0.0422	10
Poor technical knowledge of management and maintenance	59.0	28.9	12.0	0.8072	1
Misappropriation of funds by group leaders	83.7	10.8	5.4	0.5301	2

Field Survey, 2014

Level of satisfaction

Table 5a reveals that comparatively, the beneficiaries were more satisfied with Local Fadama Desk Official's handling of the project ($\bar{x} = 2.90$), project design, aims and objectives ($\bar{x} = 2.13$), training and capacity building workshop ($\bar{x} = 23.89$), and community facilitation ($\bar{x} = 2.88$). On the other hand they were less satisfied with the handling of cashew ($\bar{x} = 1.01$), mango orchard ($\bar{x} = 0.98$), and mushroom ($\bar{x} = 0.87$). These findings suggest that the service provision end of the project was not properly carried out, may be due to the low involvement of the beneficiaries in selection of service providers, and deciding the amount they should be paid as shown in Table 2.

However, a general assessment of the satisfaction level of the beneficiaries on Table 5b shows that more of the beneficiaries (57.2%) had high level of satisfaction with Fadama II CEMP implementation and the benefits derived.

Table 5a: Distribution of respondents based on their level of satisfaction with project implementation and benefits derived

Project activities and benefits	D %	I %	S %	VS %	Mean	Rank
Project design, aims and objectives	0.0	1.8	7.8	91.0	2.89	2
State officials handling	0.0	2.4	82.5	15.1	2.13	10
Local desk officials handling	0.0	1.2	7.8	91.0	2.90	1
Community facilitation	1.2	1.2	6.0	91.6	2.88	4
Service providers	12.7	13.3	68.1	6.0	1.67	12
Procurement procedures	10.2	12.7	71.7	5.4	1.72	11
Awareness campaigns	0.0	1.8	9.0	89.2	2.87	5
Training and CB workshop	0.0	1.2	9.0	89.8	2.89	3
Selecting of participants	0.0	1.8	6.6	91.0	2.88	4
Quality of project benefits	1.2	1.8	7.2	89.8	2.86	6
Bee hives	5.4	25.3	3.0	66.3	2.30	9
Plastic equipment	0.6	22.3	18.1	59.0	2.36	8
Hive tool	0.0	19.9	3.0	77.1	2.57	7
Honey extractor	0.0	72.3	2.4	25.3	1.53	14
Solar bee wax extractor	0.0	98.8	0.6	0.6	1.02	24
Honey heater	3.0	89.2	6.6	1.2	1.06	20
Snail	18.1	53.0	24.7	4.2	1.15	16
Snail pen	10.8	63.9	19.3	6.0	1.20	15
Adult grass cutter	4.8	88.0	3.0	4.2	1.07	19
Weaners grass cutter	27.7	48.8	4.8	18.7	1.14	17
Cashew orchard	6.0	89.8	1.2	3.0	1.01	25
Citrus orchard	4.8	89.2	3.6	2.4	1.04	22
Mango orchard	3.0	96.4	0.6	0.0	0.98	26
Guava orchard	0.0	94.6	5.4	0.0	1.05	21
Plantain plantation	2.4	63.3	4.8	29.5	1.61	13
Cocoa plantation	0.6	97.0	0.6	1.8	1.03	23
Mushroom	13.3	86.7	0.0	0.0	0.87	27

Table 5b: Frequency distribution of level of satisfaction

Level of involvement	%	Score range	Mean	SD
Low	42.8	65 – 85	85.87	5.63
High	57.2	86 – 97		

Sustainability of benefits derived from Fadama II CEMP

Results of Students' t- test of difference analysis on Table 6 showed significant differences in the statuses of bee hive ($T = -25.39$, $p \leq 0.05$), plastic equipment ($T = -33.221$, $p \leq 0.05$), snail ($T = -33.681$, $p \leq 0.05$), grasscutter weaners ($T = -136.106$, $p \leq 0.05$) and plantain plantations ($T = 9.717$, $p \leq 0.05$) benefitted at close of project and currently. Meanwhile, it was only plantain plantation which recorded a positive change in status among these benefits. Others recorded negative change in status which implied a deterioration in the statuses of the benefitted items. These suggested that the benefits derived from CEMP were not well sustained as their proceeds either had stagnated or deteriorated. This is quite surprising because the beneficiaries generally had high involvement, benefitted and had high level of satisfaction with the project implementation and benefits derived. Thus, suggesting a high level of sustainability of the benefits derived. One is therefore compelled to suspect beneficiaries' low involvement in the procurement of service providers and the resultant low level of satisfaction with service provision as probable causes of the low sustainability.

Table 6: Summary of T-test analysis showing the difference between benefits derived at close of project and current status of benefits derived

Variables	Mean		T	Df
	Before	After		
Bee hive	17.45±4.43	6.69±3.99	-25.39*	129
Plastic equipment	41.27±11.59	10.1190±7.83	-33.221*	125
Snail	46.5882±12.75	.0000±.00000	-33.681*	84
Snail pen	1.03614±0.18778	1.0723±1.00951	0.309	82
Grasscutter	3.000±2.828	0.500±0.7071	1.000	1
Grasscutter pens	1.0446±.05357	0.9911±0.9449	-11.179	111
Grasscutter weaners	4.9646±0.3763	0.0088±0.09407	-136.106*	112
Cashew	1.000±0.000	1.1600±19958	0.567	49
Plantain plantations	1.0000±0.0000	1.3614±0.2808	9.717*	56

* $P < 0.05$

Conclusion and Recommendation

Benefits derived from the Fadama II Critical Ecosystem Management Project was poorly sustained by the beneficiaries in spite of their generally high level of involvement in and satisfaction with the implementation of most parts of the project. Future projects should therefore ensure that the process of selection and contract negotiation with service providers is more transparent in line with the principles of community driven development. In addition, capacity building on asset maintenance should also be mainstreamed into such projects to enhance the sustainability of benefits derived from them.

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