THIRD NATIONAL FADAMA DEVELOPMENT PROJECT (FADAMA III)
FEDERAL MINISTRY OF AGRICULTURE & WATER RESOURCES
NATIONAL FADAMA COORDINATION OFFICE

BENEFICIARY ASSESSMENT/IMPACT EVALUATION OF THE FADAMA II CRITICAL ECOSYSTEM MANAGEMENT PROJECT (CEMP).

By

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EXECUTIVE SUMMARY

Community Driven Development (CDD) approach is presently becoming popular due to its potential to develop projects that are responsive to local demands, empower local communities, and are better targeted at the poor. This study was conducted to assess the impact of Fadama II Critical Ecosystem Management Project, a CDD project on its beneficiaries. The Fadama II Critical Ecosystem Management project is a six year project whose specific objective include making sure that by project end, sustainable watershed management coordination capacity is established in at least 60 percent of the participating states; it also aim at attaining by project end, sustainable land and water management practices mainstreamed in Local Development Plans in at least 35 percent of the participating communities; Area under sustainable land and water management practices in the three pilot sites must also have increased by at least 80 percent at the end of the project. In relation to this, the terms of reference for this study are:

(i)Assess the functionality and sustainability of the SWS(ii) Assess the impact of the project on the livelihood of project beneficiaries (iii) Conduct an economic analysis of the CEMP investment (iv) Assess the performance of the participating States Governments and Local Government Councils in the areas of Institutional arrangement and Institutional support – technical, financial etc (v) Assess level of beneficiaries' empowerment in the areas of decision making, funds transfer, procurement procedures, Awareness on Sustainable Land and Water Management Practices, Adoption of Sustainable Land and Water Management Practices, Sustainability and up scaling Sustainable Land and Water Management Practices.(vi)Assess the nature and degree of beneficiary satisfaction with sub-projects implemented (vii)Assess willingness to share in the costs of sub-projects and the implication of increasing sustainability (viii)Identify and examine factors underlying motivation (or lack thereof) to maintain Sub-projects supported by the grant(ix)Assess the level of compliance with / to environmental safeguards for all sub-projects being implemented.

The contribution of this study beyond the Midterm Review conducted in 2009 is in the use of an approach that better attribute measured impact to GEF/FADAMA project. This study therefore made use of quasi-experimental impact assessment approach to assess the impact of GEF/FADAMA project on its beneficiaries. This involves the use of Propensity Score Matching

(PSM) and Double Difference (DD) to control for observable and unobservable bias that could emerge while measuring impact of GEF/FADAMA project.

This study used household data collected from six states benefitting from GEF FADAMA project in order to analyze the impact of GEF/CEMP project on beneficiaries. We stratified the sampling frame into three strata ;(i) GEF/CEMP direct beneficiaries; This include beneficiaries who benefits from both Fadama and GEF or only GEF interventions (ii) Respondent who only benefits from Fadama projects; and (iii) respondents who did not benefit from GEF or Fadama projects .This stratification was designed to enable the estimation of total impact of GEF intervention as against nonGEF non Fadama respondents. By comparing outcomes of GEF/CEMP beneficiaries with outcomes of similar (in terms of gender, household size and Occupation, farm size, state of origin and education) non GEF non Fadama beneficiaries, we can obtain total impact of project on participants. This study is constrained not to compare GEF/CEMP project beneficiaries with Fadama beneficiaries because there presently exist some respondents benefiting from Fadama project as well as the Fadama Gef project among the six intervention states. The sampling procedure involved selection of respondents from total lists of Fadama Gef beneficiaries, Fadama beneficiaries and nonGEF non Fadama beneficiaries. 10 households were randomly selected from total list of three stratified groups in each state in order to arrive at a total of 180 respondents. The sampling frame was stratified to ensure that female respondents were represented in the three groups used for this study. Project staff and State watershed subcommittee surveys were also conducted to clearly assess the functionality and sustainability of SWS and also to access information from project staff about sustainable land management, watershed management, local Development plan, performance of participating state government councils and local government in the area of institutional arrangement and institutional support and monitoring and evaluation issues. In term of survey that has to do with SWS and Project staff, each of the survey instruments were distributed in each state. Therefore 6 staff questionnaires were given to 6state staff and 6 SWS members.

Result shows a large impact of GEF Fadama project on the change in the level of expenditure of beneficiaries when compare to the non beneficiaries. The expenditure of a randomly selected beneficiary would averagely change by N4863. In terms of total impact, the difference between the ATT of beneficiaries and that of non beneficiaries give a net impact of N8667.

Findings revealed that there exist a 100% 'yes' answer from 83% of the six states sampled that there exist watershed management coordination capacity in state. The 'yes' response from 83% of participating state clearly shows that the project exceed the minimum key performance indicator of having at least at the end of project, sustainable watershed management coordination capacity established in at least 60 percent of participating states.

As for the target of sustainable land and water management practices mainstreamed into LDP in at least 35 percent of participating communities, findings shows that proportion of participating state beneficiary responses that said 'yes' was 100%.This clearly shows that the project has exceeded the 35 percent cut off point that sustainable land and water management practices must have been mainstreamed into LDP of participating states. The third key performance indicator of the project which states that by project end, the area under sustainable land and water management practices in the three pilot sites must have increased by at least 80 percent was not achieved. The average achievements in the three pilot sites of Andiwa lake, Bauchi; Oguta lake ,Imo; and Eriti watershed, Ogun states stood at about 53%, while the average achievements of the six states in terms meeting the at least 80% cut off in establishing area under sustainable land and water land management practice fell short by almost 3%. This result however should not be interpreted as failure on the part of the project since in real term overall, it has been able to achieve over 60% of expected achievement in the area of sustainably increasing land and water management practices in the three pilot sites by at least 80 percent The implication of this finding on the other two PDOs is that the project has been able to exceed expectations in the area of establishing watershed management coordination capacity in at least 60 percent of participating state and having sustainable watershed management practices mainstreamed into LDP in at least 35percent of participating states.

Results also revealed that about 92% of Fadama GEF beneficiaries confirmed that capacity building impact on their livelihood pattern, 70% of Fadama beneficiaries also agreed to the fact that capacity building impact on their livelihood, while about 20% of Non GEF Non Fadama was of the opinion that capacity building impact on their livelihood pattern. The trend of this result seems reasonable given the fact that capacity building is well built into the Fadama GEF and Fadama projects. Respondents in these two groups are therefore supposed to feel the impact of

capacity building (in the form of training and awareness) more than Non Fadama Non GEF group of respondents.

Results with respect to whether Integrated Ecosystem Management component of the project impact on respondents' livelihood revealed that more Fadama GEF and Fadama respondents accessed Integrated Ecosystem Management components of the project better than the Non GEF Non Fadama beneficiaries. Result also shows that more Fadama GEF respondents agreed to the fact that Community sustainable land management impact on their livelihood more as compared with the other two groups of respondents. More respondents from Fadama GEF also claimed that Monitoring and Evaluation component of the project impact on their livelihood when compared to the other two groups of respondents. Reasons given by Fadama GEF respondents on how capacity building impact on their livelihood include respondents being encouraged in the area of conducting meetings and contributing monthly dues , earning more money as a result of various trainings attended and enhanced capacity building in the area of farm records keeping.

Fadama GEF respondents' level of empowerment in all the seven identified areas seems to be at the same level with Fadama respondents. This result contrast with findings before implementation of Fadama GEF project in which Fadama and Non Fadama Non GEF were better empowered in the seven identified empowerment areas .The results also shows that Fadama GEF respondents were better empowered in the area of awareness on sustainable land management, up scaling sustainable land management practices and sustainable water management practices when compared with the other two groups of respondents. While assessing the performance of participating state government in the area of institutional arrangement and institutional support, all the responses of project staff of Fadama GEF revealed that the State and Local Government Areas in the six participating states allow proper use of functioning and institutional arrangement as documented in the project manual

Findings also revealed that the Local Government areas have extended necessary institutional support expected from them to the projects. This finding is confirmed by the response of project staff. Area of improvement as reported by project staff on how Local Government Areas can extend necessary institutional support to Fadama and Fadama Gef project includes;

- assisting the SFCO and the LFDO with funds outside PAD guidelines especially when

necessary

- Provision of funds to support vulnerable and poor groups to pay their beneficiaries' contributions.
- Mainstreaming FCAs into LGA decisions making process.

The sub project in which most Fadama GEF respondents registered very high level of satisfaction is in Apiary, Orchard, Woodlot and Community nursery. The sub projects registered as 'Satisfied' are Orchards, windbreak, grass cutter, while snailry and grass cutter subprojects were registered as 'Not satisfied'. The explanation for this can possibly be ascribed to high mortality rate reported among beneficiaries for these two subprojects in Ogun state.

Findings revealed that more than half of Fadama Gef beneficiaries are ready to continue with all sub projects after the support of GEF/CEMP World Bank support. Community Forest, Grass cutter, snailry, woodlot and Orchards recorded high response profile in terms of willingness of respondents being ready to continue with the project after the support of the World Bank. The next in terms of ranking of subprojects which beneficiaries were ready to continue with are Road side planting and Apiary. It is also worth to note that all the 14 subproject considered have robust sustainability pontentials going by responses of Fadama GEF beneficiaries. Key reasons for highly rating projects in terms of sustainability (especially for sub projects such as Grass cutter, snailry, Woodlot, Orchard and Apiary) include enhanced income potential of sub project, High productive capability of subproject, low technical requirement of sub project and sub project being easy to manage. The lesson from this finding is that sub projects must be managed in such a way that beneficiaries finds it very easy to manage sub projects, finds such project highly productive and such project must also have income enhancing potentials. Another key lesson is that sub projects must not be too technical to manage.

Result shows that the main reason why Apiary farmers will like to maintain subproject is because it has a high income yield potential. Other reasons are that it requires minimal land and capital requirement. In the case of Grass cutter, the main factor driving its maintenance among its producers is because it promotes reduction in bush burning. Other factors driving grass cutter maintenance are because it is easy to manage and also because it is interesting to rear and it is delicious. As for snailry, the main factor driving its maintenance among its producers is because

it is a highly prolific animal. Other factor promoting investment in to snailry is because waste residues from it is used as organic manure and also because it is highly remunerative. Anticipated enhanced income is the main reason for maintaining Orchards among respondents. Other reason why investment is made on it is because it promote sustainable land management and also because funds for starting it is readily available from GEF project. Finally, the main reason for starting and maintaining woodlots among producers is because of readily available funds from sub projects. Others include anticipated enhanced income and benefits and because of environmental protection issues. Most respondents raising Apiary reported that they comply with (environmental/subproject requirements) safeguards of sub projects. However, out of the other subprojects, some of their respondents did not comply with the (environmental / subproject requirements) safeguards of subprojects.

Results on whether soil erosion has reduced after the implementation of GEF showed that higher proportion of Fadama GEF farmers confirmed that erosion has reduced considerably when compared to the responses of other categories of respondents. However, the Chi square test shows that there exist no significant different in the 'Yes' responses of two groups of farmers interviewed with respect to reduction in soil erosion after implementation of GEF. The implication of this result is that the GEF project has not made significant impact on the beneficiaries of GEF as regards achieving significant reduction in Soil erosion when compared to non beneficiaries. Results as regards whether there exist reduction in bush burning after GEF implementation shows that more GEF Fadama respondents conceding to a 'Yes ' answer than the other group of respondents.(i.e. the Fadama and the Non GEF Non Fadama groups).

However the Chi square test shows that there exist a significant different in the 'Yes' responses of two groups of farmers interviewed with respect to reduction in bush burning after implementation of GEF Fadama project. The implication of this result is that the GEF Fadama project has made significant impact on the beneficiaries of GEF as regards achieving significant reduction in bush burning when compared to non beneficiaries. Another key issue addressed in this study is the assessment of functionality and sustainability of State Water Subcommittee (SWS). The SWS members are basically from state Ministries such as Water resources, fisheries, environment, Fadama planning and NGO and Agriculture (i.e. forestry, livestock related.). Results revealed that all the SWS members interviewed reported that they are involved

in capacity building and piloting of integrated approach to Fadama natural resource management within water shed ecosystem management. SWS members interviewed also reported that they are involved in facilitating the integration of priorities of different state agencies in charge of land ,vegetative cover and water management. This is achieved through sensitization/awareness creation, training of beneficiaries and supervision of subprojects being implemented. Results from Economic analysis revealed that the Net present value of Apiary,Teak woodlot,Grasscutter farm and the sheeep enterprise were estimated to be ₦382,531, ₦78, 317.74, ₦296, 870.3 and ₦141, 371.4 respectively. The Benefit cost ratio **of** Apiary,Teak woodlot,Grasscutter farm and the sheeep enterprise were estimated as 2.12, 1.08, 1.20 and 1.12. The decision criterion used for Net present value is that estimated figures from the enterprise must be positive for such enterprises to be feasible. The decision criterion for the Benefit-cost ratio is that estimate figures must be greater than one. Results from table 4.19 clearly shows that the Net Present Values and Benefit cost ratios of the four subprojects met the criteria of being feasible with the Apiary subproject being the most promising in terms of remuneration over a five year analysis framework.

ACRONYMS

AfDB	African Development Bank *(Banque Africaine de Dkveloppement, BAD)*
ADP	Agricultural Development Project
AWPB	Annual Work Plan And Budget
BMPIU	Budget Monitoring and Price Intelligence Unit
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CDD	Community Driven Development
CDP	Community Development Plan
CEMP	Critical Ecosystem Management Project
CFAA	Country Financial Accountability Assessment
CFB	Carbon Finance Business
CPRP	Community Poverty Reduction Project
CPS	Country Partnership Strategy (WB)
DCA	Development Credit Agreement
EIA	Environmental Impact Assessment
EMCAP	Economic Management and Capacity Building Project
EMP	Environmental Management Plan
EO	Environmental Officer
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework

FCA	Fadama Community Associations.
FMR	Financial Monitoring Report
FMS	Financial Management System
FO	Financial Officer
FUG	Fadama User Group
GEF	Global Environmental Facility
IEMAWL	Integrated Ecosystem Management At Watershed Level
IIRR	International Institute For Rural Reconstruction
LDP	Local Development Plan
LFD	Local Fadama Desks
LFDC	Local Fadama Development Committee
LFDO	Local Fadama Desk Office
MEO	Monitoring And Evaluation Officer
MIS	Management Information System
MOU	Memorandum of Understanding
MTR	Mid-Term Review
NFCO	National Fadama Coordination Office
NFRA	National Food Reserve Agency
NFDP-II	National Fadama Development Project
NPC	National Project Coordinator
SFCO	State Fadama Coordination Office

1.0 INTRODUCTION

Ecosystem Management

An ecosystem is a biological environment consisting of all the organisms living in a particular area, as well as all the nonliving, physical components of the environment with which the organisms interact, such as air, soil, water, and sunlight. It is all the organisms in a given area, along with the nonliving (abiotic) factors with which they interact; a biological community and its physical environment. The natural ecosystem is made up of the terrestrial and aquatic ecosystems. Some examples of natural ecosystems include the agro ecosystem, desert ecosystem, forest ecosystem, marine ecosystem, pond ecosystem, savanna ecosystem etc.

Ecosystem management has been defined as "a process that integrates ecological, socio-economic, and institutional factors into comprehensive analysis and action in order to sustain and enhance the quality of the ecosystem to meet current and future needs" (IUCN-CEM 2010). The core objective of ecosystem management is the sustainable, efficient and equitable use of natural resources.

Ecosystem management recognizes that the inter-connectivity of ecological, socio-cultural, economic and institutional systems is fundamental to our understanding of the factors which influence environmental objectives and outcomes. Ecosystem management is therefore a holistic, multi-disciplinary and integrated approach, which requires a substantial shift in the way we perceive and approach the management of our natural environment.

Ecosystems management is an approach to natural resource management that focuses on sustaining ecosystems to meet both ecological and human needs in the future. Ecosystem management is adaptive to changing needs and new information. It promotes shared vision of a desired future by integrating social, environmental and economic perspectives to managing geographically defined natural ecological systems. Clarke and Jupiter (2010) identified key ecosystem management principles to include:

- Adoption of an integrated approach to ecosystem management.
- Maintenance of healthy, productive and resilient ecosystems.
- Maintenance and restoration of connectivity between social and ecological systems.
- Incorporation of economic, social and cultural values.
- Involvement of stakeholders through participatory governance.
- Recognition of uncertainty and plan for adaptive management.

- Use of all relevant forms of scientific, traditional and local knowledge.

The Critical Ecosystem Management Project (CEMP) component of Fadama II funded by the Global Environment Facility (GEF) but administered by the World Bank and popularly referred to as Fadama II GEF is a pilot project that supports Fadama users to carry out incremental activities that address regional and global environmental issues within the Fadama catchment areas. The project which targeted four hundred and sixty thousand (460,000) beneficiaries has a global objective of enhancing the productivity of Fadama areas and the livelihood systems they support through sustainable land use and water management.

This objective is expected to be achieved through sustainable watershed management, river basin and forest/woodland management, capacity enhancement at the national, state and local government levels, and support to Fadama communities for sustainable land management. The main reason for Impact assessment study can be traced to the monitoring and evaluation subcomponent of CEMP which recommends that some designated studies should be carried out at different stages of the project implementation. The beneficiary's impact assessment is one of such studies and it will serve as a main input to the Implementation Completion Review (ICR) and objectively demonstrate the impact of the project in the last four years of operations/implementations on the beneficiaries.

Objectives of CEMP

The broad objective of the GEF Component of Fadama II - Critical Ecosystem Management Project (CEMP) is to maintain the productive and ecological health of the Fadama resources base, in order to enhance the productivity of the Fadama areas and the livelihood systems they support, through sustainable land-use and water management.

The GEF component is expected to address sustainable land management practices by restoring watershed functions, stabilizing soil loss, encouraging riverbank protection, reducing resource use conflicts and protecting biological diversity in Fadama ecosystem. GEF intervention will also assist the Federal Government of Nigeria in her effort to improve capacity to manage and improve the productivity of Fadama resources by ensuring the integrity of the ecosystem. The project, in addition supports Nigeria's commitment to global environmental conventions including the Convention on Biological Diversity (CBD), the United Nations Framework

Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD).

The stated objective of CEMP is being achieved through:

- Capacity development for sustainable Fadama natural resources management at National, State, LGA and Community levels, including strengthening institutional capacity for integrated watershed management, and strengthening community capacity for development planning.
- Integrated Ecosystem Management in selected watersheds through management of key forest areas, buffer zones and wetlands and improved water management; and
- Community sustainable land use management through support for alternative land and/or water use activities and adoption of indigenous sustainable land management practices.
- Project Management, Monitoring and Evaluation.

Specifically, CEMP is expected to:

- provide the ecological framework for addressing the root causes of reduced Fadama agricultural productivity and the negative impact of un-sustainable land use practice;
- ensure ecosystem stability, functions and services;
- reduce land degradation;
- improve institutional capacity to manage Fadama resources; and
- Improve productivity by ensuring that ecological balance in the Fadama are maintained and protected from threats from land use for agriculture and water management in the watershed.

The project covers one intervention site in each of the six implementing states of Bauchi (Andiwa Lake Watershed which is 176.15km^2), Imo (Oguta Lake Watershed which is 410 km^2), Kebbi (Jega-Dumbegu Watershed which is 354km^2), Kogi (Koton Karfe Watershed which is 374.55 km^2), Kwara (Ajaise Ipo Watershed which is 92.94km^2) and Ogun (Eriti Watershed which is 156km^2).

Project Components

Component 1: Capacity Building

This component aims to build the capacity of Fadama users and other key stakeholders. It supports the building of the capacity of Fadama User Associations (FUAs) in order to enable them access project advisory services and finance investment in productivity and income enhancement activities. The aim is to enhance the capacity of different stakeholder groups, including relevant federal, state and local government, NGOs, community based organizations, and Fadama users in the six priority states (Bauchi, Imo, Kebbi, Kogi, Kwara and Ogun) for sustainable land and watershed management.

Major activities supported (financed) under this component include:

- Support for land use and water management capacity to enhance the productivity of Fadama area and the livelihood they support;
- Support for sustainable agricultural practices and harvest techniques for timber and non-timber forest products and fishing for community members;
- Support for the review of federal and state policies and regulations on environmental, land forest and water resources;
- Support for the development of framework for state-level coordination, monitoring and evaluation of watershed management activities among state agencies involved in environmental, agriculture, forest, water resources management activities; and,
- Support baseline and strategic studies related to Fadama critical ecosystem issues.

Component 2: Integrated Ecosystem Management at Watershed Level

This component addresses the technical, social and location specific activities to improve the management of critical watersheds that ensure Fadama productivity and sustainability, in a few areas with high potential for up-scaling and being replicated. Major activities include

- strengthening existing watershed planning and coordination mechanism among the relevant state agencies;
- sustainable management of forest resources for the protection of Fadama areas, especially the establishment and/or management of community forest reserves in highly degraded and conflict-ridden rainforest and savannah areas;
- studying and monitoring activities to understand the impact of upstream reservoir management and river flow regime in Fadama areas; and
- Monitoring plans to improve the management of ground water and shallow aquifers in selected Fadama areas.

Component 3: Community Sustainable Land Management

This component supports a range of advisory services, training, information sharing, awareness programmes, and adoption of land use practices that will enable Fadama users to adopt productivity enhancing techniques and more profitable marketing, and at the same time ensure the sustainability of the Fadama resource base.

While IDA financing (68 % of the component cost) finances traditional advisory services, including environmentally friendly practices (particularly, the promotion of Integrated Pest Management, and irrigation efficiency), the GEF financing (32 % of the component cost) supports Fadama users, through FCAs, community groups, and NGOs, to adopt sustainable land use and agricultural practices that enhance the structural and functional integrity of Fadama ecosystems, and improve rural livelihoods.

This component provides:

- Support for a range of advisory services; training, information sharing and awareness programmes;
- Support for the adoption of productivity enhancing land use practices to ensure the sustainability of the Fadama resource base;

- Support for Fadama users through FCAs and NGOs to adopt sustainable land use and agricultural practices that enhance the integrity of Fadama ecosystem and improve rural livelihoods;
- Support through grant financing, using a demand-driven approaches for two types of alternative land practices namely; land use changes in critical areas, such as river banks, flood-prone or ground water recharge and forest or natural habitats of significant biodiversity value, and sustainable agricultural practices in Fadama areas added to IDA-financed LDPs.

Activities that may also be supported in this component include:

- Biodiversity conservation;
- Alternative livelihoods in highly degraded Fadama areas;
- Energy-efficient use of solid fuels for watershed protection;
- Community woodlots on river banks and other degraded areas;
- Sustainable indigenous farming practices.

Component 4: Project Management and Monitoring & Evaluation (M&E)

This component focuses on project management mechanisms; including monitoring and evaluation (M&E) plans to implement NFDP-II. GEF supports the full integration of CEMP activities into the following two main NFDP-II subcomponents under this component:

Project Management Subcomponent

This supports new or existing institutional entities and mechanisms at the federal, state and local government levels for overall project coordination and supervision and helps to strengthen the effectiveness and quality of project operations. It supports, at the federal level, the National

Fadama Development Office (NFDO) (now NFCO) attached to the Project Coordinating Unit (PCU) (now NFRA) of the Federal Ministry of Agriculture and Rural Development (FMARD) which is responsible for overall project coordination. The subcomponent also supports the State Fadama Development Offices (SFDOs)(now SFCO) housed at the Agricultural Development Projects (ADPs) in the states. At the local government level, the project supports Local Fadama Desks (LFDs) and a multi-stakeholder committee which is responsible for, respectively, screening and approving LDPs and subproject proposals submitted by the FCAs. Finally, the subcomponent finances specialized technical assistance and training at federal, state, and local levels aimed at developing capacity for coordination of sub-project implementation.

Monitoring and Evaluation Subcomponent

This will measure performance at various project milestones, and includes three main elements:

- Management Information System (MIS) integrating NFCO and SFCO levels with data generated by FCAs and;
- Impact evaluation and beneficiary assessments to enhance project implementation

  performance; monitoring of the project's environmental management plans (EMPs), which include mitigation measures related to agricultural production, processing, and marketing, to be incorporated into LDPs, and institutional capacity strengthening in Environmental Impact Assessment (EIA) and Integrated Pest Management (IPM); and,
- Monitoring CEMP activities.

Study Term of Reference.

The main objective of the beneficiary impact assessment is to assess the value of the CEMP intervention and investment as perceived by project beneficiaries and integrate the findings into project activities, especially completion review of the project.

Specific tasks to be carried out in the study include:

- Assess the functionality and sustainability of the SWS
- Assess the impact of the project on the livelihood of project beneficiaries
- Conduct an economic analysis of the CEMP investment
- Assess the performance of the participating State Governments and Local Government Councils in the areas of Institutional arrangement and Institutional support – technical, financial etc
- Assess level of beneficiaries' empowerment in the areas of decision making, funds transfer, procurement procedures, Awareness on Sustainable Land and Water Management Practices, Adoption of Sustainable Land and Water Management Practices, Sustainability and up scaling Sustainable Land and Water Management Practices.
- Assess the nature and degree of beneficiary satisfaction with sub-projects implemented
- Assess willingness to share in the costs of sub-projects and the implication of increasing sustainability
- Assess the level of compliance with / to environmental safeguards(requirements) for all sub-projects being implemented
- Identify and examine factors underlying motivation (or lack thereof) to maintain Sub-projects supported by the grant

Plan of Study

This study is divided into five sections. This include the introductory section, Progress report on CEMP project, Methodological section, Result and finally the Conclusion and policy implication section of the study.

2.0 CEMP IMPLEMENTATION PROGRESS REPORTAND AND INSTITUTIONAL ARRANGEMENTS-National

The Critical Ecosystem Management Project (CEMP) is being implemented as a component of the Fadama II project, under the overall guidance of the National Project Coordinator (NPC). The Project became disbursement effective on 26th July 2006 and implementation period from 2006 to 2011. The participating stakeholders includes National Fadama Coordination Office, Federal Ministry of Environment, Federal Ministry of Agriculture and Water Resources, State Fadama Coordination Offices, Local Fadama Desks offices at the local government level, State Watershed Management Committee, including River Basin Development Authorities, Facilitators, Non-Governmental Organizations and Fadama Community Associations. The CEMP project is adequately mainstreamed in the Fadama project with the actual implementation being done at the State, Local Government and Community associations of the Fadama-II, The project is fully integrated with the day-to-day operation of Fadama-II M &E system.

To strengthen the implementation of the GEF component, the membership of the National Fadama Technical Committee (NFTC) was expanded to include the Director, Planning, Research and Statistics (DPRS) of the Federal Ministry of Environment, who is also the GEF operational Focal Point for Nigeria. The responsibility of the NFTC has also been expanded to include approval of the annual work programme and budget, and provision of policy guidance for the implementation of the CEMP as well as ensuring inter-Ministerial coordination in Watershed Management. The implementation of CEMP is most pronounced at the State level, which is responsible for the field level implementation of the project. The Environmental Officer (EO) in the SFCO has the responsibility of CEMP implementation at the State level. The SWS provides policy, technical and coordination mechanism for Watershed management in the State. Decision-making on sub-project proposals emanating from the communities were carried out by the LFDC and reviewed by the State level SFCO, Environmental Officer in coordination with SWS, for consistency with the GEF component activities and objectives. In line with the demand driven nature of CEMP, the Fadama community Associations through the facilitators develop their local development plans and forward them to the SFCO and are therefore played very

important roles in project implementation. At midterm review of the CEMP project, all components and institutional arrangements were scored satisfactory.

Overall Status of CEMP Implementation

Capacity Building

Well coordinated approaches were used to strengthen institutional capacity in the six pilot states. High level of Institutional strengthening for integrated watershed management and capacity building at community level for watershed management were achieved. Review of policies and regulations in watershed management and enhancement of capacity of state and local government agencies, including NGOs, community representatives and facilitators to implement project components were built. Strategic and baseline studies (including ecological assessment) of intervention sites in the six states were completed. The project established Geographic Information System (GIS) and Remote sensing Facilities. At the state level, Sustainable Watershed Sub-committee (SWS) and various institutional organizations required for effective implementation are in place and functioning. The SWS members were mainly to be involved in oversight functions (advisory and support), for effective implementation of the various sub projects at the community level. At the community level, nine trainings, fourteen national workshops and fifty –four SWS meetings were held.

Integrated Ecosystem Management at Watershed Level

The revamping of degraded lands, utilization of abandoned lands and protecting the productivity of Fadama under intensive cultivation studies on sustainable management of forest reserve in the participating states were completed. A total 54 awareness campaigns were conducted during the period under review and is reflected in the high level of performances recorded by the states in all the activities of the component.

Community Sustainable Land Management

This component has two sub-components, (a) Support for adoption of best SLM practices and (b) to increase income of Fadama farmers. The component is achieved through activities such as; woodlot establishment, roadside tree planting, border tree planting, orchard establishment, river bank stabilization, alley cropping, scattered tree planting, shelter belts and establishment of nurseries to provide the needed tree seedlings for rehabilitating. The second sub-component supports the implementation of activities that reduce the pressure on the exploitation of natural resources in the Fadama areas through the adoption of rural livelihood activities such as apiary, grass cutter and rabbit rearing, fattening of ruminants, use of cart and oxen and snailry in order to reduce bush burning and conserve Fadama biodiversity**.** The apiary will also increase pollination of trees and fruit yields of the natural vegetation.

At baseline, the local benefiting communities had minimum or no SLM plans (approximately 2% of subproject mainly on advisory services under Fadama-II). However, at mid-term, 48 LDPs and 958 subprojects on SLM were mainstreamed into development plans by the communities and were funded by CEMP. A total land area of 600 ha was planted with different tree species across the six participating states. Up to 95% achievement was recorded across the states with Kwara state exceeding her target. The six states implemented 532 alternative livelihood activities that discouraged bush burning prevent soil erosion and increase farmers' incomes. At baseline, about 15% of the beneficiaries at Koton Karfe were involved in forest exploitation.

Project Management and Monitoring and Evaluation

This component is sub-divided into Project Management and Monitoring and Evaluation. Procurement and Financial Management are also captured under this component. At the Federal level, GEF funded projects were fully mainstreamed into the Fadama II project management arrangement. This has been done with the recruitment of a Fadama GEF Desk officer who is supported by an operations/GIS analyst, M&E officer and an Accounting Supervisor. Equipments (Computer lap tops, mapping and survey equipment, cameras, GIS software etc) were procured and given to staff for use at all levels. In addition to the established SWS in the

states, the State Project Coordinator (SPC) and all relevant staff were in place. At the local Government levels, FUGs/FCAs identified sub projects and prepared their Local Development Plans (LDPs) in a participatory and socially inclusive manner. The LFDCs were fully on ground to receive, screen and approve proposals drawn for these plans. Thirteen monitoring/missions across the sites were conducted during project phase and six ad-hoc reports were produced on demand at the national level. Disbursement level of CEMP project as at June 7, 2010 was 63%.

Project Components.

This section of the report highlights the performance of CEMP project at the Mid-Term Review. The need to include this section is justified since it might provide baseline information for interpretation of results of the beneficiary assessment study**.**

Component 1: Capacity Building

Performance of Institutional Strengthening for Integrated Watershed Management

At Mid-Term Review (MTR), an appraisal of the achievements for this sub-component indicated an effective coverage of the various activities. For instance, the following were all concluded:

- Organized Retreat/sensitization workshops to raise awareness of stakeholders on the implementation of the CEMP;
- Organized International Training Course on Community Based Integrated Watershed Management (CBIWM) to strengthen capacity of key implementers;
- Conduct of a Review of policies and regulations on watershed management at the Federal; and
- Established Coordination and Synergy among the various agencies connected with Watershed Management at the Federal level.

At the State level, Sustainable Watershed Sub-committee (SWS) and various institutional organizations required for effective implementation were in place and functioning and the specific roles, functions and responsibilities of the committee had been clearly spelt out. The

SWS members were mainly to be involved in oversight functions (advisory and support), for effective implementation of the various sub-projects at the Community level.

Performance of Capacity Building at Community level for Watershed Management

At Mid-Term Review (MTR), Nine (9) trainings, fourteen (14) national workshops and forty (40) SWS meetings were held.

Appraisal of the level of capacity building of the various categories of staff indicated a moderate performance as manifested in the satisfactory level of implementation ability for the various subprojects. Differences were observed in their effectiveness and the major limitation was their general educational background and lack of relevant experience. There is, therefore, the need for more capacity strengthening especially in the implementation of second batch LDPs and sustenance and maintenance of the first batch of LDPs.

Workshop and Training Organized By NFCO

- Sensitization workshop for Key project implementation staff Sept 12-15, 2005, Lokoja, Kogi State with 27 participants in attendance;
- Retreat on the implementation of Fadama II CEMP, Oct. 4-6, 2006, Owerri, Imo State with 48 participants in attendance;
- One week training workshop to Enhance the capacity of stakeholders in sustainable land-use planning at the watersheds level, Sept 2-8, 2007 Ijebu - Ode, Ondo State with 75 participants in attendance;
- Strengthening the sustainability of Development Planning (LDP) at the community level, Oct 22-26, 2007, Kaduna, Kaduna State with 71 participants in attendance;
- Development and utilization of monitoring format, Feb 11-14, 2008, Ibadan, Oyo State with 26 participants in attendance;

- Review and Harmonization of LDPs, March 12-15, 2008, Lokoja, Kogi State with 42 participants in attendance;
- Training on the use of survey and mapping instruments, 12-17,May, 2008, Newcastle Hotel, Owerri, Imo State with 38 participants in attendance;
- National Stakeholders' Review workshop on the inception report of the Study to Review the Policies and Regulations at the Federal Level on watershed Management, August 14, 2008, Abuja, Federal Capital Territory (FCT) with 131participants in attendance;
- National Stakeholders' Review workshop on the draft final report of the Study to Review the Policies and Regulations at the Federal Level on watershed Management, December 16, 2008, Lokoja, Kogi State with 130 participants in attendance;
- Review of CEMP performance indicators and updating of the Monitoring Format, August 18-20, 2009, Kaduna, Kaduna State with 71 participants in attendance;
- Inception workshop on the Country Strategic Investment Framework (CSIF) on SLM for Nigeria, Sept. 24-25, 2009, Calabar, Cross River State with 100 participants in attendance.

Community Sustainable Land Management

The community sustainable land management component of CEMP aims at enhancing the productivity of Fadama areas and improving the livelihood systems of Fadama communities through the adoption of sustainable land use and water management practices. The component has two sub-components

- support for the adoption of best SLM practices and
- Increase income generation of the Fadama communities.

Level of Implementation of SLM Subprojects in the States

At baseline, the local benefiting communities had minimum or no SLM plans (approximately 2% of subproject mainly on advisory services under Fadama-II). A total land area of 600ha was planted with different tree species across the six participating states. The six states implemented 532 alternative livelihood activities. At baseline, about 15% of the beneficiaries at Koton Karfe were involved in forest exploitation. The performance across the states when viewed against target set at the state and community levels through Local Development Plans (LDPs) was satisfactory for subprojects under the SLM components (MTR Report 2009)

Integrated Ecosystem Management at Watershed Level

Integrated Ecosystem Management at Watershed level addressed the technical, social and location-specific activities to improve the management of critical watersheds that ensure Fadama productivity and sustainability. Fig 2.1 reveals that subprojects with thrusts in integrated ecosystem project accounts for a considerable proportion of subprojects in the intervention states.

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Other Component B Activities at the States and National Level

The States' Watershed Subcommittees (SWS) have been established in all the six participating states and there are evidences that they have been meeting. Furthermore, management plans of Eriti Community Forest, Dumbegu Communal Forest Area, Buzuzu Forest Reserve, Ohaji Forest Reserve and Ajase-Ipo Communal Forest have been concluded. Also, management plan of Oguta Lake and that of Gebu forest reserve as well as study on Impact of Reservoir Management on water flow regime in fadama areas are completed, while the study on improved management of ground water is in progress.

Monitoring and Evaluation

The national Midterm report (MTR) of CEMP project shows that the Monitoring and evaluation component is sub-divided into Project Management and Monitoring and Evaluation. Procurement and Financial Management are also captured under this component. The M&E component is designed to support, coordinate, supervise and strengthen effectiveness and quality of project operations and most importantly ensure the mainstreaming of GEF funded Critical Ecosystem Management Project (CEMP) into Fadama II at all levels of implementation (Federal, State and Local Government). At the Federal level, this is done by the National Fadama Coordination Office (NFCO), at the state level by State Fadama Coordination Office (SFCO), while at the Local Government level by the Local Fadama Desk Office (LFDO). At the community level, the FCAs and FUGs have elected management committees in place.

The core group of M&E sub components are Fadama GEF Desk officer supported by an operations/GIS analyst, M&E officer and an Accounting Supervisor. Physical monitoring visits are generally carried out from the federal down to the states and sites in a participatory manner to ascertain the degree of implementation vis-à-vis planned actions. For proper documentation of project data, a functional Management Information System was established to capture, store and ensure retrieval of information on implementation for management decision making at all levels. However, there is need to incorporate a customized software for data capture and analysis. Report Renditions are made on quarterly, bi-annual and annual basis.

The MTR also identified the need for economic analysis of sub projects as to help provide information on the costs and benefits of the intended subprojects. A Review of some of the approved sub projects shows a need for improvement and capacity building for Fadama M&E officers who will train FUGs, FCAs and members of LFDC. Presently some consultancy/ studies such as Monitoring and Evaluation (M&E) manual, Strategic and Baseline studies/survey, Review of Policies and Regulations at the Federal Level on Watershed Management, Establishment of Watershed Planning and Coordination Capacity and Harmonization of Baseline Reports has been conducted. In terms of procurement issues, scheduled GEF procurements were done from the National Project Office although some local procurement was done at the State and community levels. A review of the annual procurement plans showed completeness in terms of semi-annual updating, procurement/consultants selection methods, estimated cost, prior

requirement and time frame in compliance with Guideline: Procurement under IBRD Loans and IDA Credits" dated May 2004 and "Guidelines: Selection and employment of Consultants by World Bank Borrowers" also dated May 2004 and provisions stated in GEF procurement agreement. The MTR report also shows that the following achievements were in place at the end of first year of the project. These are establishment of Fadama GEF Desk Office within NFCO, Six SWS established and integrated into SFDC, SFCO established establishment of six LFDOs and recruitment of 16 Project Facilitators in the six states.

The first quarter report on monitoring visit to CEMP intervention states, shows that M&E at the National Desk office through monitoring visits to the six intervention sites was able to review the list of sub-projects being implemented, document the current status of the listed sub-projects, including targets, achievements, level of functionality ,Identify current implementation challenges especially with regards to sub-project implementation and the sustainability under the three main CEMP outcome indicators. The project was able to produce an audio-visual documentary of the project achievements since inception to date. The documentary covered the six intervention sites and was able to document beneficiary's perceptions of what the project is all about and impact already being created. The Midterm report of CEMP M&E (2010) revealed the quality assurance group review exercise for the project was carried out during this reporting period. The reviewers compared the progress of work done by the project since inception with the expectation as contained in the grant agreement and all other project related documents. At the close of review, the reviewers recommended the following;

- The need to empower the SWS members in the states to follow-up and provided add-on activities on sub-projects implementation
- The need to increase disbursement.
- Speedy completion of on –going ground water studies.

This section of the CEMP implementation report also provides information on recent developments in states as regards their M&E functions. The report submitted to the beneficiary / Impact assessment team showed that the Kogi State Fadama Development Office in conjunction with the SWS undertook several supervision/monitoring visits. A total of ten comprehensive

supervision/monitoring of sub-project implementation have been undertaken to date by the Kogi SFCO ,while six have been conducted by the SWS and other Government Agencies/Missions. Similarly, M&E sub-Committees of FUGs/FCAs do undertake routine sub-project monitoring. The state document also shows that Project data are collected periodically using M&E format and prepared into reports. Such data includes: Project Implementation Progress Reports, Quarterly Work Plans and Budgets, Approved Community Development Plans, Sub-project Fund Disbursement/Sub-Project Implementation and Procurement undertaken. Baseline survey for the intervention site has been conducted in Kogi State. This survey was conducted to provide benchmark information on the communities. Study on the Management Plan for Gebu Forest Reserve is still on-going. The Imo state CEMP M&E sub-component project facilitated the early establishment of the state watershed management committee. It also organizes meetings of the state water shed management committee and meetings with FCAs and Community Leaders. In terms of milestones achieved by the Bauchi state CEMP M&E , monitoring exercise carried out include; periodic visits to sub-projects sites. These visits were scheduled before, during and after subproject implementation which was done to evaluate the viability performance and productivity of the subprojects. Data collection is one of the primary responsibilities of this sub-component and as such, all relevant data to the project were collected, analyzed and the results made available to the National Office. The relevant data collected by the Bauchi state CEMP M&E include; Implementation Progress Report, Work plan & Budget, M&E Report and Summary of approved LDPs amongst others. Report rendition in Bauchi state CEMP M&E subproject is time-bound. Reports are produced on monthly, quarterly, bi-annual and annual basis. Others are mid-term and implementation reports. The various progress reports were to address the quantitative and qualitative progress made in the delivery of project inputs and outputs as well as problems experienced during the reporting period. These reports were prepared regularly and made available to the National Office. So far, 10 quarterly reports were produced and the same 10 reports were submitted to the National Office. The report submitted by Kwara CEMP M&E revealed that in terms of physical monitoring, the subcomponent has achieved 94% of its set out performance target. ***Challenges to project and M&E sub component identified include***, (i) Fund disbursement for operational purposes has not been forthcoming in

the last 14 months. (ii) Funds to build the farmers' capacity and organize advisory services for them have been lacking.

(iii) The conduct of the SWS responsibilities has also been hampered for lack of funds. **(**iv**)** The position of M&E officer is still vacant up to the period of reporting. (v) Release of subprojects disbursement for phase II is still at 70% level. **(**vi**)**The 3rd phase of LDPs from Kwara State totaling N17 million is yet to receive disbursement attention by NFCO. The interaction with staff of Ogun and Kebbi states CEMP funded project also shows that they carry out physical monitoring of projects at monthly, quarterly and annual basis and are also faced with the problem of not having access to operational funds as at when due as obtained with the other four states implementing the CEMP project. The strong point of M&E noted in this review include timely monitoring of projects while the area to be strengthen in the project include timely provision of operational funds as at when due to state project offices. The impact of the identified strong and weak points of the CEMP project is presently not clear as it affects beneficiaries of the project. This is the main goal of this study.

3.0 METHODOLOGICAL FRAMEWORK

The Study Area

This study was conducted in all the six GEF/CEMP benefiting states. Fig 3.1 is a map showing the six GEF/CEMP states. The six states lie in three major ecological zones. The Savanna (Bauchi, Kebbi), Rainforest (Imo, Ogun) and Transitional (Kogi, Kwara). The site, land area and coordinates of project site is presented in table 3.1 below

Table 3.1: Land area, site and coordinates of Intervention states and sites

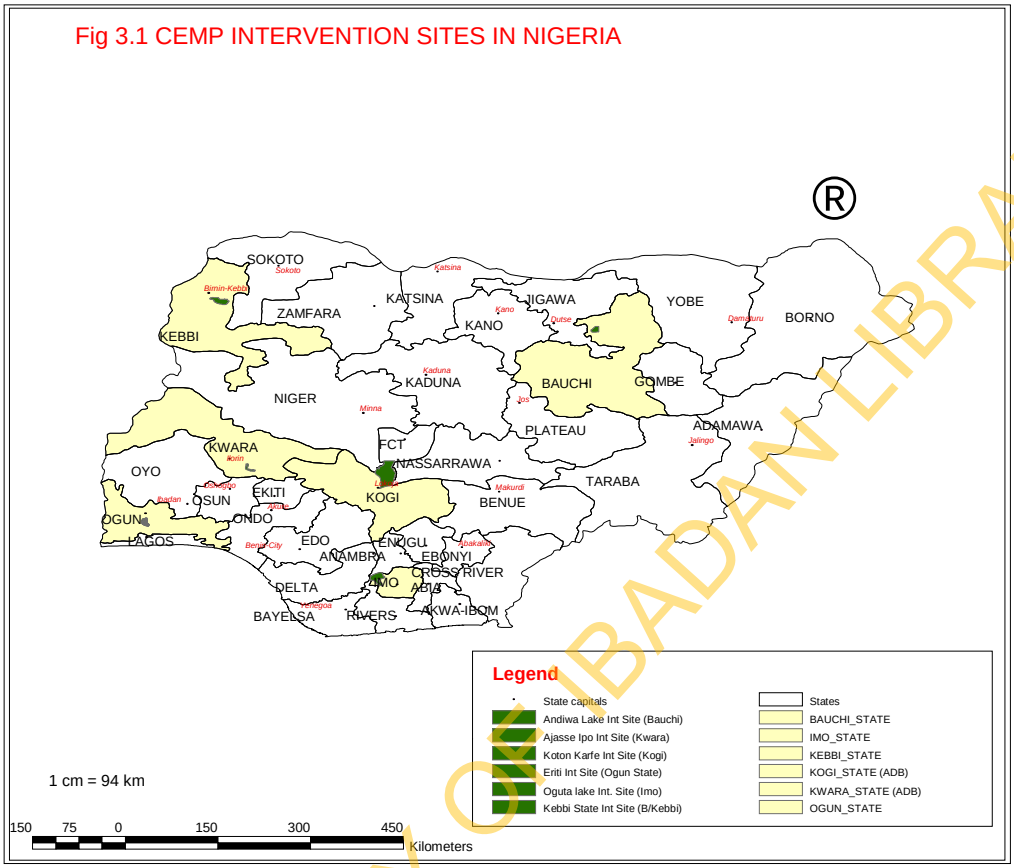
S/N	State	Site	Ecological Zone	land area (km^2)	Longitude	Latitude
1.	Bauchi	Andiwa Lake	Savanna	176.15	09° 58' 14.19'E	11° 38' 30.70'N
2	Imo	Ohaji/Egbena	Rainforest	410.00	06° 47' 15.69'E	05° 41' 27.1'N
3	Kebbi	Jega/Dumbegu	Savanna	354.00	04° 22' 18.29'E	12° 13' 04.66'N
4	Kogi	Lokoja/Koton Karfe	Transitional	374.55	06° 42' - 6.57'E	07° 51' -8°17'N
5	Kwara	Ijasse-Ipo	Transitional	92.94	04° 41' -4.56'E	08° 12' -8°21'N
6	Ogun	Eriti	Rainforest	156.00	3.15° & 3.24'E	06° 50' -7°60'N

Source: MTR 2009

In terms of crops cultivated and livelihood of communities in project site area in kwara state, the Major crops cultivated include, pepper, tomatoes, maize, cassava, yam, water melon, guinea-corn, potatoes, beans and rice. Maize, yam, cassava and vegetables are predominately cultivated in Ajasse-Ipo, Buari, Esie, Okeya and Sanmora communities. While melon and guinea corn are cultivated in Eggi, Buari and Illudun-Oro. Most of the crops are produced for household

consumption and the excess sold to generate income. There are small scale enterprises especially for garri or fufu processing (cassava product) (Kwara GEF baseline report 2008). In Bauchi, The major occupation and economic activities of the study area is crop farming. The main crop types grown include Rice, Millet, Sorghum, Cowpeas, Vegetables, Groundnut and Cassava. Other economic engagements include Livestock husbandry/domestic animal keeping, Hunting, Fishing, Bee-keeping, Blacksmithing, Agro forestry, Trading, Water Vending (Yangaruwa), Transportation business such as Motorcycle taxi/Motor park touting (Bauchi state GEF baseline report 2008). According to the baseline report of Ogun state 2008, arable crop farming is the most important agricultural activity in the watershed accounting for 72 per cent, few are engaged in trading in Non Timber Forest Products (8%) and occasional artisanal fishing and hunting activities were the minor occupation, craft artisan's employment in the location is also popular. Other livelihood activities reported for the state include Trading, Processing, Sand mining and Craft artisans fishing and Hunting. In kebbi state, the main agricultural activities engaged in include onions, tomatoes, pepper, cocoyam, beans and short type maize. Others include sweet potato, sugar cane, water melon, and cucumber. (Kebbi state GEF baseline report 2008). Crop farming, fishing, forest products exploitation and other forms of economic activities related to environmental and natural resource usage are the main economic activities engaged in by project site communities in Kogi state(Kogi state GEF baseline Report 2008). The Imo state GEF baseline report 2008 showed that the two main occupations of the inhabitants of the Oguta lake watershed catchment area are farming and fishing. Agriculture is at both commercial and subsistence level. On account of the enormous land available coupled with appreciable long fallow periods which ensure the recovery/restoration of cropped lands, farming is a remunerative occupation in the watershed area. There are farmers who produce rice, yams, cassava, plantain/banana, maize and vegetables in commercial quantities and are dependent on their produce for sustenance. Because of the low-lying nature of some parts of the watershed, farmers plant their yams around February and early March each year and harvest about July and August before the flooding period, which starts around September. Commercial farmers are also at Tombise, Enigbo Abatu, OrsuObodo, Ezi-Orsu, Opuoma, Ekeugba, Obokofia, Mgbara, Umuorji, Nnebukwu, and Oforola. They cultivate yam, cassava, rice, maize, cocoyam, and plantain/banana. Around Nnebukwu, OrsuObodo, Nkwesi, Opuoma, Obokofia and Oforola,

Tombise, Enigbo Abatu, Ezi Orsu and Afiafor are oil palm plantations owned and managed by farmers. The rubber plantations are located at OrsuObodo, Opuoma, and EziOrsu.



Sampling Technique

In order to analyse the impact of GEF/CEMP project on beneficiaries, we stratified the sampling frame into three strata; (i) GEF/CEMP direct beneficiaries i.e ; This include beneficiaries who benefits from both Fadama and GEF or only GEF interventions(ii) Respondent who only benefits from Fadama projects; and (iii) respondents who did not benefit from GEF or Fadama projects. This stratification was designed to enable estimation of total impact of GEF intervention as against non GEF non Fadama respondents. By comparing outcomes of GEF/CEMP beneficiaries with outcomes of similar (in terms of gender, household size and Occupation, farm size, state of origin and education) non GEF non Fadama beneficiaries, we can obtain total impact of project

on participants. This study is constrained not to compare GEF/CEMP project beneficiaries with Fadama beneficiaries because there presently exist respondents benefitting from Fadama GEF and Fadama projects across the six intervention states. The sampling procedure involved selection of respondents from total list of GEF beneficiaries, Fadama beneficiaries and non GEF non Fadama beneficiaries. 10 households were randomly selected from total list of three stratified groups in each state in order to arrive at a total of 180 respondents. The sampling frame was stratified to ensure that female respondents were represented in the three groups used for this study. Project staff and State water subcommittee surveys were also conducted to clearly assess the functionality and sustainability of SWS and also to access information from project staff about sustainable land management, watershed management, local Development plan, performance of participating state government councils and local government in the area of institutional arrangement and institutional support and monitoring and evaluation issues. In term of survey that has to do with SWS and Project staff, each of the survey instruments were distributed in each state. Therefore 6 staff questionnaires were given to 6state staff and 6 SWS members.

Survey Instrument and Data Collection.

Structured questionnaires were administered on three set of respondents. The beneficiaries, the project staff and the SWS members. A focus Group discussion was also organized for the three groups of beneficiaries (i.e. the GEF, Fadama and the non GEF non Fadama groups). Three FGDs were therefore carried out in each state by the Consultants and the GEF facilitators. In all 18 FGDs were carried out in all the six states. As for the beneficiary interviews, 10 GEF, Fadama and nonGEF nonFadama were interviewed per state respectively. The interviews were carried out by the consultants as well as the GEF facilitators and desk officers. The GEF facilitators and desk officers were trained by the team leader before they were used for the interview.

Data Analysis[1]

1 Note; this section of this report made use of Nkonya *et al* Impact Assessment 2007 methodology

According to Nkonya *et al* (2007) Impact assessment studies face interrelated challenges in establishing a viable counterfactual in predicting outcome in the absence of the intervention—that is, what would have happened to the beneficiaries had they not participated in the project ; for example the project's. outcome indicator is household expenditure, the average impact of the project on its beneficiaries (referred to in the impact assessment literature as the average effect of the treatment on the treated [ATT]) is defined as the difference between the expected expenditure by project beneficiaries while participating in the project and the expected expenditure they would have received if they had not participated in the project:

$$ATT = E(Y1|p = 1) - E(Y0|p = 1) \quad \ldots\ldots (1)$$

where ATT = Average impact of Treatment on the Treated; p = participation in the project ($p = 1$ if participated in the project, and $p = 0$ if did not participate in the project); $Y1$ = outcome (household expenditure, in this example) of the project beneficiary after participation in project; $Y0$ = outcome (expenditure) of the same beneficiary if he or she had not participated in the project.

We however cannot observe the counterfactual expenditure of the beneficiaries had they not participated in the project—E ($Y0|p = 1$). Simply comparing expenditure of households participating in the project with those not participating could result in serious biases, because the two groups may be quite different and thus likely to have different expenditure regardless of their participation in the project. For example, adding and subtracting E ($Y0|p = 0$) on the right side of equation (1) results in the following:

$$ATT = [E(Y1|p = 1) - (E(Y0|p = 0)] - [E(Y0|p = 1) - (E(Y0|p = 0)] \quad (2)$$

The first expression (within the first set of square brackets) is observable because it is the difference between the expenditure of the beneficiaries and non-beneficiaries. The second expression is unobservable because E ($Y0|p = 1$) is unobservable and thus represents the bias resulting from estimating ATT as the first expression. This bias results because the expenditure that non-beneficiaries spent without the project may not be equal to the expenditure that

beneficiaries would have spent without the project; that is, E($Y0|p = 1$) may not equal E($Y0|p = 0$).

There exist two common sources of bias are (1) project placement or targeting bias, in which the location or target population of the project is not random and (2) self-selection bias, in which households choose whether or not to participate and thus may be different in their experiences, endowments, and abilities. The most accepted method to address these biases is to use an experimental approach to construct an estimate of the counterfactual situation by randomly assigning households to treatment (beneficiary) and control (no beneficiary) groups. Experimental approach makes it possible to choose groups that are statistically similar (i.e., drawn from the same distribution) in both observable and unobservable characteristics, thus avoiding project placement and self-selection biases. Such an approach is not feasible in the present study because project placement and participation decisions were used before the design of the study and were not random. The notion of random assignment also conflicts with the nature of this CDD project (of which GEF/CEMP project is one), in which communities and households make their own decisions about whether to participate and what activities they will pursue. Therefore the random or experimental design cannot be used for this project.

According to Nkonya *et al* (2007) various quasi-experimental and non-experimental methods have been used to address the bias problem. The most commonly used quasi-experimental methods is propensity score matching (PSM), which make use of project beneficiaries and non-beneficiaries who are as similar as possible in terms of observable characteristics expected to affect project participation as well as outcomes. The difference in outcomes between the two matched groups is normally interpreted as the impact of the project on the beneficiaries. This study therefore follows the methodology to estimate the ATT for impacts of the GEF /CEMP project on household outcomes.

The PSM method matches project beneficiaries with comparable non-beneficiaries using a propensity score, which is the estimated probability of being included in the project. The PSM choose only beneficiaries and non-beneficiaries with comparable propensity scores used to estimate the ATT. Those who do not have comparable propensity scores are dropped from the comparison groups. In our study, 16 of 181 were dropped, while 165 observations matched.

Therefore, we used only the matched observations to analyze the impact of GEF/CEMP project on beneficiaries.

However, it should be noted that PSM is subject to the problem of "selection on unobservable," meaning that the beneficiary and comparison groups may differ in unobservable characteristics, even though they are matched in terms of observable characteristics (Heckman, Ichimura, Smith, and Todd, 1998)

In this study, we address the problem of selection on unobservable by combining PSM with the use of the double-difference (DD) estimator. The double-difference estimator compares changes in outcome measures (i.e., change from before to after the project) between project participants and nonparticipants, rather than simply comparing outcome levels at one point in time.

The advantage of the double-difference estimator is that it nets out the effects of any additive factors (whether observable or unobservable) that have fixed (time-invariant) impacts on the outcome indicator (such as the abilities of farmers or the inherent quality of natural resources), or that reflect common trends affecting project participants and nonparticipants equally (Nkonya *et al*, 2007). Thus, for example, if project participants and nonparticipants are different in their asset endowments (mostly observable) or in their abilities (mostly unobservable), and if those differences have an additive and fixed effect on outcomes during the period studied, such differences will have no confounding effect on the estimated ATT.

By combining PSM with the double-difference estimator, controls for differences in pre-project observable characteristics can be established. There however exist some shortcomings in the use of PSM which are common to all non-experimental methods of impact assessment. Therefore the use of PSM and double difference methodology is not as perfect as when impact assessment study uses experimental approach.

The propensity scores were computed using binary probit regression models. We estimated two probit models for three comparisons: The first involve comparing GEF beneficiaries with all non-beneficiaries. The second involve comparing non-Fadama non GEF with others.

The explanatory variables used in computing the propensity scores are those expected to jointly determine the probability to participate in the project and the outcome. This study makes use of variables such as Gender, household size, farm size, education, state and Primary occupation as

explanatory variables .The results of the probit models are reported in the result section of this report. The probit model results were used to compute the propensity scores that were used in the PSM estimation of ATT. Several methods are possible for selecting matching observations (Smith and Todd, 2001). This study used the kernel matching method which uses a weighted average of "neighbors" (within a given range in terms of the propensity score) of a particular observation to compute matching observations.

Observations outside the common range of propensity scores were dropped from the analysis.

This study also used bootstrapping to compute the standard errors of the estimated ATT in order to generating robust standard errors

4.0 EMPIRICAL RESULT

The tables 4.1 below presents the results of the probit model used in generating the propensity score for the matching exercise. It shows the covariates that explain the differences between the Fadama GEF beneficiaries and the non beneficiaries. This exercise is important in order to ensure that the two groups of interest differ only by the fact one benefit from Fadama GEF and the other not. The results show a log likelihood of 98.68 and a LR Chi2 of 35.29 which is significant at 1 percent level of significance. This shows that the model has a good fit as all the covariates used contribute in explaining significantly the differences between the two groups. In addition five variables out of ten are significantly different from zero at different level of significance. These include years of education, primary occupation, being a resident of Bauchi, Ogun and Kebbi state.

After the propensity score is estimated and the score computed for each respondent, the next step is the actual matching. Any of these algorithms can be used for matching: Kernel, Nearest Neighbour, stratification and Radius matching. The quality of the match can be assessed by checking the common support between treatment and non treatment using the minima and maxima criterion. Observations which lie outside the region were discarded (dropped) from the analysis. Imposing the common support condition in the estimation improves the quality of the match. At the end of this process the sample size was reduced to 165. This is because 16 respondents were dropped.

Table 4.1: The maximum likelihood results of the probit model

Variables	Fadama GEF Beneficiaries		Non Beneficiaries	
	Coefficients	Std. Error	Coefficients	Std. Error
Gender	-0.421	0.272	0.072	0.272
Household size	0.015	0.021	-0.029	0.019
Years of education	0.087***	0.019	-0.056***	0.018
Farm size	-0.006	0.024	0.013	0.021
Bauchidum	0.676*	0.405	-0.276	0.402
Kogidum	0.231	0.364	-0.026	0.365
Imodum	0.456	0.361	-0.084	0.355
Ogundum	0.620*	0.375	-0.400	0.373
Kebbidum	0.697*	0.419	-0.336	0.406
Poccup	0.726***	0.228	-0.314	0.212
Constant	-2.1382	0.507	0.748	0.470
Number of obs	181		177	
LR chi2(10)	35.29***		15.63	
Log likelihood	-98.684		106.183	

The estimation of the total impact of the GEF project on some selected outcomes is presented in table 4.2. The Double difference was used to control for the unobservable bias and the bootstrap test was used to estimate robust standard error for the average treatment effect on the treated

(ATT). The table shows a large impact of GEF project on the change in the level of expenditure of beneficiaries when compare to the non beneficiaries. The expenditure of a randomly selected beneficiary would averagely change by N4863. In terms of total impact the difference between the ATT of beneficiaries and that of non beneficiaries give a net impact of N8667.

Table4. 2: Estimation of the total impact on selected outcomes

	Mean before	Mean after	Average Treatment on the Treated (ATT)
Total expenditure	131044.4 (11846.45)	82695.24 (7059.67)	
Fadam GEF beneficiaries	86056.85 (13587.38)	79968.18 (9693.75)	4863.63 (15493.37)
Non fadama non GEF Befeneficiaries	180981.6 (25266.94)	105610.1 (17817.72)	-3804.19 (21566.98)

The result of this impact assessment study is structured along the four components of Fadama GEF project. Capacity Building, Integrated Ecosystem Management at Watershed Level, Community Sustainable Land Management, Project Management and M&E. The Term of reference will be discussed such that it will fall under the four components of Fadama GEF .It should also be noted that discussion of the some of the four components will be done together because they appear as cross cutting issues in the term of reference. The term of reference of this study is in line with the main objective of the Fadama GEF Project. The main objective of the Fadama GEF project include; (a) capacity building for sustainable fadama natural resource management at national, state, local government, and community levels, including strengthening o f institutional capacity for integrated watershed management and 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 o f indigenous sustainable land management practices under the following four components. In order to achieve the term of reference of this study, it first assessed the three key performance Indicators of the Fadama GEF Project.

Table 4.3: Results of Key performance Indicators

States	Existence of watershed management coordinating capacity in the state (%)	Mainstreaming of sustainable land and water management practice into the LDP (%)	Area under sustainable land and water management practice in tree pilot site
Bauchi	75.00	100.00	**60.21**
Kogi	100.00	100.00	54.88
Imo	100.00	100.00	**59.99**
Ogun	100.00	100.00	**37.57**
Kwara	100.00	100.00	21.87
Kebbi	100.00	100.00	230.70
Cut off of PDOs	At least 60%	At least 35%	At least 80%
Proportion of the participating state	**83.33**	**100.00**	
For pilot state			**52.59**

For all states			**77.53**

Source: CEMP GEF Field Survey 2010

Fig 4.1: Existence of watershed management coordination capacity in state (%)

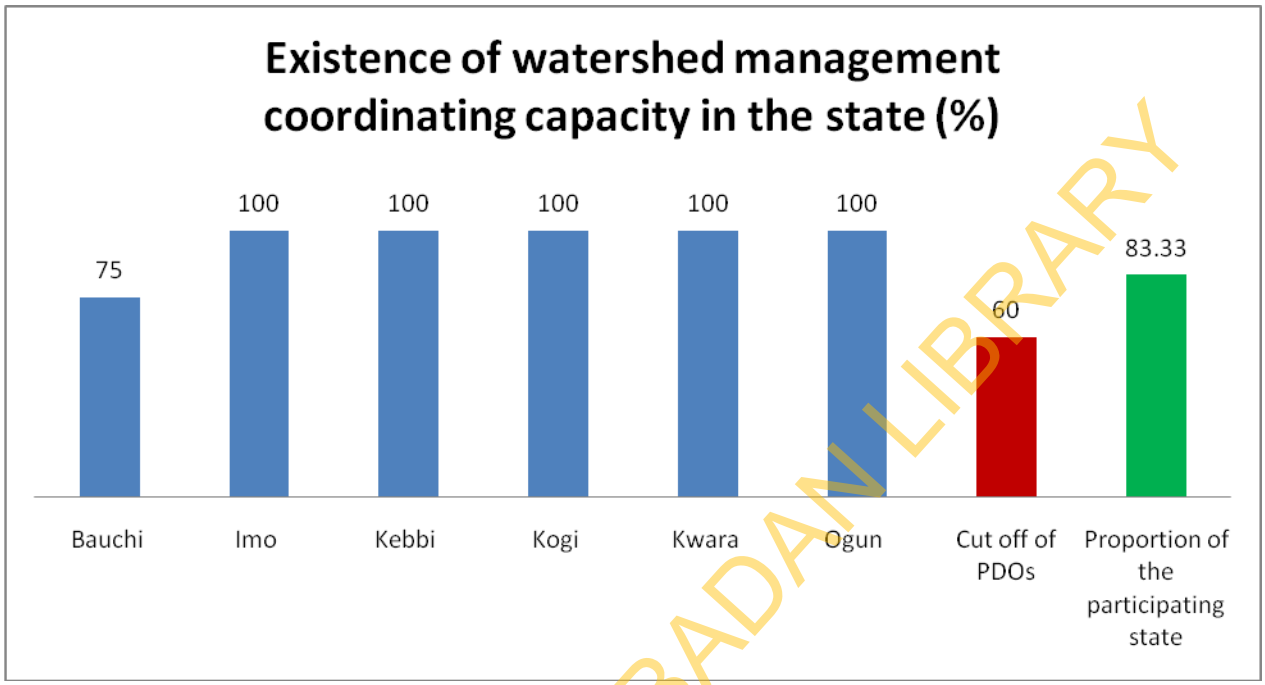


Fig 4.2: Mainstreaming of sustainable land and water management practice into LDP(%)

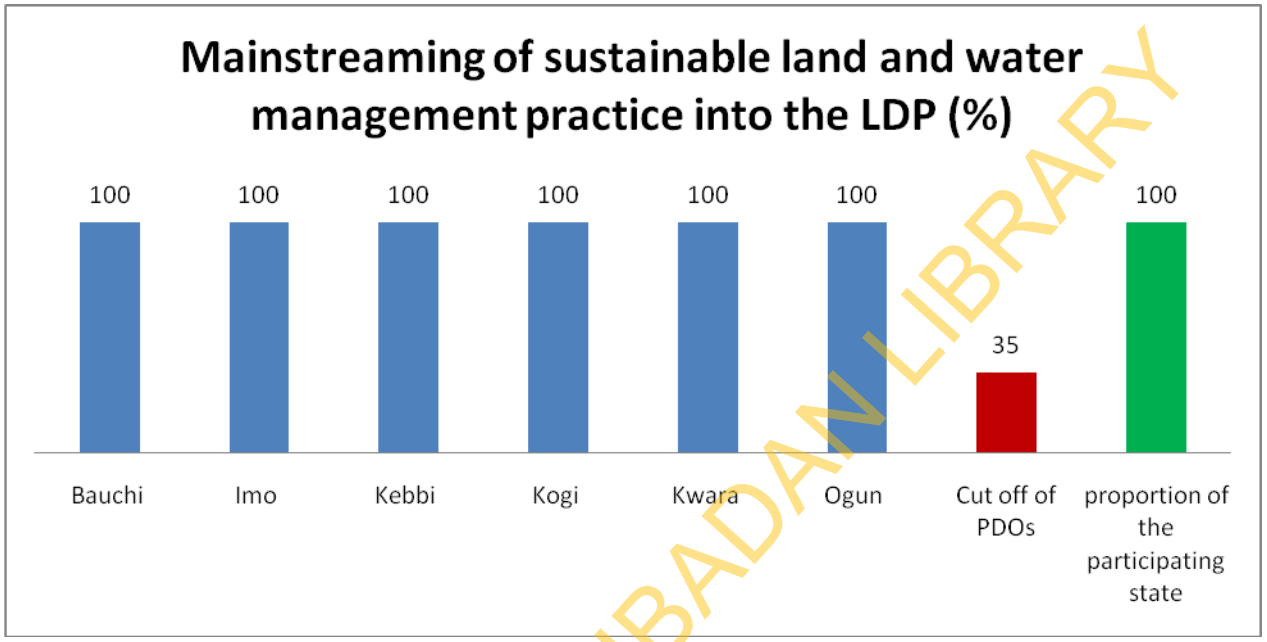


Fig4.3a: Area under sustainable land and water management practice in the six sites .

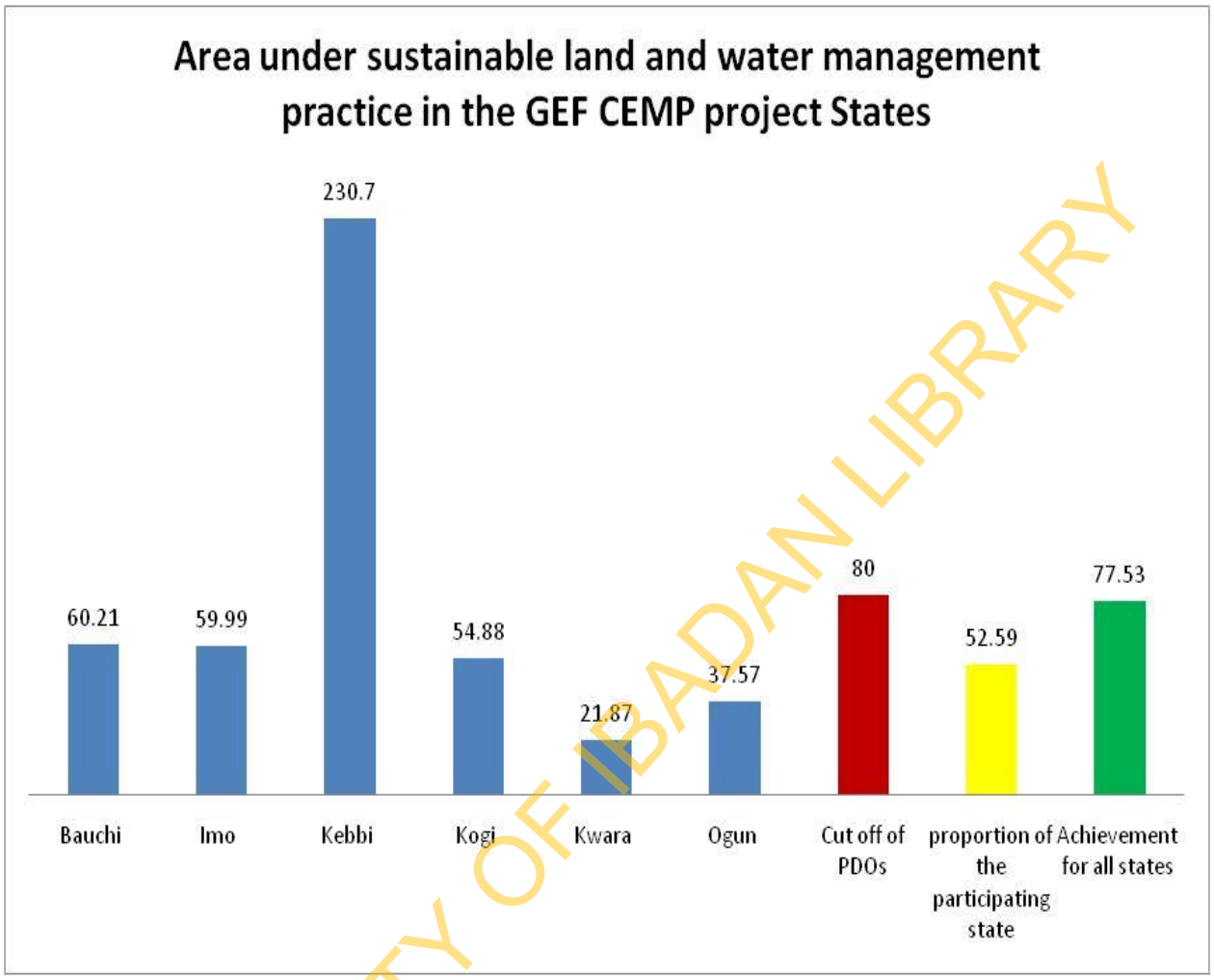
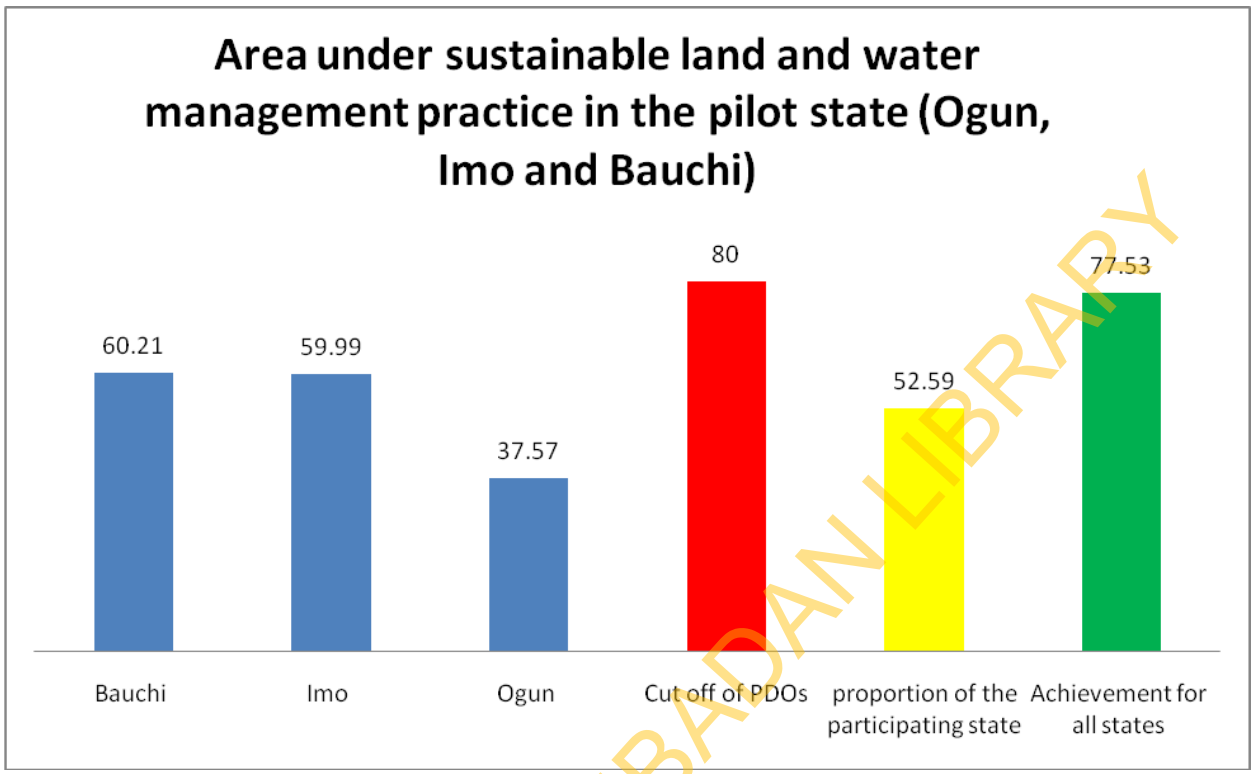


Fig4.3b: Area under sustainable land and water management practice in pilot site



**Note ; Participating states in fig 4.3a and 4.3b are for the three pilot sites of Bauchi, Imo and Ogun states*

Figures 4.1, 4.2 and 4.3a and b present pictorially the results in table 4.3. The findings as regards the PDOs are presented as follows:

Watershed Management Coordination.

Findings revealed that there exist a 100% 'yes' answer from 83% of the six states sampled that there exist watershed management coordination capacity in state. The 100% 'yes' response from 83% of participating state clearly shows that the project exceed the minimum key performance indicator of having at least at the end of project, sustainable watershed management coordination capacity established in at least 60 percent of participating states.

Sustainable land and water management practices mainstreamed into LDP

As for the target of sustainable land and water management practices mainstreamed into LDP in

at least 35 percent of participating communities, findings shows through proportion of participating state beneficiary responses that said 'yes' was 100%.This clearly shows that the project has exceeded the 35 percent cut off point that sustainable land and water management practices must have been mainstreamed into LDP of participating states.

The area under sustainable land and water management practices in the three pilot sites must have increased by at least 80 percent

The third key performance indicator of the project which states that by project end, the area under sustainable land and water management practices in the three pilot sites must have increased by at least 80 percent was not achieved going by the result in figure 4.3. The average achievements in the three pilot sites of Bauchi, Imo and Ogun states stood at about 53%, while the average achievement of the six states was about 77%. Going by this result, it is clear that the project might likely accomplish the 80% target before the end of the project in year 2011.

The implication of finding with respect to the Project Development Objectives is that the project has been able to exceed expectations in the area of establishing watershed management coordination capacity in at least 60 percent of participating state and having sustainable watershed management practices mainstreamed into LDP in at least 35percent of participating states. The rest of the results are discussed under the four components of the project and sometimes discussed together where they exist as crosscutting issues in the term of reference.

Capacity building, Waters shed Management, Sustainable land Management and Monitoring and Evaluation.

Table 4.4: Impact of capacity building on livelihood

Yes response	Frequency	Percent
Fadama GEF	51	92.73
Fadama	39	69.64
Non Fadama Non GEF	11	20.37

Source: CEMP GEF Field Survey 2010

Fig 4.4: 'Yes response of impact of capacity building on livelihood. (Figures in %)

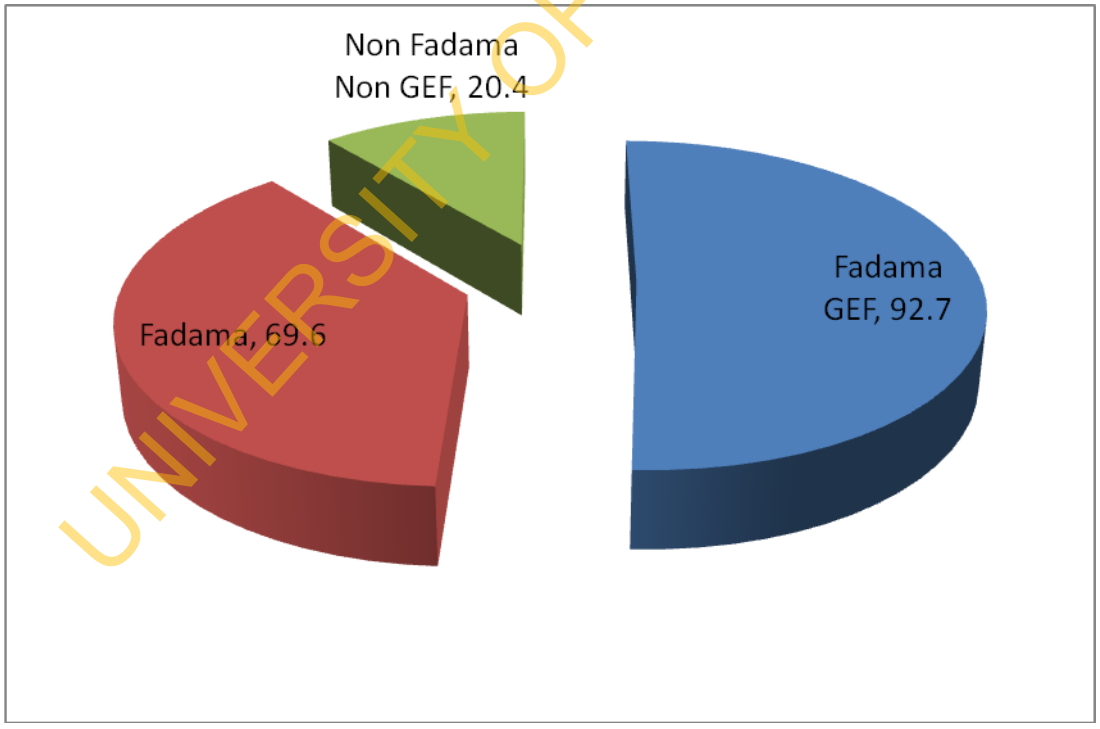


Table 4.5: Reasons for yes response in GEF area

Fadama GEF	Frequency	Percent
Capacity building led to enhanced yield, earning and savings	29	52.73
Improved agricultural practices, farming system and afforestation	13	23.64
Increased capacity building in soil conservation and organic manure	1	1.82
Increase knowledge of livestock and poultry Breeding and rearing	2	3.64
No impact	8	14.55

Source: CEMP GEF Field Survey 2010

The results on how the four components of the project impact on livelihood are presented as follows. Results revealed that about 92% of Fadama GEF beneficiaries said yes to capacity building impacting on their livelihood pattern, 70% of Fadama beneficiaries also agreed to the fact that capacity building impact on their livelihood, while about 20% of Non GEF Non Fadama was of the opinion that capacity building impact on their livelihood pattern. The trend of this result seems reasonable given the fact that capacity building is well built into the Fadama GEF and Fadama projects. Respondents in these two groups are therefore supposed to feel the impact of capacity building (in the form of training and awareness) more than Non Fadama Non GEF group of respondents. The fact that more of Fadama GEF respondents said yes to capacity building impacting on their livelihood more than Fadama respondents may reflect the effect of higher frequency of exposure to capacity building on the part of Fadama GEF beneficiaries as compared to the Fadama beneficiaries. In terms of reasons given as regards how capacity building has impacted on GEF beneficiaries, there exist two key driving issues. They are that capacity building enhance yield and savings made from different livelihood and that it enhance

agricultural practices and afforestation.

Fig4.5: Reasons for 'Yes' response of impact of capacity building on livelihood in GEF area.

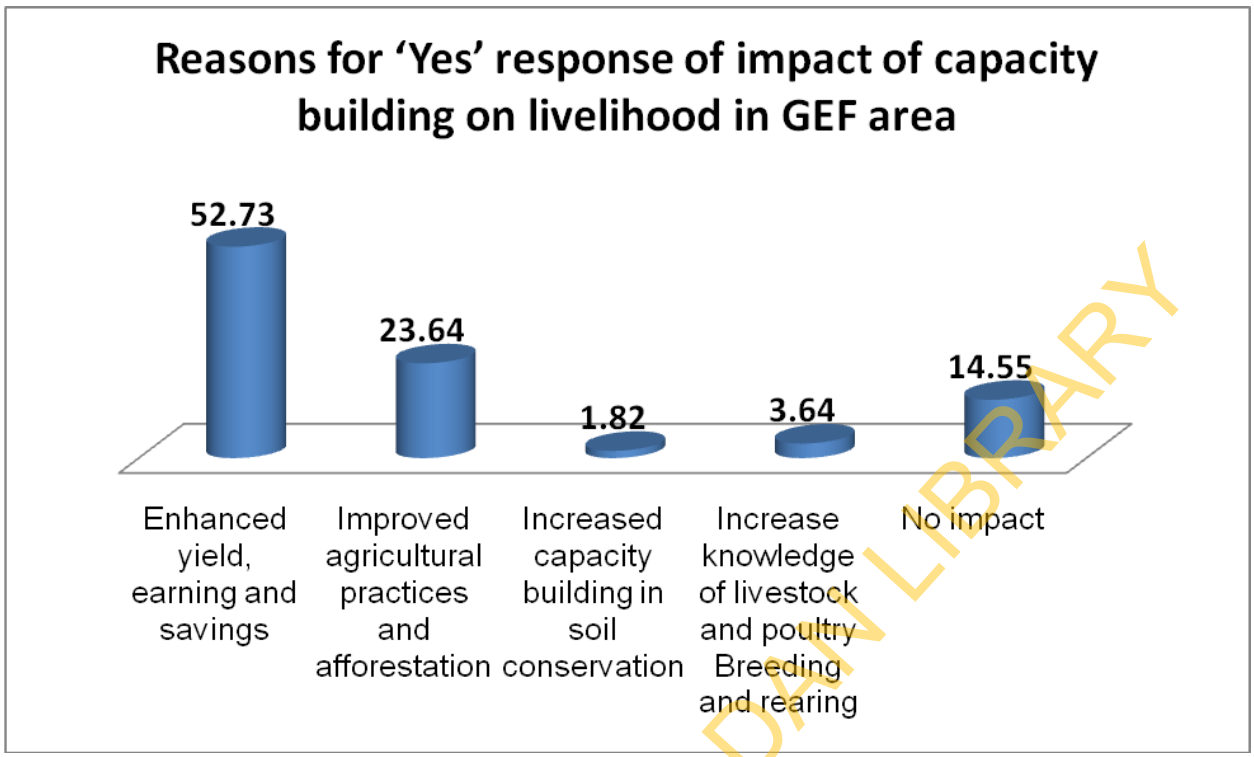


Table 4.6: Impact of Integrated ecosystem management at watershed level on livelihood

Yes response	Frequency	Percent
Fadama GEF	53	96.36
Fadama	37	66.07
Non Fadama Non GEF	11	20.37

Source: CEMP GEF Field Survey 2010

Fig 4.6: Yes response for the Impact of Integrated ecosystem management at watershed level on livelihood. (Figures in %)

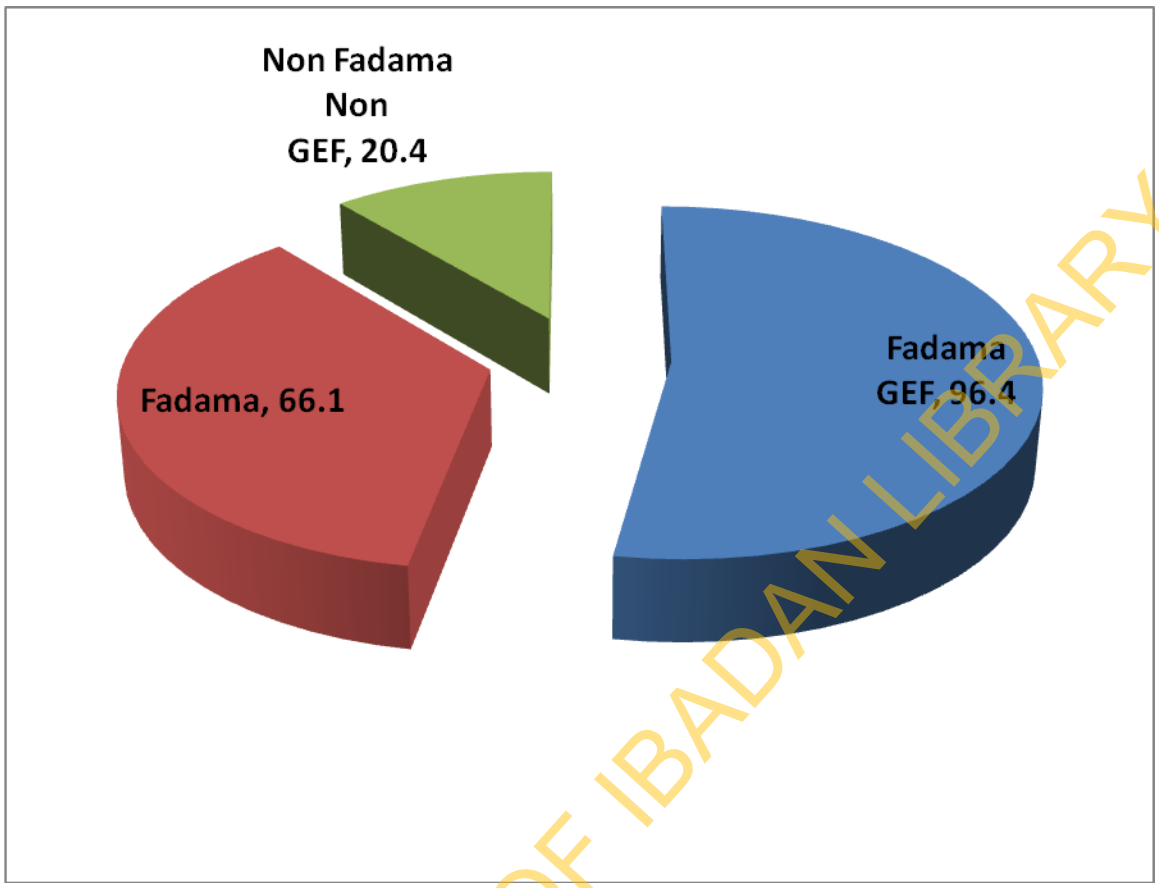
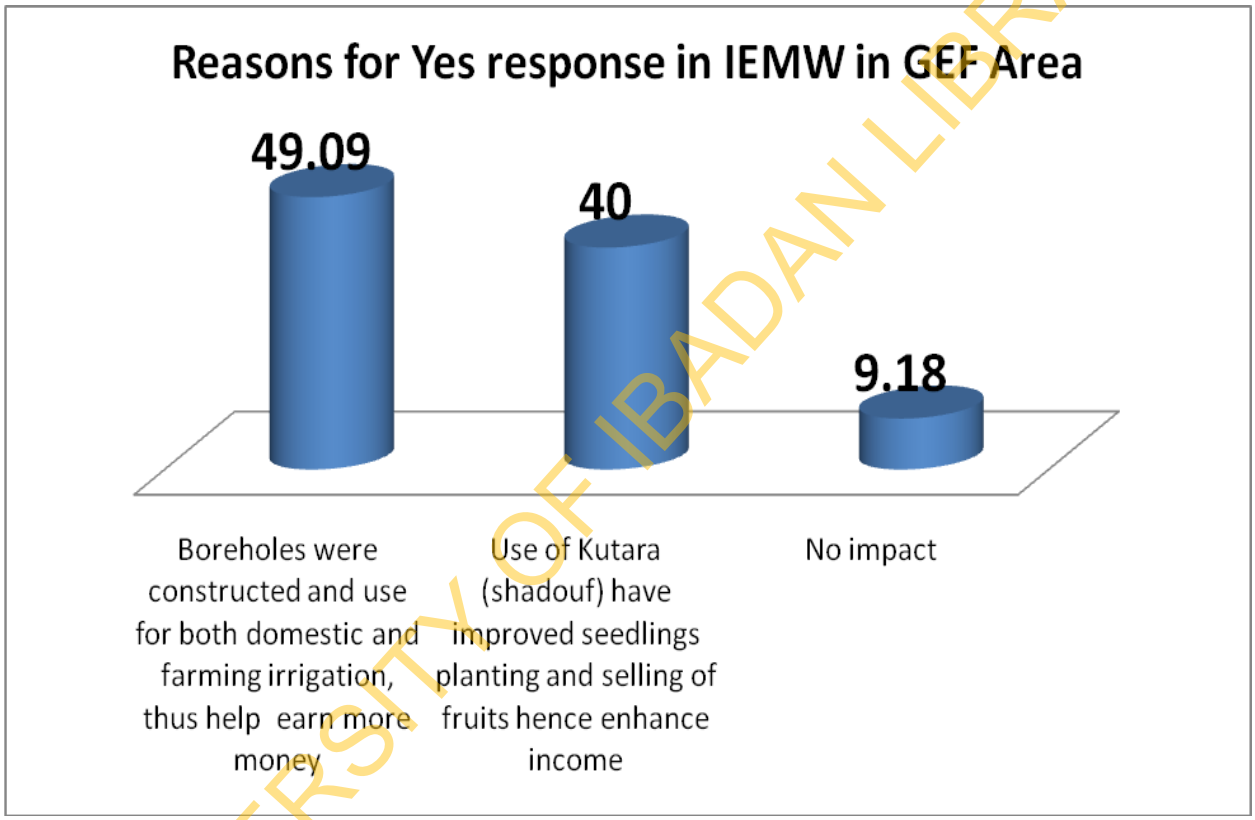


Table 4.7: Reasons for yes response in Fadama GEF area

Fadama GEF	Frequency	Percent
Boreholes were constructed and use for both domestic and farming irrigation, thus help earn more money	27	49.09
Use of Kutara (shadouf) have improved seedlings planting and selling of fruits hence enhance income	22	40.00
No impact	10	9.18

Source: CEMP GEF Field Survey 2010

Fig 4.7: Reasons for Yes response in IEMW in GEF Area



Results with respect to whether Integrated Ecosystem Management component of the project impact on respondents' livelihood revealed that more Fadama GEF and Fadama respondents accessed Integrated Ecosystem Management components of the project better than the Non GEF Non Fadama beneficiaries. The trend of this result seems acceptable; however the fact that71% of Fadama respondents claiming that Integrated Ecosystem Management component impact on their livelihood suggests spillover effect of Fadama GEF project components to Fadama

respondent. Key reasons put forward by Fadama GEF respondents on how Integrated Ecosystem Management impact on their livelihood include the use of boreholes constructed for 'Fadama project' for use of domestic and farming purposes which translates into enhanced income as well as use of shadouf leading to improved seedling planting and fruit selling.

Table 4.8: Impact of Community sustainable land management component on livelihood

Yes response	Frequency	Percent
Fadama GEF	50	90.91
Fadama	40	71.43
Non Fadama Non GEF	8	14.81

Source: CEMP GEF Field Survey 2010

Fig 4.8: Yes response for the Impact of Community sustainable land management component on livelihood (Figures in %)

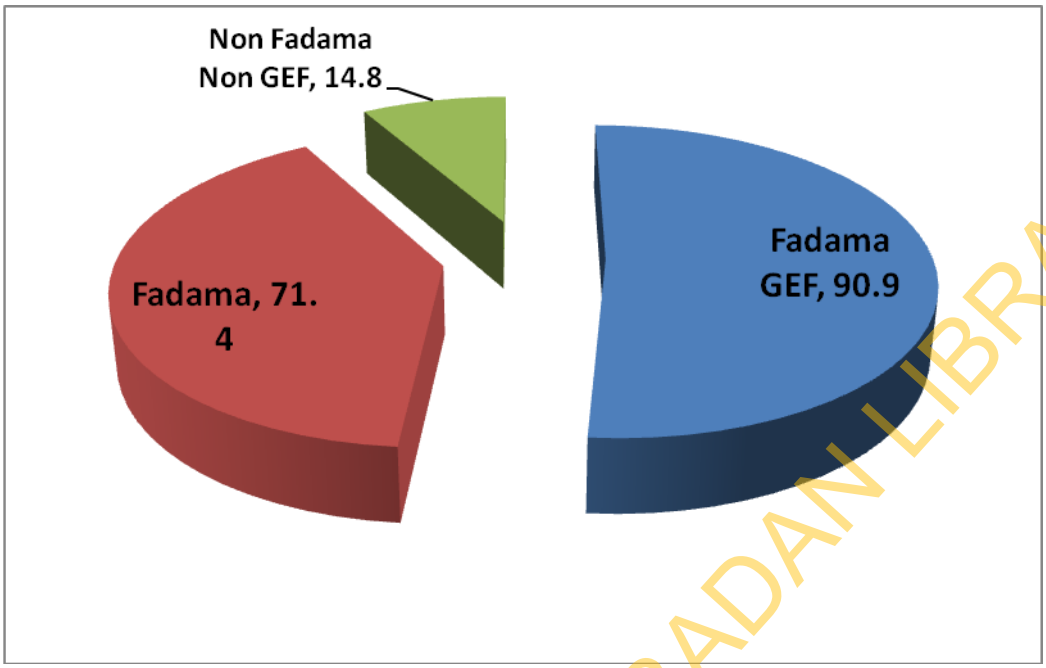
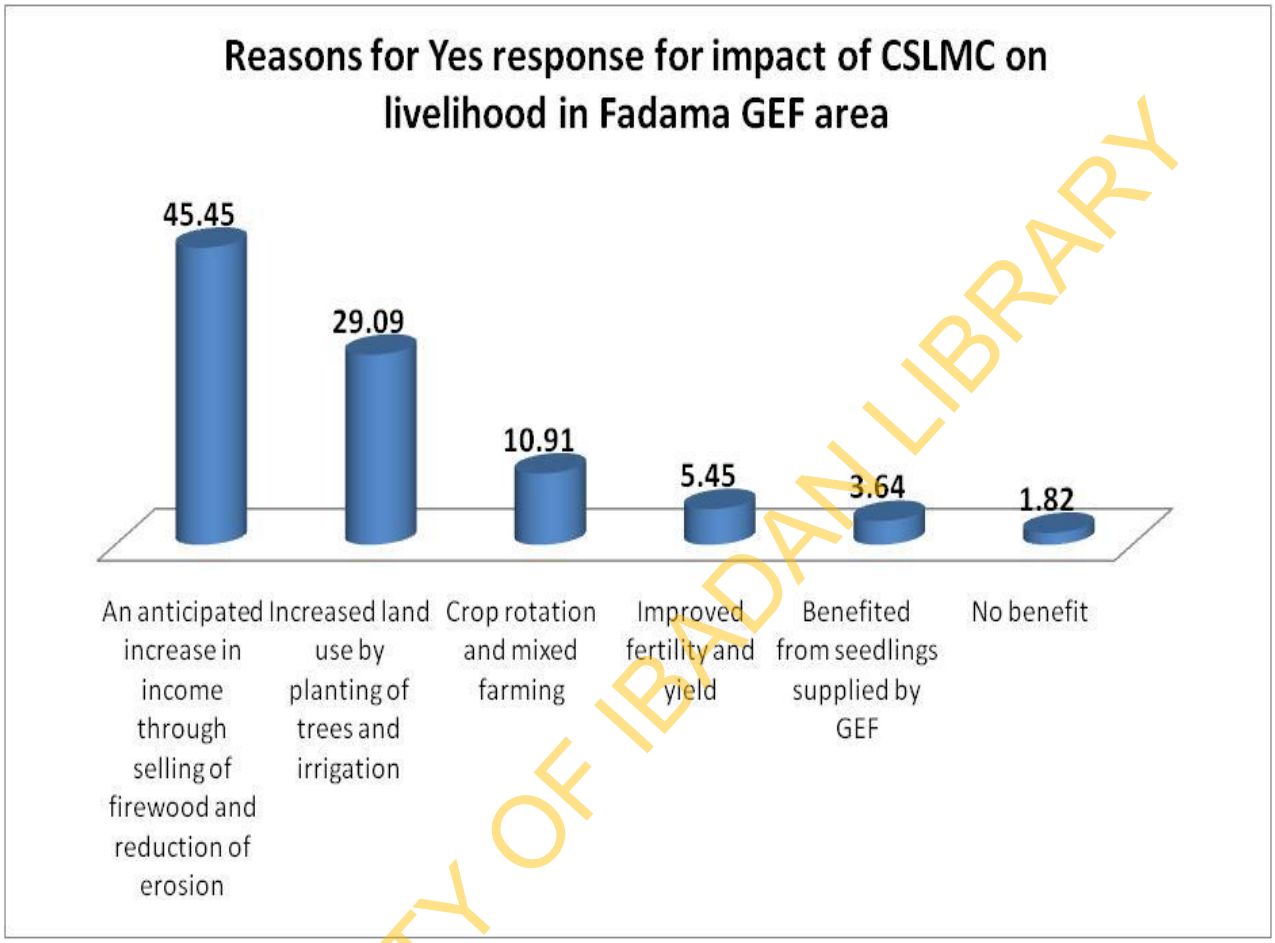


Table 4.9: Reasons for 'Yes' response of Impact of Community sustainable land management component on livelihood in GEF area

Fadama GEF beneficiaries	Frequency	Percent
An anticipated increase in income through selling of firewood and reduction of erosion	25	45.45
Increased land use by planting of trees and irrigation	16	29.09
Crop rotation and mixed farming	6	10.91
Improved fertility and yield.	3	5.45
Benefited from seedlings supplied by GEF (mango, guava, orange)	2	3.64
Did not benefit	1	1.82

Source: CEMP GEF Field Survey 2010

Fig 4.9: Reasons for Yes response for impact of CSLMC on livelihood in Fadama GEF area



Results on whether Community sustainable land Management impact on livelihood shows that more Fadama GEF respondents agreed to the fact that Community sustainable land management impact on their livelihood more as compared to the other two groups of respondents. The reason for this is because sustainable land management is an integral part of Fadama GEF project. Key reasons given on how sustainable land management impact on livelihood include anticipated enhanced income from sale of firewood and increase land use by planting of trees.

4.10: Impact of Project monitoring component on livelihood

Yes response of three categories of respondents.	Frequency	Percent
Fadama GEF	46	83.64
Fadama	41	73.21
Non Fadama Non GEF	6	11.11

Source: CEMP GEF Field Survey 2010

Fig 4.10: Yes response for Impact of project monitoring component on livelihood(Figures are in %)

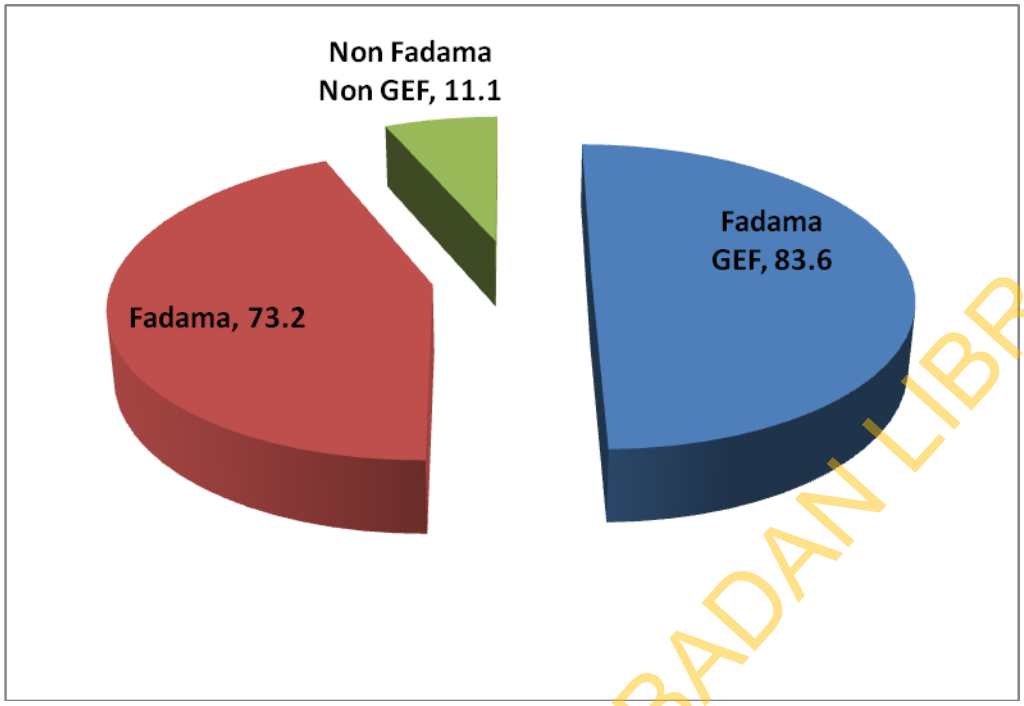
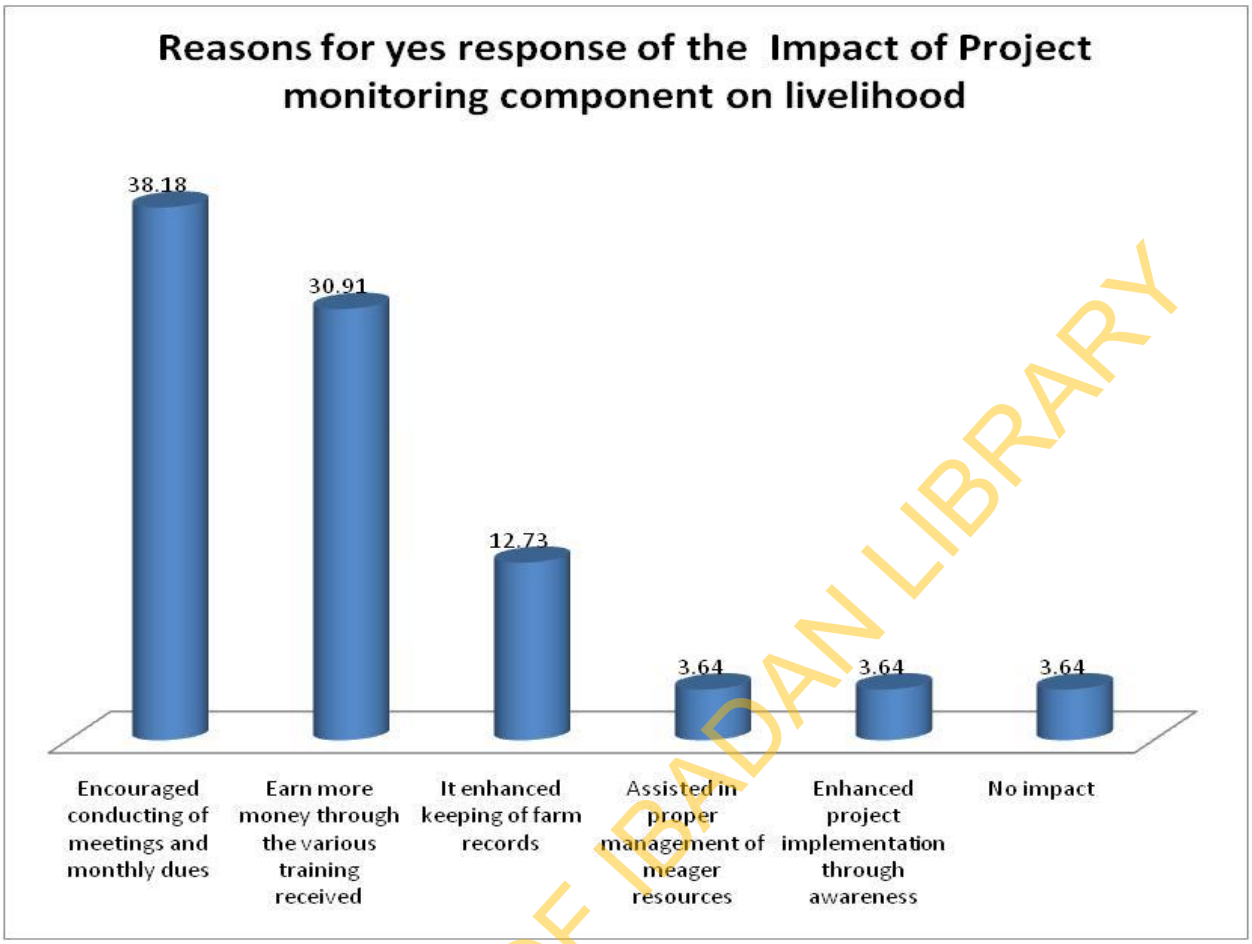


Table 4.11: Reasons for yes response of respondents as regards impact of M&E in GEF area

Fadama GEF	Frequency	Percent
Encouraged activities such as conducting of meetings and monthly dues	21	38.18
It has helped us to earn more money through the various training received	17	30.91
It enhanced keeping of farm records	7	12.73
Assisted in proper management of meager resources	2	3.64
Enhanced project implementation through awareness and training	2	3.64
No impact	2	3.64

Source: CEMP GEF Field Survey 2010

Fig 4.11: Reasons for Yes response of Impact of Project monitoring component on livelihood



The trend of answer of whether Project management and evaluation component impact on the three groups of respondents follows what is obtained with other discussed result on impact on livelihood. More respondents from Fadama GEF claimed that monitoring and evaluation component of the project impact on their livelihood when compared to the other two groups of respondents. Reasons given by Fadama GEF respondents on how capacity building impact on their livelihood include respondents being encouraged in the area of conducting meetings and contributing monthly dues , earning more money as a result of various trainings attended and enhanced capacity building in the area of farm records keeping. The reasons given by Fadama GEF respondents clearly show that M&E components of the project are engaged in frequent informal trainings of respondents when they monitor projects.

Table 4.12: Distribution of Fadama GEF respondents on empowerment issues

	Before		After	
Fadama GEF	Not well trained	Well trained	Not well trained	Well trained
Extent of training in decision making before and after GEF	72.73	27.27	15.09	84.91
Extent of knowledge of fund transfer procedure before and after GEF	83.02	16.98	17.31	82.69
Extent of knowledge of procurement procedure before and after GEF	79.25	20.75	17.31	82.69
Awareness on sustainable land management before and after GEF	84.91	15.09	15.09	84.91
Awareness on sustainable water management before and after GEF	92.31	7.69	20.00	80.00
Up scaling sustainable land management practices before and after GEF	94.12	5.88	22.45	77.55
Sustainable water management practices before and after GEF	90.20	9.80	20.83	79.17

Source: CEMP GEF Field Survey 2010

Table 4.13: Distribution of Fadama respondents on empowerment issues

	Before		After	
Fadama	Not well trained	Well trained	Not well trained	Well trained

Extent of training in decision making before and after GEF	26.09	73.91	3.85	96.15
Extent of knowledge of fund transfer procedure before and after GEF	27.66	72.34	11.54	88.46
Extent of knowledge of procurement procedure before and after GEF	40.43	59.57	13.79	86.21
Awareness on sustainable land management before and after GEF	45.65	54.35	21.43	78.57
Awareness on sustainable water management before and after GEF	47.37	52.63	14.81	85.19
Up scaling sustainable land management practices before and after GEF	57.14	42.86	23.08	76.92
Sustainable water management practices before and after GEF	56.76	43.24	22.22	77.78

Source: CEMP GEF Field Survey 2010

Capacity Building

This section of the report seek to assess level of beneficiaries empowerment in the area of decision making, fund transfer, procurement procedure , awareness on sustainable land management and water practice, adoption of sustainable land and water management practices and sustainability and up scaling sustainable land and water management practices. The results generated show the level of empowerment in these seven areas. Findings also revealed that after the implementation of Fadama GEF project, Fadama GEF respondents' level of empowerment in all the seven identified areas seems to be at the same level with Fadama respondents. This result contrast with findings before implementation of Fadama GEF project in which Fadama and Non Fadama Non GEF were better empowered in the seven identified empowerment areas. The reason for this can be attributed to the projects' well managed M&E component as well as the

activities of the SWS .The results also shows that Fadama GEF respondents were better empowered in the area of awareness on sustainable land management, up scaling sustainable land management practices and sustainable water management practices when compared with the other two groups of respondents..

Table 4.14: Distribution of NonFadama NonGEF respondents on empowerment issues

	Before		After	
Non Fadama Non GEF	Not well trained	Well trained	Not well trained	Well trained
Extent of training in decision making before and after GEF	50.00	50.00	23.08	76.92
Extent of knowledge of fund transfer procedure before and after GEF	55.88	44.12	29.17	70.83
Extent of knowledge of procurement procedure before and after GEF	60.61	39.39	36.00	36.64
Awareness on sustainable land management before and after GEF	69.70	30.30	30.77	69.23
Awareness on sustainable water management before and after GEF	78.13	21.88	26.92	73.08
Up scaling sustainable land management practices before and after GEF	80.00	20.00	25.00	75.00
Sustainable water management practices before and after GEF	80.65	19.35	23.08	76.92

Source: CEMP GEF Field Survey 2010

Fig 4.12: Level of beneficiary empowerment using response of Not well trained before

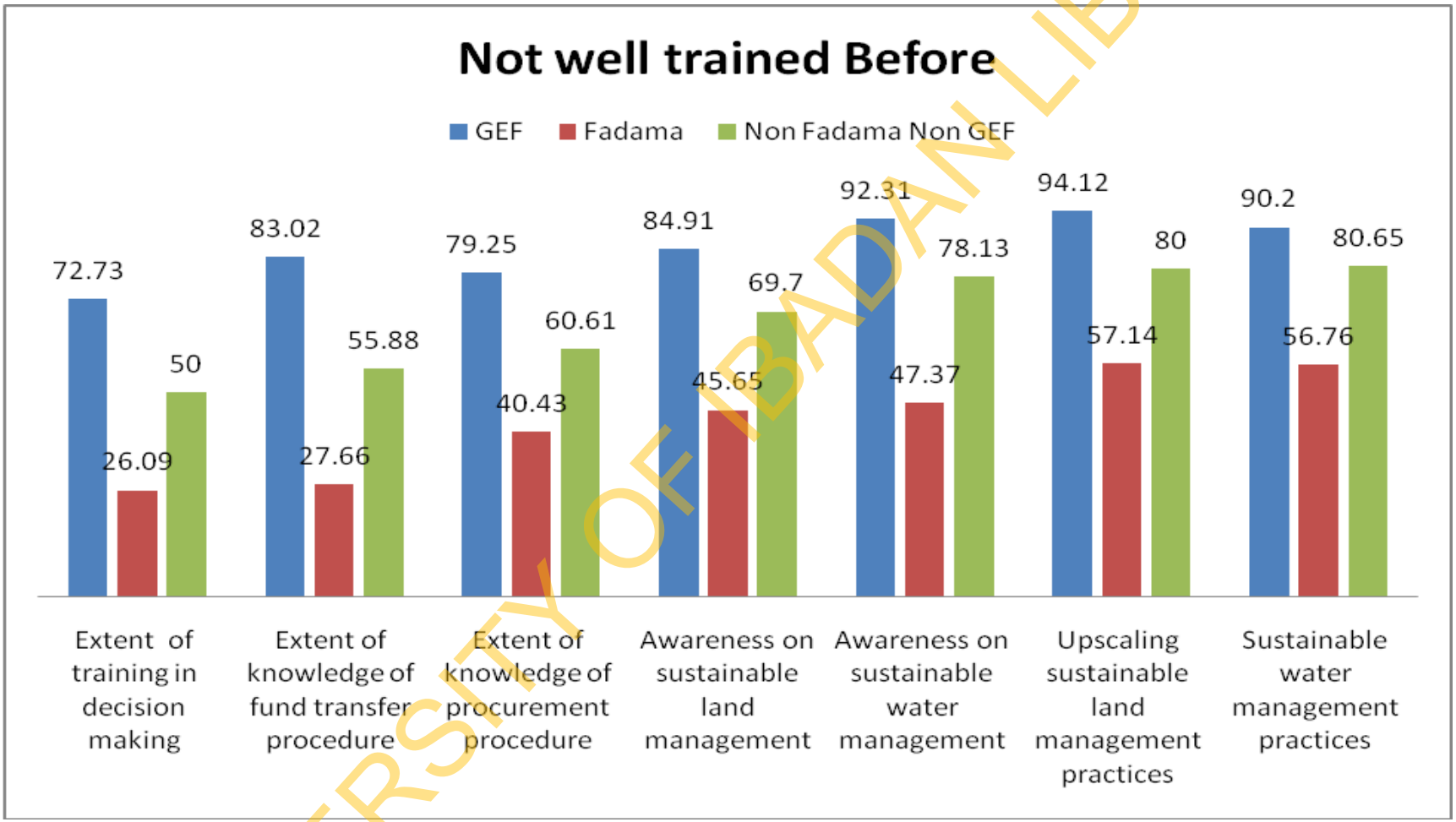


Fig 4.13: Level of beneficiary empowerment using response Not well trained after

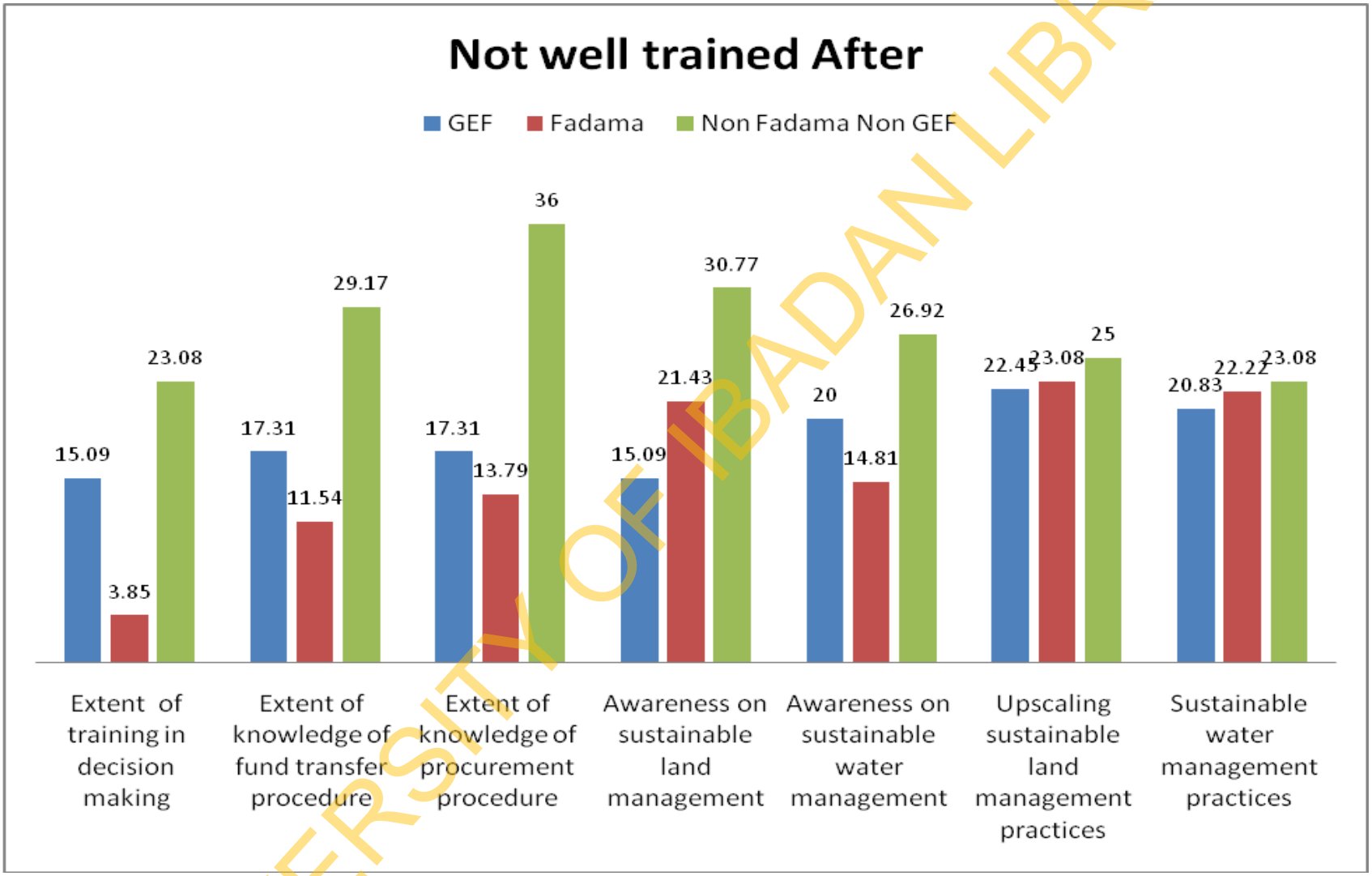


Fig 4.14: Level of beneficiary empowerment using response of well trained before

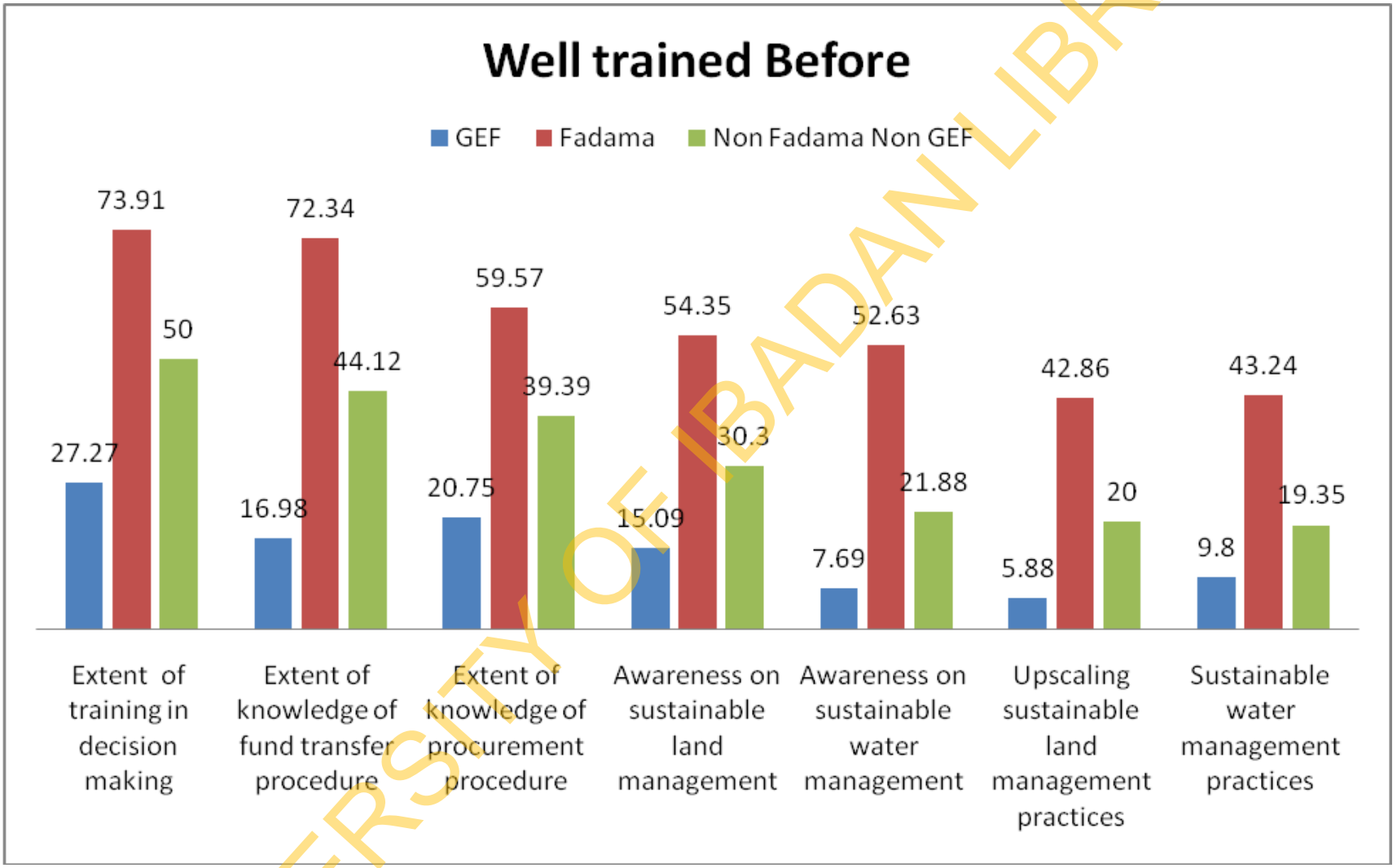


Fig 4.15: Level of beneficiary empowerment using response of well trained after

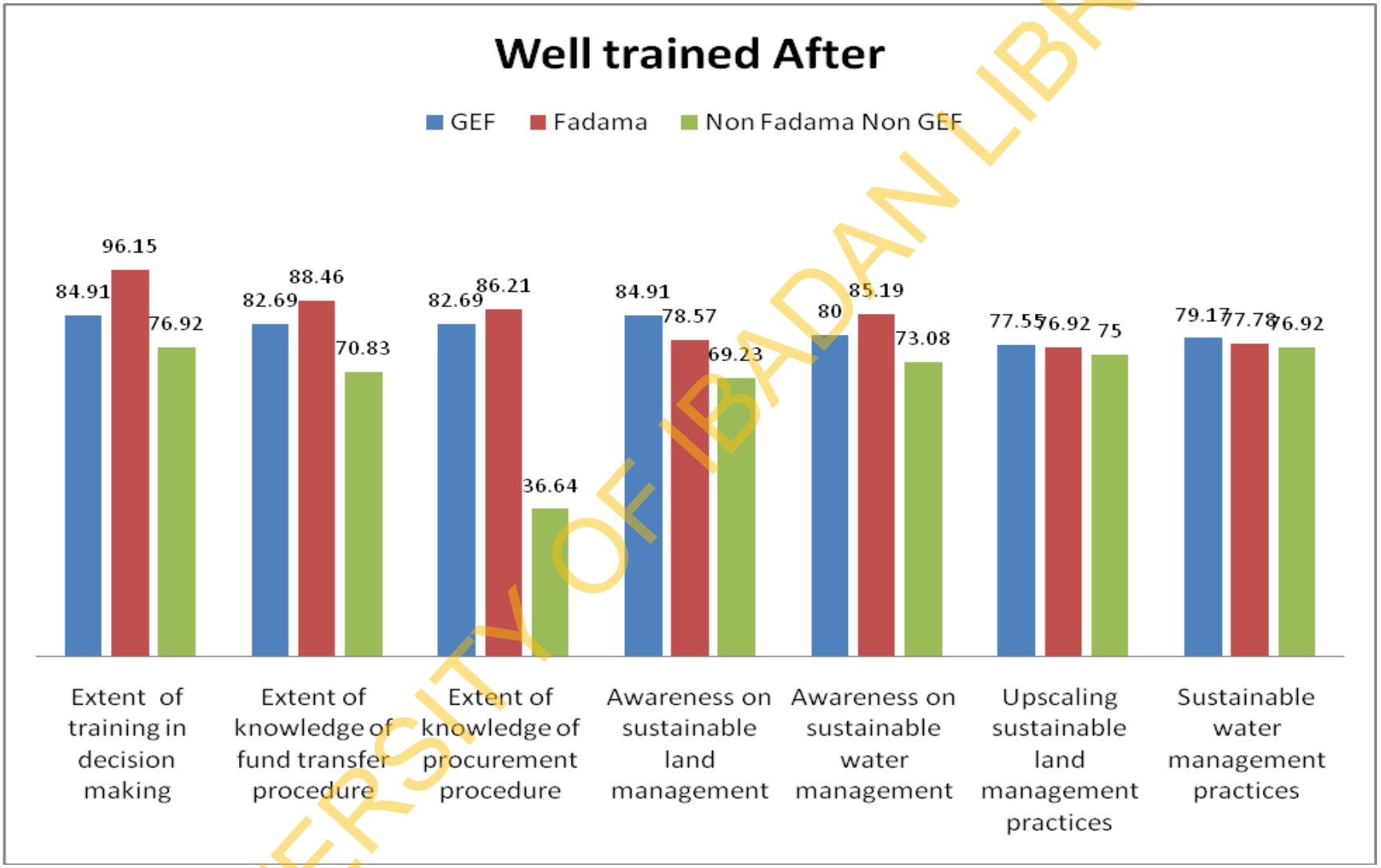
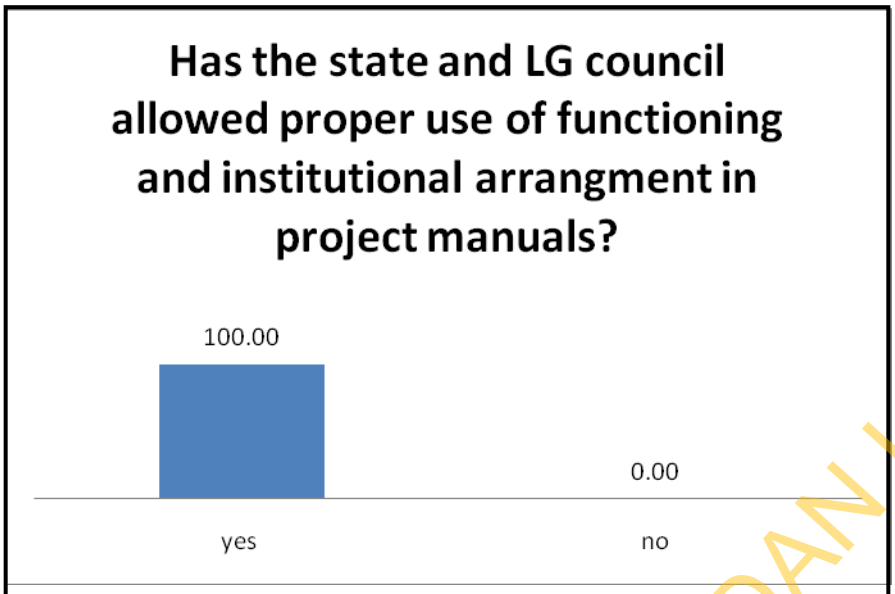


Fig 4.16: Distribution of response as regards whether state and LGA allow project to work with projects' manual

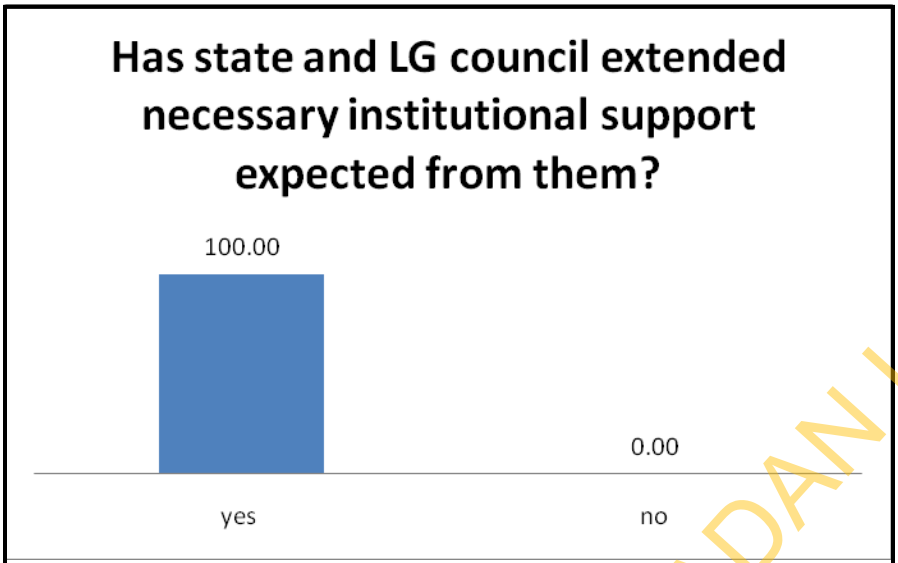


Reasons .

1. The local fadama development committee in conjuction with the local government chairman approves the LDPs .
2. Staff accommodation provided at LFDO and payment of counterpart funds.
3. Close monitoring of project activities
4. Supporting the desk offices and allowing the commitiees to function without interferance
5. LFDC and SFTC and SWS are function within the limit of resources made available to them.

Assessing the performance of participating state government in the area of institutional arrangement and institutional support is deemed another important aspect of capacity building**.** All the responses of project staff of Fadama GEF revealed that the state and Local Government Areas in the six participating states allow proper use of functioning and institutional arrangement as documented in the project manual. The manner and ways by which this is achieved is presented as text under fig 4.16.

Fig 4.17: Distribution of responses as regards whether state and LG extended necessary institutional support expected of them



Reasons.

1. The use of local government staff to achieve technical task like desk and field appraisal of LDPs
2. At the state level: participation of SWS in the project implementation, payment of counterpart funds and provision of accommodation. At the local government level: provision of office accommodation, payment of counterpart funds and approval of LDPs
3. The LGAs do help poor FCAs/FUGs to pay their beneficiary contributions

Findings also revealed that the Local Government Areas have extended necessary institutional support expected from them to the projects. This finding is confirmed by the 100% 'Yes' response of project staff. The way this is being done is presented as text under fig4.17.

The response above does not however indicate there are still no area of improvement for states

and LGAS in the area of institutional support to CEMP. Such area of improvement as reported by project staff includes;

- assisting the SFCO and the LFDO with funds outside PAD guidelines especially when necessary
- Provision of funds to support vulnerable and poor groups to pay their beneficiaries' contributions.
- mainstreaming FCAs into LGA decisions making process

Monitoring and Evaluation

One of the terms of reference of this study is assessing beneficiary satisfaction with the Fadama GEF project. The sub project in which most Fadama GEF respondents registered very high level of satisfaction is in Apiary, Orchard, Woodlot and Community nursery. Orchards, windbreak, grass cutter project were subproject in which most Fadama GEF respondents registered a 'satisfied' answer for. However, two subproject stands out in terms of having a more than 10% of its respondents registering 'Not satisfied' response about them. These are snailry and grass cutter business. The explanation for this is possibly as a result of high mortality rate reported among beneficiaries for these two subprojects in Ogun state.

Table 4.15: Nature and Degree of beneficiary satisfaction with Fadama GEF sub -project (Figures in %)

Activity	Very satisfy	Satisfy	Undecided	Not satisfied
Apiary	41.38	31.03	24.14	3.45
Orchard	38.71	54.84	0.00	6.45
Woodlot	62.50	33.33	0.00	4.17
Snailry	31.03	31.03	27.59	10.34
Grass cutter	19.35	51.61	12.90	16.13
Small ruminant	20.00	10.00	70.00	0.00
Community nursery	47.37	21.05	31.58	0.00
Riverbank stabilization	23.53	17.65	58.82	0.00
Windbreak	18.18	81.82	0.00	0.00
Shelterbelt	16.67	8.33	75.00	0.00
Alley cropping	18.18	9.09	72.73	0.00
Border tree line planting	6.67	33.33	53.33	6.67
Road side planting	0.00	11.11	88.89	0.00
Buffer strip planting	0.00	0.00	100	0.00

Source: CEMP GEF Field Survey 2010

Fig 4.18: Nature and Degree of beneficiary satisfaction with subproject implemented in Fadama GEF area

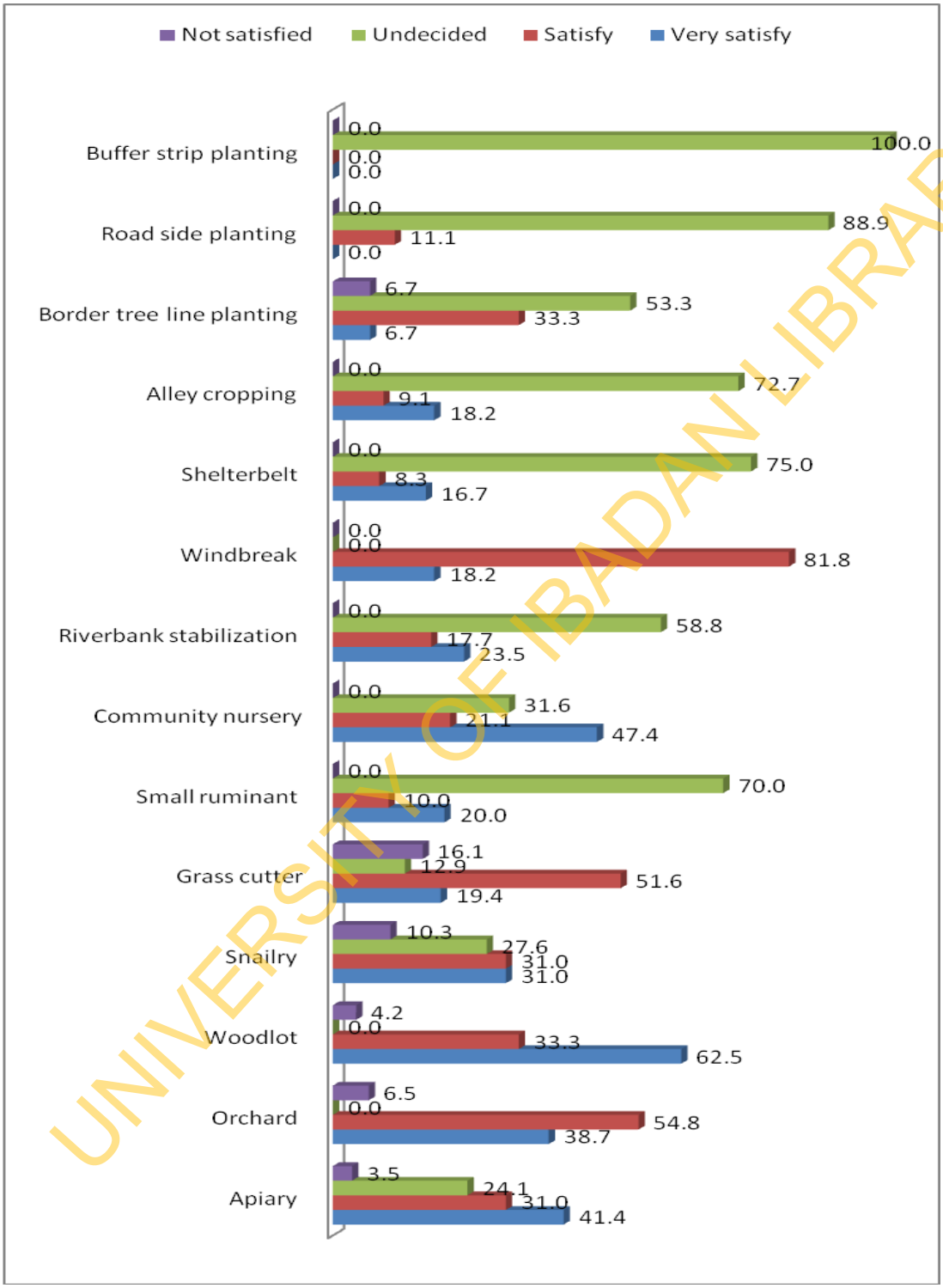
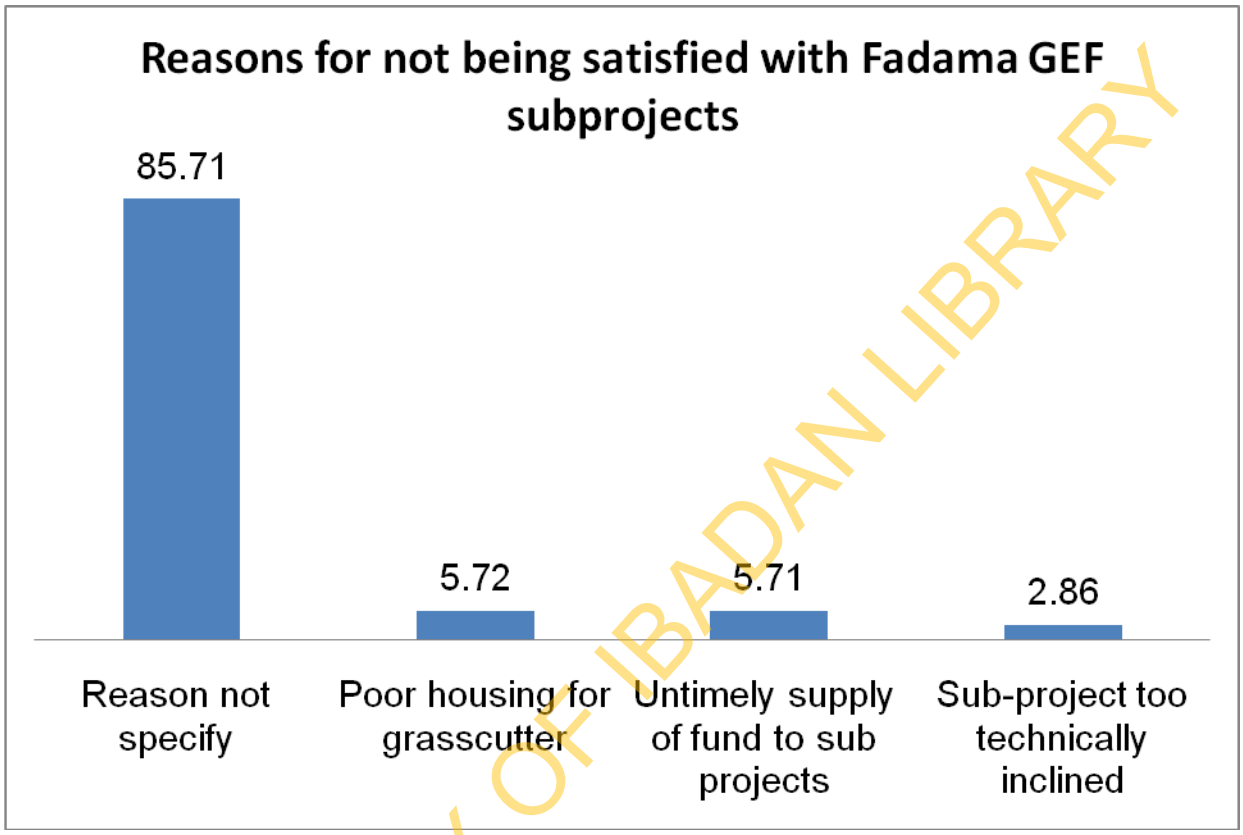


Fig 4.19: Reasons for not being satisfied with Fadama GEF subprojects



The Fadama GEF respondents were made to provide reasons for not being satisfied with their subprojects. Most respondents that reported that they are not satisfied with their sub project did not give reasons for their response. The reason for this might have been as a result of disagreement within groups which respondents were not ready to share. However some gave technical reasons which have to do with the poor housing system constructed for grass cutters. This issue of making grass cutter comfortable in their houses was a key issue mentioned by consultants on the field. The suggestion on this includes not making them to be exposed to extreme heat or cold. The issue of untimely release of funds to subproject was also a factor for not being satisfied generally. This issue reoccurred among beneficiaries and Fadama GEF staff in all the six state visited. Their main reason for this is the untimely release of operational funds for

the project from the National office.

Another key term of reference of this study that falls under the monitoring and Evaluation component of this project is assessment of willingness of respondents to share in cost of sub projects and implication for sustainability. Findigs revealed that more than half of Fadama GEF beneficiaries are ready to continue with all sub projects after the support of GEF/CEMP World Bank support. Community Forest, Grass cutter, snailry, woodlot and Orchards recorded high response profile in terms of willingness of respondents being ready to continue with the project after the support of the world Bank. Road side planting and Apiary were also projects which most respondents participating in these subprojects were ready to continue with. It is also worth to note that all the 14 suproject considered have robust sustainability pontentials going by responses of Fadama GEF beneficiaries.

Fig 4.20: Subprojects which Fadama GEF respondents are ready to continue with.

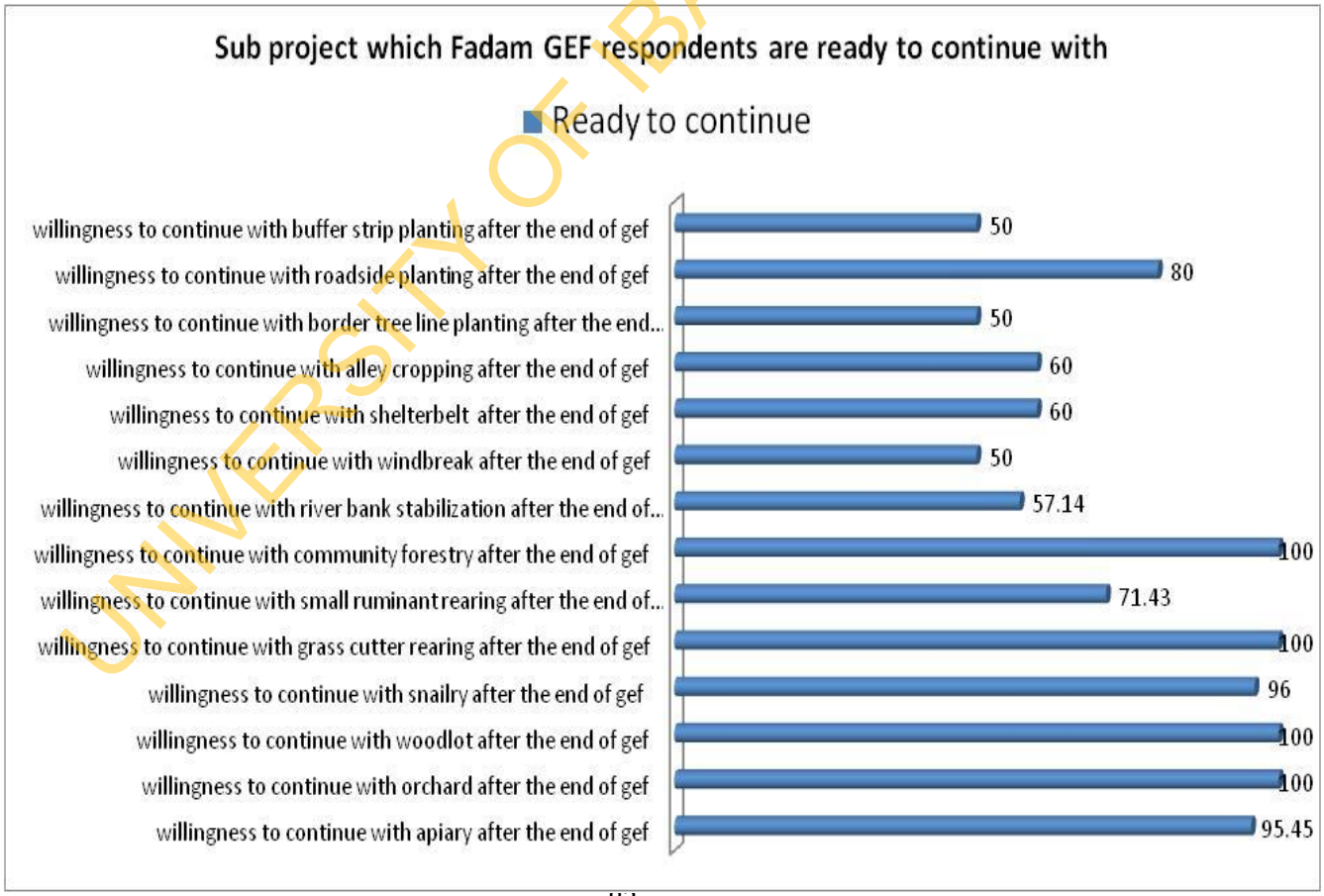
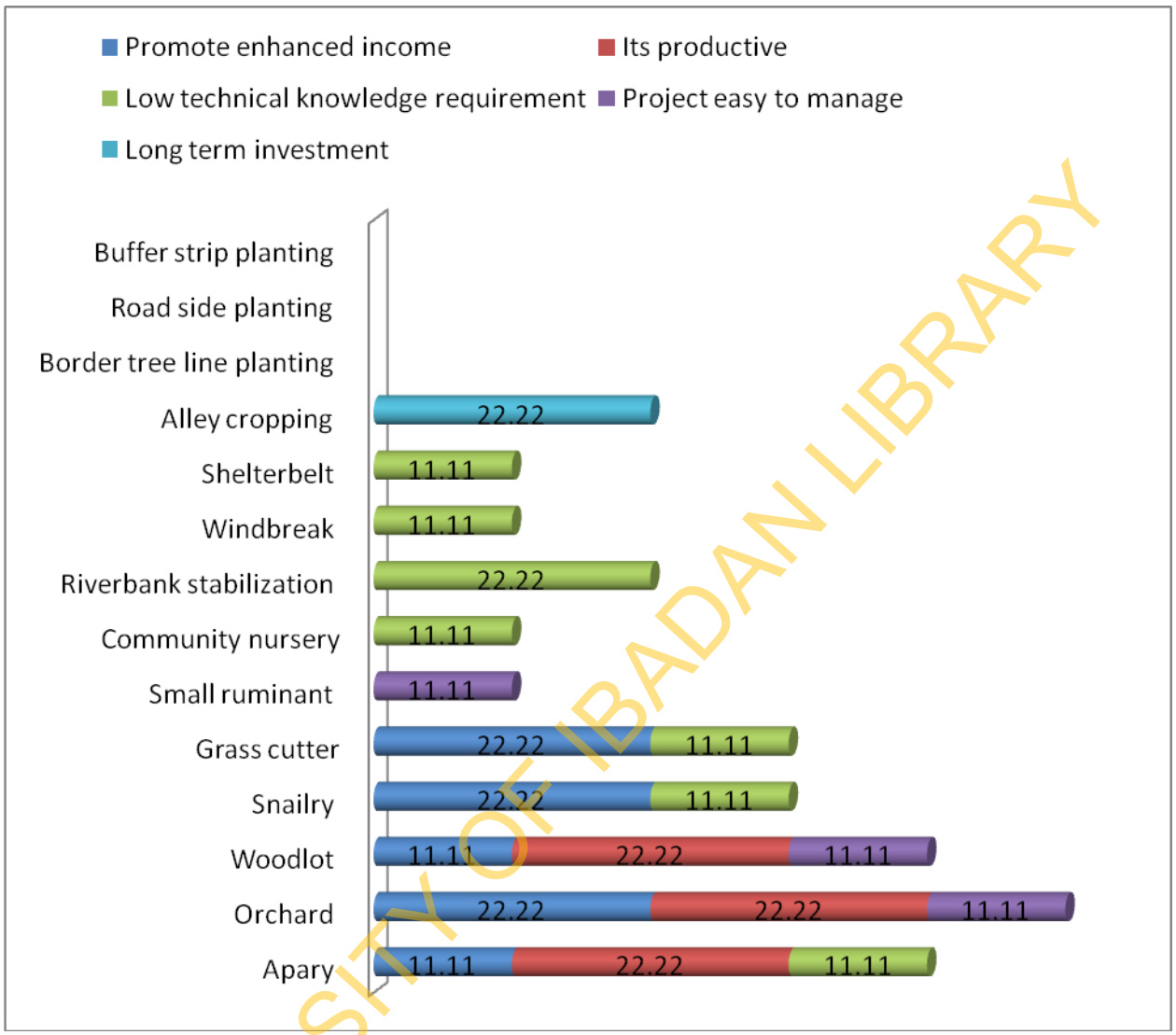


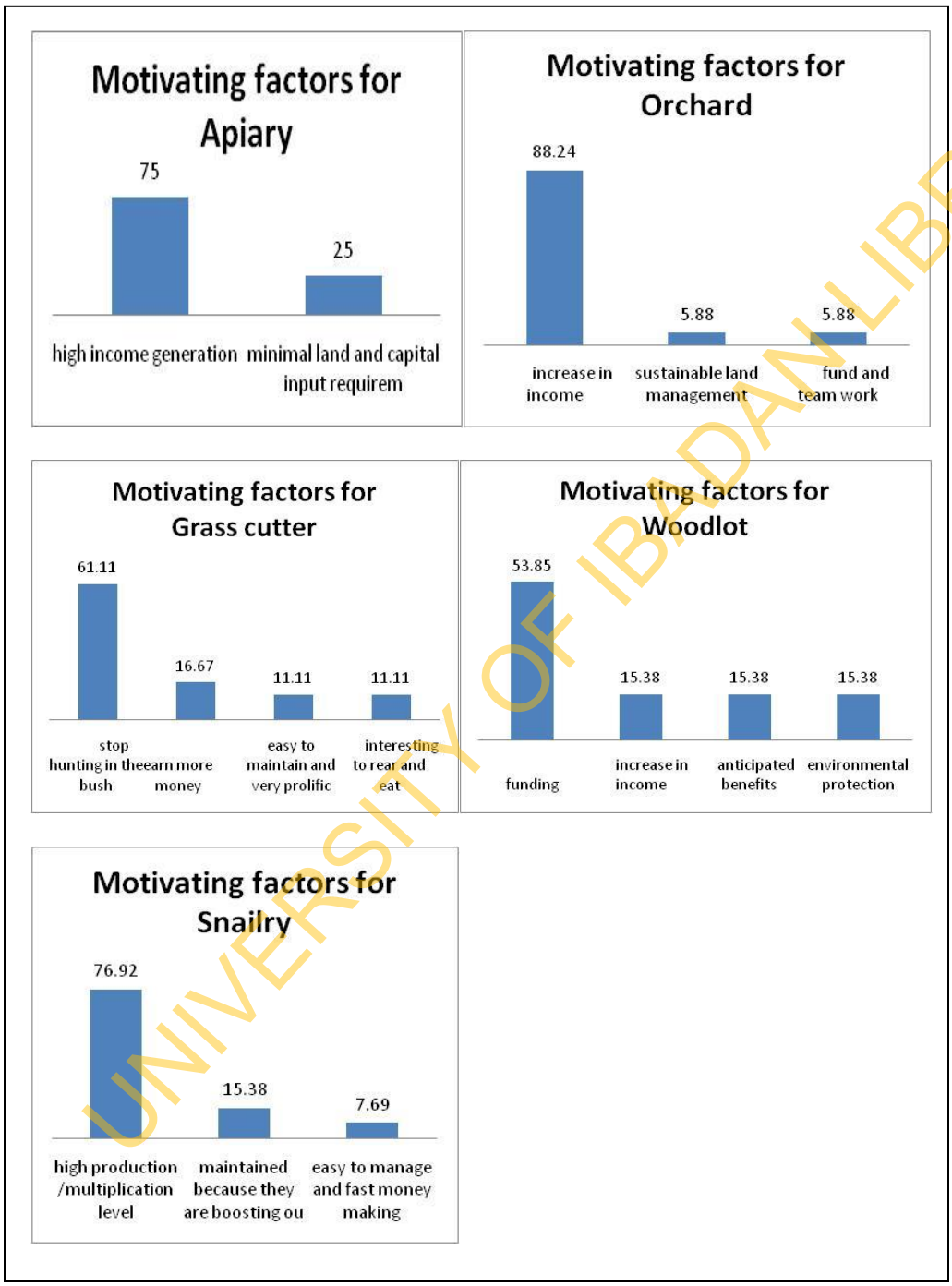
Fig 4.21: Reasons for willingness to continue with sub project after project support



Fadama GEF respondents were asked to provide reasons for willingness to continue with sub projects after the support of GEF/CEMP. Key reasons for highly rating projects in terms of sustainability (especially for sub projects such as Grass cutter, snailry, Woodlot, Orchard and Apiary) include enhanced income potential of sub project, High productive capability of subproject, low technical requirement of sub project and sub project being easy to manage. The lesson from this finding is that sub projects must be managed in such a way that beneficiaries finds it very easy to manage sub projects, finds such project highly productive and such project

must also have income enhancing potentials. Another key lesson is that sub projects must not be too technical to manage.

Fig4.22: Motivating factors promoting maintenance of sub project.



Another component of Monitoring and Evaluation is the term of reference of this study which seeks to identify the factors promoting maintenance of subproject supported by GEF grant. The main sub projects which respondents gave reasons for as motivating factors to maintain are Apiary, Grass cutter, Snailry, Orchards and Woodlots. The main reason why Apiary farmers will like to maintain subproject is because it has a high income yield potential. Other reasons are that it requires minimal land and capital requirement. In the case of grass cutter, the main factor driving its maintenance among its producers is because it promotes reduction in bush burning. Other factors driving grass cutter maintenance are because it is easy to manage and also because it is interesting to rear and it is delicious. As for snailry, the main factor driving its maintenance among its producers is because it is a highly prolific animal. Other factors promoting investment in to snailry are because waste residues from it are used as organic manure and also because it is highly remunerative. Anticipated enhanced income is the main reason for maintaining Orchards among respondents. Other reason why investment is made on it is because it promote sustainable land management and also because funds for starting it is readily available from GEF project. Finally, the main reason for starting and maintaining woodlots among producers is because of readily available funds from sub projects. Others include anticipated enhanced income and benefits and because of environmental protection issues.

Table 4.16 :Economic Analysis of Selected subprojects of CEMP

Subproject	**Economic Analysis Indicators(showing feasibility of projects)**	
	Net Present Value(N)	**Benefit Cost Ratio**
Apiary for Honey production	**382,531**	**2.12**
Teak Woodlot for Pole Production	**78,317.74**	**1.08**

Establishment of Grass cutter Farm with Start Up Size of Two Families	**296,870.3**	**1.20**
Rearing of 30 Males and 10 Females of Balami Sheep	**141,371.4**	**1.12**

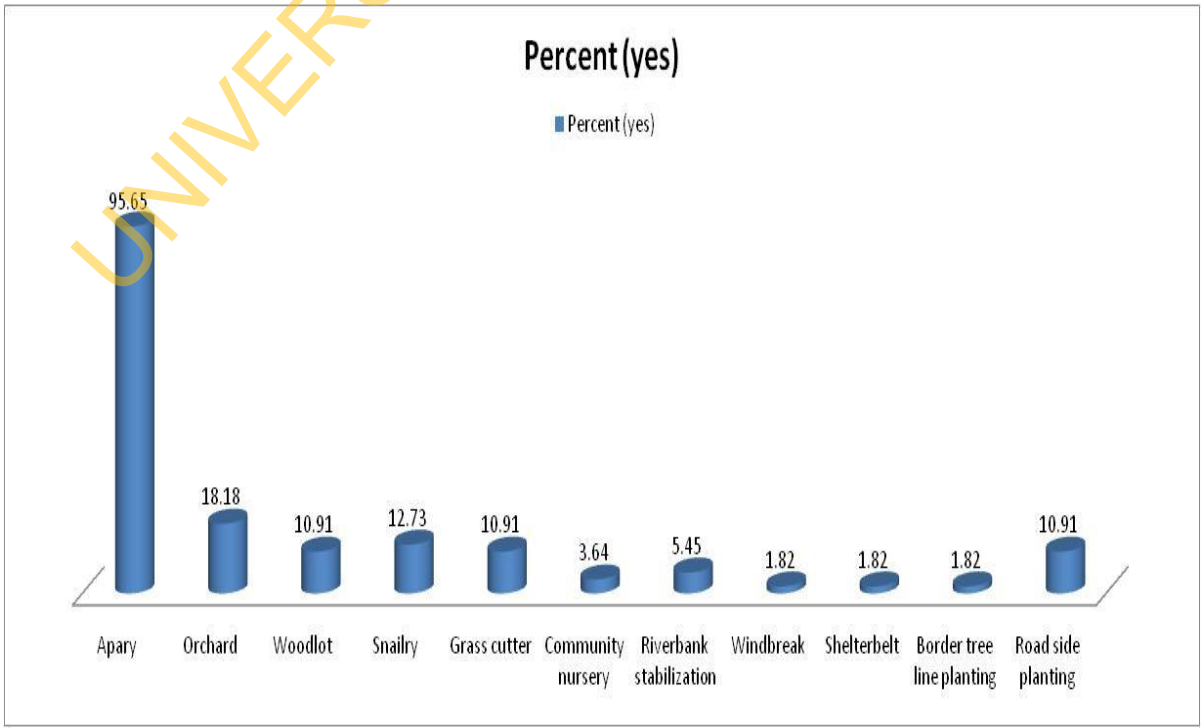
Source: Agroforestry Expert in the Team; 2010

Finally , the last section of this report presents feasibility analysis of some subprojects of CEMP. The feasibility analysis of other subprojects could not be estimated due to lack of data. The feasibility analysis of four subprojects were carried out. These are Apiary for honey production, Teak Woodlot for pole production, Establishment of Grasscutter farm with start up size of Two families and rearing of 30 males and 10 females of Balami sheep. The Economic(feasibility) analysis was carried out over a five year period(See datails of analyses in the appendix section from tables A through H). Two feasibility indicators were used, these were Net Present Value and the Benefit cost ratio, while a 16% discount factor was used as proxy for average opporunity cost of capital in Nigeria(i.e Going by the average bank lending rate in Nigeria). Results revealed that the Net present value of Apiary,Teak woodlot,Grasscutter farm and the sheeep enterprise were estimated to be N382,531**,** N78, 317.74, N296, 870.3 and N141, 371.4 respectively**.** The Benefit cost ratio **of** Apiary,Teak woodlot,Grasscutter farm and the sheeep enterprise were estimated as 2.12**,** 1.08, 1.20 and 1.12**.** The decision criterion used for Net present value is that estimated figures from the enterprise must be positive for such enterprises to be feasible. The decision criterion for the Benefit-cost ratio is that estimate figures must be greater than one. Results from table 4.16 clearly shows that the Net Present Values and Benefit cost ratios of the four subprojects met the

criteria of being feasible with the Apiary subproject being the most promising in terms of being feasible in terms of remuneration over a five year analysis framework.

Integrated Ecosystem Management at Watershed level

Figure 4.23: Distribution of responses to compliance with Environmental Safeguards (Subproject requirements) to subprojects



Assessing the level of compliance of respondents to environmental safeguards for all sub projects was also an important issue that was supposed to be reported on. Most respondents raising Apiary reported that they comply with environmental safeguards of sub projects. However, out of the other subprojects, few respondents reported compliance to safeguards/environmental requirement of subprojects.

The safeguards reported by producers of subprojects are summarized in table 4.16 below.

Table 4.17: Safeguards used for different subprojects

Activity	If yes state the safeguards/Environmental requirements
Apiary	Control bush burning
Orchard	Elimination of bush burning; weeding of the environment; fencing; Use of pesticide, insecticide and herbicide application;
Woodlot	Enhanced Forest reserve, Organic farming, composting and water shed.
Snailry	Provision of shed and chemical treatment; Housing always cool and neat;
Grass cutter	Reduction in burning of bush and destroying of forest as a result grass cutter hunting; Frequent cleaning of the housing environment; Maintaining good security and hygiene of animals;
Small ruminant	Prevent animals from running around the community
Community nursery	Provision for sheds for the seedlings,
Riverbank stabilization	Use of Organic farming manure for plants,
Border tree line planting	Providing good security for the plant to ensure that young plants are not destroyed by animals or young children.

Source: CEMP GEF Field Survey 2010

Sustainable Land Management (SLM)

Sustainable land management is a major component of CEMP/GEF project. It is as a result of this that two important indicators of sustainable land management were considered. These are Soil erosion and bush burning reduction after the implementation of CEMP/ GEF project. Results on whether soil erosion has reduced after the implementation of CEMP/GEF showed that higher proportion of Fadama GEF farmers confirmed that erosion has reduced considerably when compared to the responses of other categories of respondents. However the Chi square test

shows that there exist no significant different in the 'Yes' responses of two groups of farmers interviewed with respect to reduction in soil erosion after implementation of CEMP/GEF. The implication of this result is that the CEMP/GEF project has not made significant impact on the beneficiaries of Fadama GEF as regards achieving significant reduction in Soil erosion when compared to non beneficiaries.

Table 4.18: Distribution of responses as regards reduction in erosion after GEF

Soil erosion reduction after GEF			Total
	Others	Fadama GEF	
Yes	60	38	98
	58.82%	70.37 %	62.82 %
No	42	16	58
	41.18%	29.63 %	37.18 %
Total	102	54	156
	100.00%	100.00 %	100.00 %
Pearson chi2(1) = 2.0155 Pr = 0.156			

Source: CEMP GEF Field Survey 2010

Table 4.19: Distribution of responses as regards reduction in bush burning after GEF

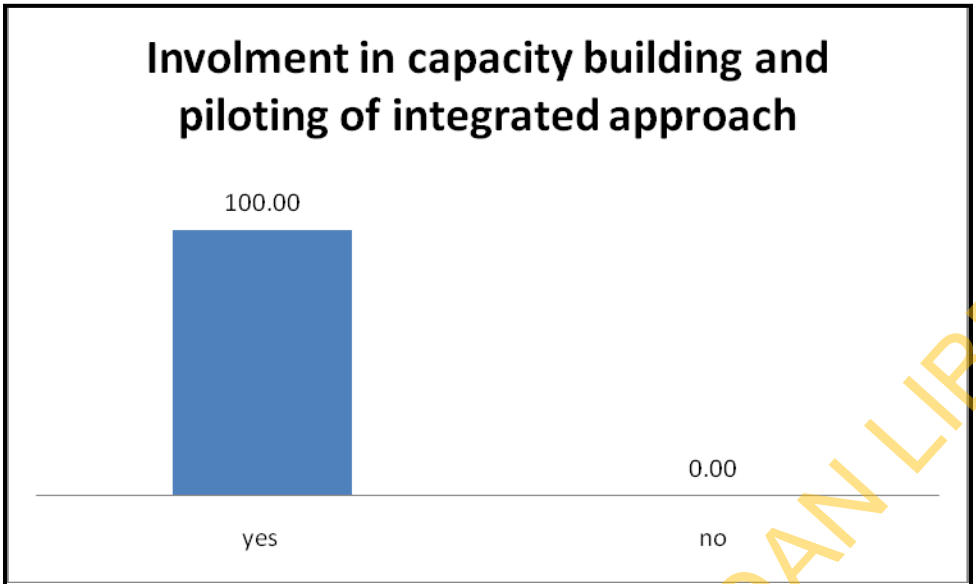
reduction in bush burning	Fadama GEF		Total
	Others	Fadama GEF	
Yes	73	46	119
	73.00	85.19	77.27

No	27	8	35
	27.00	14.81	22.73
Total	100	54	154
	100.00	100.00	100.00
Pearson chi2(1) = 2.9646 Pr = 0.085			

Source: CEMP GEF Field Survey 2010

Results as regards whether there exist reduction in bush burning after Fadama GEF implementation shows that more GEF Fadama respondents conceding to a 'Yes ' answer than the other group of respondents.(i.e. the Fadama and the Non GEF Non Fadama groups). However the Chi square test shows that there exist a significant different in the 'Yes' responses of two groups of farmers interviewed with respect to reduction in bush burning after implementation of Fadama GEF. The implication of this result is that the GEF project has made significant impact on the beneficiaries of Fadama GEF as regards achieving significant reduction in bush burning when compared to non beneficiaries. Another key issue to be addressed by this study is the assessment of functionality and sustainability of State water subcommittee (SWS). The SWS members are basically from state Ministries such as Water resources, fisheries, environment, Fadama planning and NGO and Agriculture (i.e.forestry, livestock related.)Results revealed that all the SWS members interviewed reported that they are involved in capacity building and piloting of integrated approach to Fadama natural resource management within water shed ecosystem management. The mode by which they carry out this function is presented as text under figure4.24.

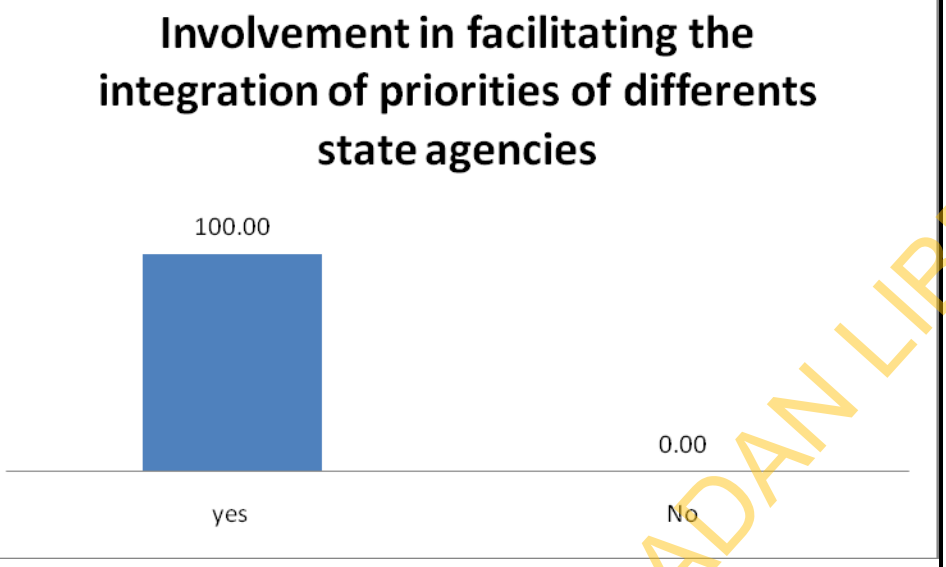
Figure 4.24: SWS members' involvement incapacity building and piloting of integrated approach



How are these functions performed?

1. Training and awareness creation in the communities
2. SWS members participates in sensitization of FCAs/FUGs and also assist in technical know-how on alternative livelihoods
3. During sensitization on sub-project implementation; training on the management is carried out.
4. Provision of technical assistance to GEF participating communities
5. Organizing folk drama on evil effect of bush burning and fish capture through water poisoning. Involving SWS as resource persons during sensitisation; production of hand bills.

Fig 4.25 : SWS members' involvement in facilitating the integration of priorities of different state agencies.



How do you carry out facillitation responsibilities?

1. Involving SWS persons during sensitization; SWS sub-committee on field visits assess and advice on sub-project.
2. Guidance during PRA and during LDP preparation
3. Facilitated through their various representative in the state watershed committee
4. Suggesting sub-project that will address the priorities of different agencies to be included in the positive list so that FCAs can adopt them
5. Making sure the priorities of the agencies are included in the local development plan.

Results also revealed that all the SWS members interviewed reported that they are involved in facilitating the integration of priorities of different state agencies in charge of land ,vegetative cover and water management. The mode by which they carry out this function is presented as text under figure4.25. SWS members were also requested to state the things that should be put in place to make their functions go beyond the funding period of GEF /World Bank. Their response include SWS members should be retained and more technical staff of Fadama project should be injected into the SWS and be trained. Another point put forward was that all members of SWS should be trained in his/her area of specialization locally and internationally. The SWS members were also of the opinion that the forestry department should make provision for other related ministry in the SWS to implement SLM and water resources in order to sustain the implementation of these sub-projects after the CEMP/GEF project. Finally, the SWS members requested for the involvement of the village extension agents (VEAs) in awareness creation activities by mainstreaming their functions into the monthly technology review meetings (MTRM) of the ADPs.

In terms of the type of training that SWS members have been involved in, the following were their response**;**

- Sensitization training;
- watershed management course(Philippines);
- Review and standardizing performance indicators,
- Strengthening the coordination capacity of the SWS;
- Watershed management at community level;
- Sustainable land use and planning at watershed level.
- Training about Integrated Pest Management

5.0 CONCLUSION AND POLICY ISSUES

The findings from this study made it to concludes that Fadama GEF project has impacted positively on beneficiaries of the project. The estimation of the total impact of the GEF project on Fadama GEF beneficiaries compared with Non GEF Non Fadama beneficiaries clearly reveals this fact. The GEF project had a large impact on the change in the level of expenditure of beneficiaries when compare to the non beneficiaries with a net impact of N8667

The project was able to exceed expectations in the area of establishing watershed management coordination capacity in at least 60 percent of participating state and having sustainable watershed management practices mainstreamed into LDP in at least 35percent of participating states.

Fadama GEF beneficiaries experienced higher impact in the area of how capacity building, Integrated Ecosystem Management, Sustainable land Management and Monitoring and Evaluation component of the project affect their livelihood than the Fadama and Non Fadama Non GEF beneficiaries. The effect of capacity building on livelihood felt by Fadama GEF includes enhanced yield and savings and better agricultural practices and afforestation. Provision of better water source leading to enhanced productivity was the impact that Integrated Ecosystem Management components had on livelihood. Anticipated enhanced income from sale of firewood and increase in land use for planting of trees were the key impact that sustainable land management had on livelihood, while group formation was the main contribution of Monitoring and Evaluation to Livelihood. There is therefore a need to integrate the gains from these four components to complement each for in order to achieve better results for the project.

Fadama GEF respondents' level of empowerment in all the seven identified areas seems to be at the same level with Fadama respondents after the implementation of Fadama GEF project. This can be attributed to the well organized M&E components of the project as well as the robust contribution of SWS to the project. Fadama and Non Fadama Non GEF were however better empowered in the seven identified empowerment areas before the implementation of Fadama GEF project. Fadama GEF respondents were better empowered in the area of awareness on

sustainable land management, up scaling sustainable land management practices and sustainable water management practices. The Fadama GEF project therefore needs to improve on empowerment of its beneficiaries in the other empowerment areas such as training on decision making; Funds transfer procedure and procurement procedures.

State and Local Government Areas in the six participating states allowed for proper use of functioning and Institutional arrangement as documented in the project manual. Local Government Areas also extended necessary institutional support expected from them to the projects. However the area of improvement expected of State and Local government Area in terms of institutional support as suggested by project staff include assisting the SFCO and the LFDO with funds outside PAD guidelines especially when necessary, Provision of funds to support vulnerable and poor groups to pay their beneficiaries' contributions and mainstreaming FCAs into LGA decisions making process.

More than 50% of Fadama GEF beneficiaries are ready to continue with all sub projects after the support of GEF/CEMP World Bank support. Community Forest, Grass cutter, snailry, woodlot and Orchards were the subproject high in their response profile in terms of willingness of respondents being ready to continue with the project after the support of the world Bank. Key reasons adduced for highly rating projects in terms of sustainability (especially for sub projects such as Grass cutter, snailry, Woodlot, Orchard and Apiary) include enhanced income potential of sub project, High productive capability of subproject, low technical requirement of sub project and sub project being easy to manage. The lesson learnt from this finding is that sub projects must be managed in such a way that beneficiaries finds it very easy to manage, must be highly productive with income enhancing potentials and not too technical to manage in order to guarantee sustainability.

Higher proportion of Fadama GEF farmers confirmed that erosion has reduced considerably when compared to the responses of other categories of non beneficiaries of GEF. GEF project however did not have significant impact on the beneficiaries of Fadama GEF as regards achieving significant reduction in Soil erosion when compared to non beneficiaries. CEMP/GEF project however had significant impact on the beneficiaries of GEF as regards achieving significant reduction in bush burning when compared to non beneficiaries. There is therefore the need to put in place trainings that will make GEF project have significant impact on Fadama

GEF farmer in the drive to reduce soil erosion.

Things to be put in place to make the SWS functions go beyond the funding period of GEF /World Bank include SWS members being retrained and more technical staff of Fadama project being injected into the SWS and be trained . Suggestion were also put forward that SWS members should be trained in their area of specialization locally and internationally, while the forestry department were expected to make provision for other related ministry in the SWS to implement SLM and water resources management in order to sustain the implementation of these sub-projects after the GEF project. Finally the four selected subprojects, Apiary, Teak woodlot, Grass cutter and Sheep were estimated to be feasible projects in terms of remuneration with Apiary having the highest remuneration over the five year analytical framework.

Appendix

Table A: Estimated Cost and Returns from Establishing and Operating Apiary for Production of Honey

S/N	ITEMS	QUANTITY	UNIT COST (N)	Year 1	Year 2	Year 3	Year 4	Year 5
1	Hive (60x120cm)	10	6500	65000				
2	Hive stand (steel)	10	2800	28000				
3	Bee suit (Large)	2	8000	16000				
4	Veil	2	1800	3600				
5	Smoker	2	3500	7000				
6	hive tool	2	1500	3000				
7	rain boot	2	3000	6000				
8	Brush	2	600	1200				
9	plastic buckets	10	1000	10000				
10	processing machine	1	38000	38000				
11	swarm catcher	2	3000	6000				
12	Cutlass	1	800	800				
13	1 litre plastic container	100 containers for the 1st year; 120 for other years	100	10000	12000	12000	12000	12000
14	gloves (2 pairs each of rubber and woolen gloves)	4	600	2400	2400	2400	2400	2400
15	Knife	2	600	1200				
16	Bait	10	1200	12000				
17	transportation (of hives, stand and swam catchers to the site;	10 hives 10 stands 2 swam catchers	200 200 100	2000 2000 200				
18	fortnight inspection of	24 visits	500	12000	12000	12000	12000	12000

	hives							
19	transportation of harvested honey	140 litres in the 1st year; 200 litres in others	20	2800	4000	4000	4000	4000
20	labour for spot weeding of hive site (3x/annum)	3 manday	2000	6000	6000	6000	6000	6000
21	firetracing of 5m round the apiary	3 manday	2000	6000	6000	6000	6000	6000
22	Sub total		241200	42400	42400	42400	42400	24120
23	Contingency (10%)		24120	4240	4240	4240	4240	24120
24	Grand total		**265320**	**46640**	**46640**	**46640**	**46640**	**26532**
	Returns (N) from honey yield							
25	average honey yield of 7 litres /hive for the 1st year and average of 10 litres/ hive in subsequent years harvestable 2x/annum @N1200/litre for 10 hives	168000	240000	240000	240000	240000	240000	

Table B: Discounted Cash Flow Analysis for Apiary for Honey Production

Year	Cost (₦)	Benefit (₦)	D.F at 16% prime lending rate	PVC (₦)	PVB (₦)	
1	265320	168000	0.86	228724.14	144827.6	
2	46640	240000	0.74	34661.118	178359.1	
3	46640	240000	0.64	29880.274	153757.8	
4	46640	240000	0.55	25758.857	132549.9	

5	46640	240000	0.48	22205.911	114267.1	
Total	**451880**	**1128000**		**341230.3**	**723761.5**	

NPV = 723761.5-341230.3 = 382531

B/C = 2.12

Table C: Discounted Cash Flow Analysis for 3x3m Teak Woodlot for Pole Production

Year	Cost (₦)	Benefit (₦)	D.F at 16% prime lending rate	PVC (₦)	PVB (₦)
1	716111	177780	0.86	615855.5	152890.8
2	157300	177780	0.74	116402	131557.2
3	157300	177780	0.64	100672	113779.2
4	66000		0.55	36300	0
5	66000		0.48	31680	0
6	66000		0.41	27060	0
7	66000		0.35	23100	0
8	66000		0.31	20460	0
9	33000		0.26	8580	0
10	33000		0.23	7590	0
11	33000		0.20	6600	0
12	33000	4000000	0.17	5610	680000
Total	**1492711**	**4533340**		**999909.5**	**1078227**

NPV = ₦1078227 - ₦ **999909.46** = ₦ 78317.74

B/C = 1.08

Table D: Estimated Cost and Returns from the Establishment of Grasscutter Farm with Start Up Size of Two Families

S/N	ITEMS	QTY	UNIT COST (N)	Year 1	Year 2	Year 3	Year 4
1	Site clearing and excavation for foundation	LS	LS	15000			
2	Supply and laying of 150mm blocks as side walls/main partition for grasscutter pen and plastering	40	2000	80000			
3	Supply and erection at the frontages of the hutches a 600mm x750mm steelburglary proof	12	5000	60000			
4	Supply and erection of 600mmx750mm burglary proof as partition between the hutches	12	5000	60000			
5	Casting of reinforced concrete as 100mm slab between the upper and lower layers and as roof on the upper layer of the grasscutter house	3	24000	72000			
6	Erection of 3mx5mx7m high wire gauze fence+door+padlock	LS	LS	50000			
7	Casting of mass concrete on the surrounding floor of 3mx5mx0.1m	2	24000	48000			
8	Padlocks for the hutches	8	400	3200			
9	Breeding stock (2 families comprising 2bucks, 8 does)	2	28000	56000			
10	Feed concentrates	24	3000	72000	108000	162000	243000

11	fodder transportation /month	12	1000	12000	18000	18000	36000
12	Cassava feeds/month	12	1500	18000	27000	40500	60750
13	Drugs (Antibiotics+multivitamins)/month	12	1500	18000	27000	40500	60750
14	Deep well (water)	LS	LS	50000			
15	Water and feed trough	2	350	700			
16	weighing balance	1	3500	3500			
17	rain boot	1	1100	1100			
18	Cutlass	1	750	750			
19	bucket (metal)	1	700	700			
20	Rake	1	750	750			
21	broom, packer, waste bin, bowl	1	400	400			
22	water container	1	3500	3500			
23	Shovel	1	800	800			
24	wheel barrow	1	8000	8000			
25	Sacks	12	250	3000			
26	Glove	6	300	1800			
27	Labour wages/month	12	5000	60000	60000	120000	180000
28	Total			699200	240000	381000	580500
29	10% contingency			69920	24000	38100	58050
30	**GRAND TOTAL**			769120	264000	419100	638550

Table E: Returns from a Grasscutter Farm with a Start up Size of Two Families

S/N	ITEMS	QTY	UNIT COST (₦)	Year 1	Year 2	Year 3	Year 4
1	Revenue from cropping of 5 adults from the first filial	5	4000		20000		
2	Revenue from cropping of at least six families from the second filial	6	25000		150000		
3	Revenue from cropping of 10 adults from the second filial	10	4000		40000		
4	Revenue from cropping of at least six families from the third filial	6	25000		150000		
5	Revenue from cropping of 10 adults from the third filial	10	4000		40000		
6	**Total Revenue for year II**				**400000**		
7	Revenue from cropping of at least six families from 4th filial	6	25000			150000	
8	Revenue from cropping of 10 adults from the 4th filial	10	4000			40000	
9	Revenue from cropping of 17 families and 15 adults from 5th filial	17	25000			425000	
10	Revenue from cropping of 15 adults from the 5th filial	15	4000			60000	
11	Revenue from cropping of at least 6 families from 6th filial	6	25000			150000	
12	Revenue from cropping of 10 adults from the 6th filial	10	4000			40000	
13	Revenue from cropping of at least 6 families from the 7th filial	6	25000			150000	

14	Revenue from cropping of 10 adults from the 7th filial	10	4000			40000	
15	Revenue from cropping of the parent stock (10 adults)	10	6000			60000	
16	Revenue from cropping of 2 families from the 1st filial	2	25000			50000	
17	**Total Revenue for year III**					**1165000**	
18	Revenue from cropping of at least 6 families from 8th filial	6	25000				150000
19	Revenue from cropping of 10 adults from the 8th filial	10	4000				40000
20	Revenue from cropping of at least 6 families from the 9th filial	6	25000				150000
21	Revenue from cropping of 10 adults from the 9th filial	10	4000				40000
22	Revenue from cropping of at least eight families from the two fawnings (10th filial) of the 3rd filial	6	25000				150000
23	Revenue from cropping of 10 adults from the 10th filial	10	4000				40000
24	Revenue from cropping of at least 6 families from the 11th filial	6	25000				150000
25	Revenue from cropping of 10 adults from the 11th filial	10	4000				40000
26	Revenue from cropping of at least 6 families from the 12th filial	6	25000				150000
27	Revenue from cropping of 10 adults from the 12th filial	10	4000				40000

28	Revenue from cropping of at least 6 families from the 13th filial	6	25000				150000
29	Revenue from cropping of 10 adults from the 113th filial	10	4000				40000
30	Revenue from cropping of at least 6 families from the 14th filial	6	25000				150000
31	Revenue from cropping of 10 adults from the 14th filial	10	4000				40000
32	**Total Revenue for year IV**						**1330000**

PRODUCTION SCHEDULE FOR THE GRASSCUTTER

YEAR 1:

Parent Stock: 2 Families (10 grasscutter)

The parent stock will give birth once in the first year. Production of the parent stock is once in the first year because the animals need time to acclamatize to the new environment.

On the assumption that one Doe(female animal will give birth to an average of four kids at a time, the eight does in the two families of parent stock are expected to give birth to 32 kids. Assuming a mortality rate of 20%, there will be 25 kids left out of the 32. The25 animals are regarded as 1st Filial

YEAR 2:

The parent stock (2 Families) will give birth twice in the second year to 50 kids. These 50 animals will be regarded as 2nd Filial.

On the assumption that there will at least be 4 bucks in the 25 kids (Fisrt Filial) produced by the parent stock, there will be at least four families (20 animals) in the first Filial. Being relatively young, it is assumed that each of the four families will give birth at once to produce a total of 50 kids since 2 families will produce on the average 25 kids less the mortality. These 50 animals are regarded as 3rd

Fillial. So at the end of second year, it is expected that there should be 135 animals comprising 10 parent stock, 25 first filial, 50 each for third and fourth Filial.

YEAR 3:

The parent stock will give birth twice to 50 kids less mortality. These 50 kids are regarded as 4th Filial

The four families of the first fillial will give birth twice to a total of 100 kids. These 100 animals are regarded as 5th Filial

Two families retained from 2nd Filial will give birth twice to 50 kids. These 50 animals are regarded as 6th Fillial

Two families retained from 3rd Fillial will give birth twice to 50kids. These 50 animals are regarded as 7th Fillial

So at the end of third year, it is expected that there should be 305 animals comprising 10 Parent Stock, 25 from 1st fillial, 10 retained from 2nd fillial, 10 retained from 3rd fillial, 50 from 4th fillial, 100 from 5th fillial, 50 from 6th fillial and 50 from 7th filial

YEAR 4:

Two families retained from 1st fillial will give birth twice to 50 kids. These 50 animals are regarded as 8th fillial

Two families retained from 2nd fillial will give birth twice to 50 kids. These 50 animals are regarded as 9th fillial

Two families retained from 3rd fillial will give birth twice to 50 kids. These 50 animals are regarded as 10th fillial

Two families retained from 4th fillial will give birth twice to 50 kids. These 50 animals are regarded as 11th fillial

Two families retained from 5th fillial will give birth twice to 50 kids. These 50 animals are regarded as 12th fillial

Two families retained from 6th fillial will give birth twice to 50 kids. These 50 animals are regarded as 13th fillial

Two families retained from 7th fillial will give birth twice to 50 kids. These 50 animals are regarded as 14th fillial

Table F: Discounted Cash Flow Analysis for Grasscutter Farming with a Start Up Size of Two Families

Year	Cost (₦)	Benefit (₦)	D.F at 16% Prime Lending Rate	PVC (₦)	PVB (₦)
1	769120	-	0.86	661443.2	
2	264000	**400000**	0.74	195360	296000
3	419100	**1165000**	0.64	268224	745600
4	638550	**1330000**	0.55	351202.5	731500
Total	**2090770**	**2895000**		**1476230**	**1773100**

NPV = ₦1773100 - ₦ 1476230 = **₦296870.3**

B/C = **1.20**

Table G: Estimated Cost and Returns from Rearing of 30 Males and 10 Females of Balami Sheep

S/N	ITEMS	QTY	UNIT COST (₦)	Year 1	Year 2	Year 3	Year 4	Year 5
1	Procurement of 30 balami males for fattening	30	10000	300000				
2	Procurement of 10 balami females for breeding	10	10000	100000				
3	Shed and feed barn Aldx roofing sheet)	60m²	LS	150000				
4	Wooden Feeding troughs (60x180cm)	10	3500	35000				
5	Drinking troughs (plastic)	10	600	6000				
6	Salt lick	10	2000	20000	6000	6000	6000	6000
7	Well for water	1	LS	50000				
8	vet care		LS	5000	5000	5000	5000	5000
9	Transportation of sheep from point of purchase to where they are kept for rearing)	40	200	8000				
10	Feeding of 30 males who can take maximum of 1 kg of feed/day for 6 months	5400	30	162000				
11	Feeding of 10 females who can take maximum of 1 kg of feed/day for 6 months	1800	30	54000	54000	54000	54000	54000
12	Feeding of the 2 retained males who can take maximum of 1 kg of feed/day for 6 months	360	30	0	10800	10800	10800	10800
13	Feeding of 12 kids @1/2 the feeding rate of the adults	1080	30	32400	32400	32400	32400	32400
14	Total			922400	108200	108200	108200	108200
15	Contigency			92240	10820	10820	10820	10820
16	Grand Total			1014640	119020	119020	119020	119020
17	RETURNS							

18	Sales of 28 fattened male balami sheep	28	30000	840000				
19	Sales of at least 12 animals	12	20000		240000	240000	240000	240000

Table H: Discounted Cash Flow Analysis for Sheep Rearing

Year	Cost (₦)	Benefit (₦)	D.F at 16% prime lending rate	PVC (₦)	PVB (₦)
1	1014640	840000	0.86	872590.4	722400
2	119020	240000	0.74	88074.8	177600
3	119020	240000	0.64	76172.8	153600
4	119020	240000	0.55	65461	132000
5	119020	240000	0.48	57129.6	115200
Total	1490720	1800000		1159429	1300800

NPV = 1159429 – 1300800 = 141371.4

B/C = 1.12

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