RESEARCH ARTICLE

ASSESSMENT OF THE EFFECTIVENESS OF IFAD-COMMUNITY BASED NATURAL RESOURCE MANAGEMENT PROGRAMME (CBNRMP) IN REDUCING INCOME INEQUALITY AMONG BENEFICIARIES IN EDO STATE, NIGERIA

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ABSTRACT

The study assessed the effectiveness of the IFAD Community-Based Natural Resource Management Programme (CBNRMP) in the reduction of income inequality among beneficiaries in Edo Stale. The objectives were to determine the effectiveness of the programme in reducing income inequality among beneficiaries and examine constraints faced by the beneficiaries in the CBNRM programme. To achieve these objectives data were collected from 180 respondents, comprising 82 CBNRMP beneficiaries and 98 non beneficiaries, randomly selected from the three agro-ecological zones in the State as delineated by the Edo State Agricultural Development Programme (EADP). Structured questionnaire and interview schedule were employed as instruments for data collection. Data collected were analyzed using descriptive statistics such as tables, mean, frequency distribution, standard deviation as well as inferential statistics like Gini coefficient and student t-test. The study found that the programme was seen to have impacted positively and significantly ($t = 10.89$; $p<0.05$) on beneficiaries' income with their without and with CBNRMP income being N281,119.01 and N421.095.73 respectively. Similarly, beneficiaries' average farm income (N421,195.73) was found to be significantly ($t = 4.11$; $p<0.05$) higher than that of non-beneficiaries (N263,008.21). The Gini coefficient obtained for both groups were 0.798 and 0.791 respectively indicating that there is high level of income inequality among the different groups which implies that the programme did not reduce income inequality among farmers in any significant way. Two major factors found to be of great concern, to CBNRM programme beneficiaries were lack of insurance against crop/livestock failure (mean score = 4.01) and the small size of loan given (mean score= 3.50). It was recommended that there is need for an upward review of the loan volume granted beneficiaries to enable them expand their enterprise and meet their production costs as well.

INTRODUCTION

According to Child (2004), natural resources are the land, the soil, the water, the air, the plants and the animals. These are the natural wealth of the community. The community's livelihood depends on protecting these natural resources and using them wisely otherwise there will be nothing left for future generations. Thakadu (2005), noted that Natural resource management refers to the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations. This also implies that people and their livelihoods rely on the health and productivity of the natural landscapes and acknowledges that their actions play a critical role in maintaining this health and productivity.

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Management refers to how local people use an existing Community Based Organization (CBO) or form new ones to develop plans to protect their natural resources and to use them wisely. The organisation works to earn the trust of the community while the community recognises the organisation as the legitimate body that represents their interests and the one they can partner with. Community-based development management or planning (CBDP) refers to planning by communities for their own communities. Such planning, according to Inglis and Hesse (2002), is not isolated from the state and national government planning systems. One of the reasons for undertaking CBDP is to promote community action, sometimes, as a means of releasing latent energy of communities or to reduce the demands on government scarce resources by shifting responsibility to communities. It is for this reason that the Federal Government of Nigeria identified the need to partner with the International Fund for Agricultural Development (IFAD) in Community-Based Natural Resource Management Programme (CBNRMP).

According to Bond *el al.* (2006), CBNRM is an approach to the management of land and other natural resources that are relevant to. and have the potential to provide solutions to some of the problems found within the community. CBNRM is based on the rationale that "community empowerment, which manifests itself through providing communities with legal rights to the sustainable use of wildlife on communal lands, would gradually lead to community "ownership" in conservation management" (Schuerholz and Baldus, 2007). The Community-Based Natural Resource Management Programme (CBNRMP) which commenced on July 6, 2005, is designed to improve the standard of living and quality of life of rural poor households. The eight year old programme (2005 - 2013) target at least 400,000 poor rural households, with emphasis on women and youths in nine States in the Niger Delta: Abia, Akwa lbom. Bayelsa. Cross River. Rivers. Edo. Delta. Ondo and Imo States. If well managed, the programme has the potential to increase national food production, improve institutional capability, encourage participation of the community beneficiaries and create the enabling environment for rural economic growth, and most importantly, enhance the socio-economic life of small scale farmers.

The programme is financed by the International Fund for Agricultural Development (IFAD). Federal Government of Nigeria through the Niger Delta Development Commission and the benefiting States and Local Government Councils. In Edo State, nine local government councils benefited, these include Ovia North east, Orhionmwon, Uhunmwode, Owan east, Esan West, Igueben., Esan South East, Akoko Edo and Etsako Central. The Programme which was hitherto under World Bank supervision was reviewed at Mid-term in May 2010 and IFAD took over direct supervision in June, 2009 (IFA/FGN/NDDC, 2010) CBNRM is concerned about people in the community coming together to protect and preserve their land, water, animals and plants, so that they can use them to improve their lives and the lives of their future generations. CBNRM is a tool to enable every member of the community willing to play a part in improving the quality of people's lives economically, culturally and spiritually. CBNRM provides a platform for communities to work together to protect their natural resources and at the same time bring long-lasting benefits to the community (Johnson and Erdmann, 2006).

Successful CBNRM can deliver many different benefits. According to Luric and Hibbarb (2008), CBNRM can: give people access to resources; improve farming and food supply; create jobs; build small businesses; provide opportunities for education and training; build community organization; improve community health; maintain and strengthen cultural and spiritual values. This paper seeks to answer the following research questions;

- Has the CBNRM programme been effective in reducing income inequality among beneficiaries?
- What are the constraints facing the beneficiaries of the programme?

By identifying and documenting the strengths of the programme especially with reference to its impact on small scale farmers, it is hoped that such information can be used to

seek for greater public and international support for programme continuity. The study will highlight the constraints associated with the operations of the CBNRM programme. It is hoped that by identifying the limitations, the programme managers and government can take corrective steps to address the problems and thus enhance the effectiveness of the programme or other programmes in the future.

Objectives of the Study

The main objective of this study is to assess the effectiveness of IFAD-Community Based Natural Resource Management Programme (CBNRMP) in reducing income inequality among beneficiaries in Edo State, Nigeria. The specific objectives include to:

- determine the effectiveness of the programme in reducing income inequality among beneficiaries in Edo State, and
- examine the constraints faced by the beneficiaries of the CBNRM programme.

Literature Review

Concept of Poverty

Poverty is best captured as a condition of being very poor, caused by lack of inadequate resources (Longman 2007). It describes a situation in which people live with small amount of money, too small for comfort and therefore full of wants and inadequacies. Poverty is seen in peoples inability to feed well, limited access to social and economic infrastructure such as education and health, those with high infant mortality, low life expectancy, poor housing or lack of shelter, lack of portable water and loss of self-esteem (Ekong, 2003). The World Bank, according to Elumilade *et al*. (2006), defined poverty as the inability to attain a minimum standard of living. Basic resources are required to meet this minimum standard of living. The availability of these life necessities enable people to meet social and economic obligations and interact confidently with their fellow human beings. It should be stressed that poverty cannot be conceived only from an economic or consumption perspectives.

According to Nanak and Hyun (2006), poverty encompasses other non-material forms of deprivation of life such as lack of education, vulnerability, unemployment, ill-health, powerlessness, social exclusion, etc. Aside these other perspectives, Hazell and Haddad (2001) also posit that there are psychological and social components of deprivation (poverty). Psychological deprivation refers to individuals' inability to meet basic material and psychological needs which can be measured by lack of inadequate income, which limits access to food and to education, health, water and sanitation services or by the failure to achieve the desired outcome; such as a high quality diet, rich in nutrients, health status, education. Social deprivation, on the hand, implies the absence of critical empowering elements, such as autonomy, time, information, dignity and self-esteem. The poverty profile of Nigeria shows that most of the country's population lives in poverty. The National Bureau of Statistics (2012) reported that 38.7% of the Nigerian population lives in extreme poverty while 69% of the

population lives below the poverty line. Thus, a World Bank report recently rated Nigeria as one of the twenty poorest countries in the world. Poverty in Nigeria, like in most developing nations, has a rural-urban dimension. Poverty in the rural areas is worse when compared with the urban centres largely because the rural areas lack basic infrastructures and social amenities. Even where such infrastructures and amenities are present, they are in different stages of neglect and disrepair.

Many factors have been implicated for the state of affairs in Nigeria as it relates to the prevalence of poverty. Some critics blame the government for concentrating too much of developmental efforts in the urban areas to the neglect of the rural areas. One consequence of this is rural-urban migration, which in itself results in the development of slums in the urban areas worsening the urban poverty status. There is also the dimension of income inequality which is very high in Nigeria. According to Aigbokhan (2000), income inequality in Nigeria worsened from 0.43 to 0.49 between 2004 and 2009. Almost within the same period in Nigeria, a Gini Co-efficient of 0.51 was reported by FAO (2006), and 0.58 was reported by Adeoti and Oyekale (2006). The implication of these figures is that there exists a very wide gap between the income levels of the "poor" and the "rich" in Nigeria. Thus, every effort is being made to bridge/reduce this huge gap in income, especially as it pertains to the rural-urban income dichotomy. One method embraced by the Federal Government of Nigeria, in this regard, is the Community – Based natural Resource Management Programme (CBNRMP). This study seeks to assess the effectiveness of the CBNRMP in reducing the income inequality among the beneficiaries in Edo state, Nigeria.

Types of CBNRM Projects

Authors have attempted to classify CBNRM projects into several categories. However, Aslin, Collier and Garnctt (2009), and Murphree (2000). observed that CBNRM projects take several forms but the following are important forms or features of CBNRM projects globally:

- Projects that provide rural communities with different ways of earning a living, for example; projects to introduce better farming methods or build small businesses so that people may not have to rely only on farming or forestry or fishing. Projects that assist communities to use their natural resources wisely, such as setting limits on using scarce natural resources like fish or fruit to prevent over-utilization. Projects that help communities to get benefits from their natural resources without having to use them up, like tourism development projects (tourists pay to visit the local forest, for example, so there is no need to cut down the trees in order to earn a living).
- Projects that involve the community in partnerships with Parks Boards or other organisations involved in conservation, where the community has access to land and the rights to use the land, and gets benefits from working together with these organisations. Projects that bring skills to the community to manage their own resources better.

Projects that provide access to land and resources, for example, that communities can use land for cultural, spiritual and recreational purposes, as well as for earning a living.

MATERIALS AND METHODS

Area and Scope of the Study

The study was carried out in Edo State. The State lies on 05. 44° N and 07.34° N latitudes, 05.4° E and 06.45 °E longitudes of the Greenwich meridian. It is hounded in the East by River Niger, in the West by Ondo State, in the South by Delta State and in the North by Ekiti and Kogi States. It occupies an area of 19,283.9 square kilometers with a population of 3,218,332 made up of 1,640,461 males and 1,577,871 females by the 2006 population census figures (NPC, 2006). The State is divided into three (3) agro-ecological zones namely Edo north, Edo central and Edo south by Edo Agricultural Development Programme (EADP) delineation and 18 local government areas (Edo State government, 2013) The climate of the State is tropical marked by two distinct seasons; the dry and rainy seasons. The former occurs between November and April while the later commenees in April through October. The vegetation in the State is characterized by swamps along the coast to evergreen forests and savannah in the north. Common food crops grown in the State arc cassava, yam, maize, rice and plantain. Rubber and oil palm are the major tree crops in the State. This study focused on beneficiaries of the IFAD-CBNRM programme and the study was limited to communities in Edo State where the CBNRM Programme is ongoing.

Type and Sources of Data

Primary and secondary data were used for the study. The primary data were collected from beneficiaries of the programme through the use of a well-structured questionnaire and interview schedule. The secondary sources included reports from CBNRM programme, journals and other relevant publications.

Data collection methods

Structured questionnaire and interview schedule were used to collect the primary data. *The* instrument consisted of open and close-ended questions. The closed ended questions provided limited options for the respondents to fill while the open-ended questions allowed respondents to give their response to questions they may be asked by the researcher. The researcher personally administered the structured questionnaire and interview respondents alongside trained enumerators.

Sampling Procedure

Multistage sampling technique which incorporated the purposive and the random sampling techniques were used in this study. CBNRMP programme operates in the three agro-ecological zones delineated by Edo ADP, which explains the purposive selection of the three zones: namely Edo South, Edo Central and Edo North zones. The first stage was to

purposively select two local government areas (LGAs) from each of the three agro-ecological zones based on the concentration of CBNRM programme activities in the local government areas. The second stage involved the random selection of two communities from each LGA. Thirdly, two of the most dominant CBNRMP farmers' groups, as defined by their enterprise/activities and membership size, were purposively selected from the list of activities for each community. A total of 24 farmers' groups were thus sampled.

At the last stage, proportional random sampling was used to sample a total of 111 CBNRM beneficiaries. An equivalent number of non-beneficiaries were sampled bringing the total number of respondents to 222. However, only 180 responses were used for final data analysis due to non-response and incomplete responses, which represents about 85% of expected response. This comprise of 98 non-beneficiaries and 82 beneficiaries.

Analytical Techniques

Objective one

Determine the effectiveness of the programme in reducing income inequality among beneficiaries. The Gini coefficient index was used to determine income inequality among programme beneficiaries before and after the programme. The Gini coefficient is a measure of inequality of a distribution or of a frequency distribution (for example levels of income). It is defined as a ratio with values between 0 and 1. A Gini coefficient of zero expresses perfect equality where all values are the same (for example, where everyone has an exactly equal income). A Gini coefficient of one (100 on the percentile scale) expresses maximum inequality among values (for example where the income is concentrated in the hands of one person).The Gini index is the Gini coefficient expressed as a percentage, and is equal to the Gini coefficient multiplied by 100. The formula, according to (Gonzalez, 2010) is given as:

$$G = \frac{N+1}{N-1} - \frac{2}{N(N-1)u} \left(\sum_{i=1}^{n} P_i X_i \right) \qquad \ldots \ldots \ldots \ldots (1)$$

Where

G = Gini coefficient
N = sample size
PI = no. of households
X_i = income

Objective two

to examine constraints faced by programme beneficiaries in the CBNRMP programme. This was analysed using descriptive statistics such as means, frequency counts and standard deviation. The Student t-test was used to determine the significance of the difference in income and living standards of CBNRM Project beneficiaries and non-beneficiaries. It was equally used to compare the farm income level of the beneficiaries before and after joining the programme as well as to compare the income of beneficiaries and non-beneficiaries. This test is useful in comparing the means from two samples (William. 2006). The mathematical representation of t-test for comparing the means of two unequal sample is given as:

$$t = \frac{\overline{x_2} - \overline{x_1}}{\sqrt{\frac{S_1^2}{n_1} - \frac{S_2^2}{n_1}}} \qquad \ldots \ldots \ldots \ldots (2)$$

$\overline{X}_1 =$ mean income of project beneficiaries
$\overline{X}_2 =$ mean income of non-project beneficiaries
$S_1 =$ standard error of mean income of project beneficiaries
$S_2 =$ standard error of mean income of non-project beneficiaries,
$n_1 =$ sample size of project beneficiaries
$n_2 =$ sample size of non-project beneficiaries

RESULTS AND DISCUSSION

The results presented in Table 1, S shows that the average income of the respondents before and after enrolment were ₦421,095.73 and ₦282,119.01 respectively. These values suggest a positive increase in farm income of the respondents since joining the programme. The t-test result (t = 10.89) reveals that the difference is significant at the 5% level (t_{cal} 10.89>t_{tab} 1.976).

Table 1. Beneficiaries' Income Before and After Participation in CBNRMP

Income (₦)	Without CBNRMP		With CBNRMP	
	Freq	%	Freq.	%
1 00,000 & below	19	23.2	4	4.9
100,001-200,000	21	25.6	19	23.2
200,001-300,000	20	24.4	12	14.6
300,001-400,000	10	12.2	11	13.4
400.001-500,000	8	9.8	15	18.3
500,001-600,000	1	1.2	10	12.2
600.001-700,000	Nil	Nil	4	4.9
700,001-800,000	1	1.2	3	3.7
900,001-1,000,000	Nil	Nil	1	1.2
>1,000,000	2	2.4	3	3.7
Total	82	100.0	82	100.0
Mean	*282, 119.01*		*421,095.73*	

t value = 10.89
Source: computed from field data, 2012

Table 2. Income of Beneficiaries and Non-beneficiaries of the CBNRM Programme

Income (₦)	Non-Beneficiaries		Beneficiaries	
	Freq	*%*	Freq	*%*
100,000 & below	4	4.9	11	11.2
100,001-200,000	19	23.2	26	26.5
200,001-300,000	12	14.6	29	29.6
300,001-400.000	11	13.4	22	22.4
400,001-500,000	15	18.3	8	8.2
500,001-600,000	10	12.2	1	1.0
600,001-700,000	4	4.9	Nil	Nil
700,001-800,000	3	3.7	Nil	Nil
900,001-1,000000	1	1.2	1	1.0
>1,000,000	1	3.7	Nil	Nil
Total	82	100.0	98	100.0
Mean	*263,008.21*		*421,095.73*	

t-value = 4.11
Source: computed from field data, 2012

Table 3. Constraints Associated with Respondents Participation in IFAD-CBNRM Programme

Constraints	Very serious		Serious		Undecided		Little serious		Not serious		Pooled	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Mean	SD
Lack of insurance to insure against crop failure	56	68.3	6	7.3	2	2.4	1	1.2	17	20.7	4.01*	1.62
Small size of loan given	18	22.0	40	48.8			13	15.9	11	13.4	3.50*	1.35
Late delivery of loan	20	24.4	21	25.6	3	3.7	13	15.9	25	30.5	2.98	1.62
Late delivery of inputs	11	13.4	15	18.3	5	6.1	19	23.2	32	39.0	2.44	1.49
Lack of training on loan utilization	8	9.8	11	13.4	7	8.5	12	14.6	44	53.7	2.11	1.43
Lack/inadequacy of inputs supplied	6	7.3	10	12.2	10	12.2	15	18,3	41	50.0	2.09	1.33
Natural disasters e.g. flooding	16	19.5	4	4.9	2	2.4			60	73.2	1.98	1.65
Lack of training on how to use inputs supplied	5	6.1	8	9.8	13	15.9	8	9.8	48	58.5	1.95	1.30
Lack of consultation with Beneficiaries on intended project	6	7.3	13	15.9	4	4.9	6	7.3	53	64.6	1.94	1.41
Ineffectiveness of inputs supplied	5	6.1	9	11.0	6	7.3	17	20.7	45	54.9	1.93	1.27
Breakdown and/or poor functioning of projects established in the community	1	1.2	8	9.8	15	18.3	8	9.8	50	61.0	1.80	1.12
Poor teaching skill of trainers during capacity building	6	7.3	5	6.1	10	12.2	5	6.1	56	68.3	1.78	1.29
Not consulted by programme executors on projects before execution	3	3.7	9	11.0	7	8.5	o J	3.7	60	73.2	1.68	1.22
Favouritism in the choice of Beneficiaries in the project	1	1.2	5	6.1	13	15.9	7	8.5	56	68.3	1.63	1.03

Serious (mean>3.00): Source: Computed from field data, 2012

The result suggests that participation in the CBNRM programme had positive effect on the income of beneficiaries. The results presented in Table 2, compared the income of beneficiaries and non-beneficiaries of the CBNRM Programme. The average income of the beneficiaries and non-beneficiaries was ₦421.095.73 and ₦263.008.21 respectively, indicating that programme beneficiaries earned higher income than the non-beneficiaries. The income difference (₦158,087) was significant at the 5% probability level (t_{cal} 4.11>t_{tab} 3.976). This finding agrees with the assertion of Bradshaw (2003), that community based resource management scheme had the potential of enhancing farm revenue of rural small scale farmers. The Gini coefficient obtained for both groups were 0.798 and 0.791 respectively. These values are high indicating that there is high level of income inequality among the different groups. The results suggest that the programme did not reduce income inequality among farmers in any significant way. A probable explanation for these results would be that the rural dwellers, being resource poor, are unable to speedily take advantage of economic opportunities as they are made available.

Based on the mean scores in Table 3, two major factors were of serious concern to the beneficiaries. These include lack of insurance to insure against crop/livestock failure (mean score = 4.01). Some respondents' claimed they experienced enterprise failure for which the programme made no effort to reimburse or at least reduce the effect of their loss (es). About 24% of the respondents' claimed they suffered natural disaster. Another serious complaint about the programme was the small size of loan given (mean score - 3.50) which was not sufficient for their farm operations. Personal interview revealed that beneficiaries were not actually given direct cash, however, the loan given to their group, according to them, was grossly insufficient to cater for the needs of their enterprises. About 24.4% of the respondents considered late delivery of loan to beneficiaries to be very serious. These result supported EGSSAA, (2009), who noted these constraints as some of the implementation challenges facing the programme.

Conclusion and Recommendations

Community-based natural resource management represents the Nigerian Government attempt to conserve the natural resources as well as channel such efforts in ameliorating poverty among rural households in Nigeria. An examination of the effectiveness of the (CBNRM) programme in reducing income inequality among beneficiaries, which the study focused on, showed that the programme, though, contributed to poverty reduction among small scale farmers in the State, had positive effect on the income of beneficiaries and also improved their livelihoods, did not reduce income inequality.
Based on the results of the study the following recommendations were made:

- Since participation in the CBNRM programme has positive effect on the income of beneficiaries, it will be necessary to replicate the programme in other locations that are yet to benefit within the State so that more people and communities will gain from the scheme.
- There is need for an upward review of the loan volume granted beneficiaries to enable them expand their enterprise and meet their production costs as well.
- There may be need for synergy between the CBNRMP and the Nigeria Agricultural Insurance Corporation (NAIC) so that beneficiaries can be guaranteed some level of indemnity in the event of crop/enterprise failure.

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