

**IMPACT ASSESSMENT OF KOMADUGU-YOBE BASIN WETLANDS
DEVELOPMENT INITIATIVE PROJECT ON FARMERS LIVELIHOOD IN
JIGAWA STATE, NIGERIA**

BY

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DECEMBER, 2015

DECLARATION

I hereby declare that this dissertation titled “**Impact Assessment of Komadugu-Yobe Basin Wetlands Development Projects on Farmers Livelihood in Jigawa State, Nigeria**” has been written by me and it is a record of my research work. No part of this work has been presented in previous application for another degree or diploma in this or any institution. All borrowed information has been duly acknowledged in the text and a list of references provided.

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CERTIFICATION

This dissertation titled “**Impact Assessment of Komadugu-Yobe Basin Wetlands Development Project on Farmers’ Livelihood in Jigawa State, Nigeria**” by Bashir **UMAR** meets the regulations governing the award of the degree of Master of Science of the Ahmadu Bello University and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research thesis is dedicated to my Mother late Zainab Abdullahi, Father late Umaru Mu'azu, my beloved wife – Saudatu and children – Khalifa, Khadija, Mohammed, Amira, Saddiq, Ummulkhairi, and entire family and friends.

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ABSTRACT

This study assessed the impact of the Komadugu-Yobe Wetlands Development Initiative project on income, agricultural production, and standard of living of the people. Primary data were obtained by the use of structured questionnaire that was administered to 456 respondents comprising the project participants and non-participants. Descriptive statistics, logistic regression, and Chow test were used to analyze the data collected.

The findings on the socio-economic variables revealed that the mean age of the participants was 36 years and participants were younger in terms of age distribution, the participants were relatively more educated than the non-participants, the participants were also organized in to a viable associations under the project, and the average years of farming experience of participants was 15 years while the non-participants had about 14 years. It was also found that majority (85.5) of the participants have not benefitted from credit facilities. The logistic regression analysis shows that the socio-economic characteristics such as age (0.022**), level of education (0.000*), farm size (0.018*), Household size (0.224*), membership of cooperatives (0.022*), and access to credit (0.023**) were the most important variables that predicted farmer's participation in the project. The results of the Chow test show that the F- calculated values on income, crop output and living standard were greater than the F- tabulated values. It has been concluded that the Komadugu-Yobe Basin Wetlands Development Initiative project had positive impact on the participants of the project.

It is recommended that the project should register more participants as the activities of the project had impacted positively on the lives of the participants, so as to provide more employment opportunities for the youth in the area. Access to loan happened to be a factor that militates against the enhancement of crop production in the study area. It is recommended that farmers in the study area be linked with financial institutions or Government agencies by the project to access loan to boost crop production in the area. Extension activities which play a significant role in extending information to farmers should be revived by the Government as the ratio of an extension agent to farmers is very low, when extension problems are solved, crop production in the area would be enhanced.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

During the past two decades, there has been a growing realization of the ecological, economic, social, climatological and even strategic importance of wetlands (Maltby, 1996). Consequently, the imperative to conserve and utilize wetlands sustainably has also been on the increase, especially, in developing countries whose economics depend heavily on the wise use of resources such as those provided by wetlands (Hollis, G.E Adams, W.M. and M.Aminu Kano (1993); Organization for Economic Cooperation and Development,1995). In Nigeria, in spite of the dramatic increase in the appreciation of their values, wetlands remain one of the most threatened and critical ecosystem (Moses, 1990).

Wetlands are areas where water covers the soil, or is present either or near the soil surface of the soil all year or for varying period of time during the year, including during the growing season. They are also economic drivers because of their key role in fishing, hunting, agriculture and recreation; it includes swamps, marshes and bogs. Wetlands vary widely because of differences in soils, topography, climate hydrology, water chemistry, vegetation and other factors.

Komadugu-Yobe Basin Wetlands Development initiative project is a donor funded project introduced in 2007, for empowering the inhabitant of the wetlands to harness their well being. The activities of the project range from mechanical and manual clearance of typha grass, skill acquisition on pomade, dye, beads for women, Farmer-Pastoralists Conflict resolution, dyking the river banks with the aim of improving the life of the inhabitants (KYB-WDI, 2007).The wetland forms a strategic ecosystem in

the sudan-sahelian zone; this is because of the annual inundation of the flood plains of the rivers and those of their several non –contributing channels (Roggeri, 2001).

In Nigeria, in spite of the dramatic increase in the appreciation of their values, wetlands remain one of the most threatened and critical ecosystem (Moses, 1990). The Hadejia-Ngruru wetlands are an extensive area of flood plain located in the north-eastern Sudan-Sahelian zone of Nigeria. The wetlands thus support the livelihood systems of about 1.5 million people in this otherwise sparsely populated region. This support is performed through the exploitable natural resources that the ecosystem provides and through various functions of the wetlands (Oguntala, 1996). The wetlands constitute a natural barrier to the southward advancement of the process of desertification, which is major threat in the region and flooding of the wetland contribute to recharging of the ground water that supplies the wells and boreholes in and around the wetlands without which the supported communities would have to disperse (Dugau, 1995). The ground water also supports the unique ecosystem of the area. The wetlands facilitate nutrient recovery in Fadama farms which support a higher than average level of agricultural productivity in the region as well as ameliorate micro-climatic conditions in and around the region. Flood waters of the wetlands, provide natural irrigation for rice, as well as ground moisture for recession agriculture, both of which are significant elements of the economy of the region.

Fodder is provided for over 250,000 herds of cattle during critical periods. These cattle support a trade which has an annual turnover of N416 million in the livestock market dotted in and around the wetlands and support an annual catch of over 6,000 metric tons of fish with a market value of N45.4 million and which are exported to national

markets like Onitsha and Lagos (Thomas D.H.I. Jimo and Mathis (1993). The wetlands provide plant resources that are harvested as fuel, timber, fibre and medicines (Thomas *et al.*, 1993).

Over 3 million naira is generated annually from doum palm fronds which find their way to national markets as well as support a large variety and number of birds and other animals that are illegally and in an unregulated manner for sale and subsistence, and facilitate the production of large quantities of honey, which are collected from both improved and natural beehives. The aesthetics atmosphere of the wetlands encourages eco-tourism which has placed the area on the map of the tourism world (Hollis *et al.*, 1993).

1.2 Statement of the problem

In Nigeria, several efforts have been made by Government and Non-Governmental Organizations (NGOs) to promote agriculture by improving the situation of the basin. In 1973, the federal Government of Nigeria introduced a programme called River Basin Development Authorities (RBDAs) to overcome the problem of river basins and wetlands, but the programme was not able to solve the problem (Ahmed, 1987). Moreover, in the year 2003, another project called joint enhancement of wetland livelihood came and was sponsored by Department for International Development with the aim of solving the problems of the river basin but there were so many hitches as regard to the project during the inception phase due to lack of proper communication about its existence and its activities in the area and the project ended in the year 2007 leaving behind so many problems in the area ranging from blockage of the river basin, intrusion of potash into farm lands and grazing land (International Workshop on Aliasing Confinement and Ownership,1995).

The Fadama Projects are projects engaged in the development of Fadama farming. The essence of this projects put in place were introduced to help better the lots of Nigerian rural dwellers, specifically those involved in Fadama farming, for example the first National Fadama development project (Fadama I) which was introduced in the early 1990s to promote simple and low-cost improved irrigation technology. The second National Fadama Development Project (Fadama II) was also designed with the Objective of addressing the weaknesses of the Fadama I Project there by substantially increasing the incomes of Fadama users, such as farmers, pastoralists, fishers, hunters, gatherers and service providers through empowering communities to take charge of their own development agenda and by reducing conflict between Fadama users.

The Third National Fadama Development Project (Fadama III) is a follow-up on the second phase. The development objective of Fadama III project was to increase the income of users of rural land and water resources on a sustainable basis; it relies on the facilitation for demand-driven investment and empowerment of local community groups and to improve productivity and land quality (Chikwendu *et al.*, 2007).

The Wings over wetlands project (WOW) which was a large collaborative initiative aimed at conserving migratory water birds and their habitat in the African-Eurasian region. WoW (Wings over wetlands) has been operational in Nigeria since the middle of 2007, and was working with local partners to foster local solutions to the environmental challenges they face with regard to the wetlands and their livelihoods (Jonathan, 2007). The concept of River Basin Development Authority in Nigeria could be traced to 1963 when the country became involved with lake Chad Basin Commission set for countries along that lake. The need was to harness efficiently the land and water resources within

a drainage area (Ahmed, 1987). Natural environment degradation as well as poor management of the natural resources, especially Dam construction on some of the rivers running through the basin, has resulted in economic hardship for the inhabitants and other users of the basin. Lack of proper management of water resources in the basin has led to a lot of environmental problems, such as the proliferation of typha grass into farm lands, fishing ponds, grazing areas and even settlement and silting up of river channels. Flooding and desiccation of some river channels have been a direct result of these problems. These environmental problems have led to serious economic hardship and diseases especially among the inhabitants of the Hadejia – Nguru wetlands (HNWs), which has a population of over 1.5 million.

Komadugu – Yobe Basin Wetland Development Initiative is a donor funded project by Department of International Development (DFID) and Hadejia Jama'are Komadugu-Yobe Trust Fund (HJKYBTF) introduced in 2007, for empowering the inhabitants of the wetlands to harness their well being. KYB –WDI initiates developmental activities ranging from mechanical and manual clearing of typha grass, skill acquisition on pomade, tie, dye, beads for women, farmer-pastoralist conflict resolution, Dyking the river banks in the Hadejia-Nguru wetlands that would improve the livelihoods of the inhabitants and being funded by the Hadejia Jama'are Komadugu-Yobe Basin Trust Fund, Lake Chad Basin commission and the Department for International Development (DFID) to address the problems of wetlands.

Considering the situation of the river basin, the study attempt to provide answers to the following questions:

- i. What are the socio-economic characteristics of the participants of the project?
- ii. What are the impacts of Komadugu-Yobe Basin Wetlands Development Initiative project on farmers in the study area?
- iii. What are the socio-economic and institutional factors influencing farmer's participation in the Komadugu-Yobe Basin wet lands development initiative project?
- iv. What are the constraints to farmer's participation in the implementation of the project in the Study area?

1.3 Objectives of the Study

The broad objective of the study is to assess the impact of Komadugu-Yobe Basin Wetlands Development Initiative (KYB-WDI) on farmers' livelihood. The specific objectives are to:

- i. describe the socio-economic characteristics of the participants in the project;
- ii. assess the impact of Komadugu-Yobe Basin wetlands development initiative on farmers in the study area;
- iii. examine the socio-economic factors influencing farmers participation in the Komadugu-Yobe Basin wetlands development initiative project, and

- iv. identify the constraints to farmer's participation in the project in the Study area.

1.4 Justification of the Study

The Hadejia Jama'are-Komadugu-Yobe Basin (HJKYB) was endowed with abundant natural resources. These natural resources include agricultural land, fisheries resources, grazing areas for livestock and surface water. Farmers, fishermen, and livestock rearers from many part of Nigeria, and even from outside Nigeria, used to visit the area from time – to – time in order to get their own share of this natural resource endowment.

The impacts of the other projects reviewed above have been documented but there is currently a gap of knowledge on the impact of the KYB-WDI project in Jigawa State, as there has been no research conducted on the impact of the project on crop output, income and livelihoods status of the inhabitants of area. The importance of wetlands cannot be overemphasized as it supports the lives of its inhabitant by providing the natural resources for the well being of the people living within or nearby wetlands area. This research will be of great importance as it will serve as a guide for further research concerning the area.

The research would also contribute in stimulating the Government, Non Governmental Organizations (NGOs) and other agencies to give special considerations to the area in terms of boosting their agricultural production by providing agricultural facilities that will help the farmers in the area as well as designing more programmes that will boost agricultural activities and uplift the standard of living of the farmers in the area, it will

be of great advantage to student that are interested in making further research about the area by providing insight about the area.

Moreover, the research would help identify major problems of the area as well as suggesting solutions to the problems for the benefit of the inhabitants of the wetlands by modifying the critical situation of the areas and it will help the government in designing policies that will help convert the problems of wetlands and stimulates the authorities of the Hadejia Jama'are Komadugu Yobe Basin Trust Fund to provide more financial support to the Komadugu Yobe Basin wetland development initiative (KYB-WDI) project for more activities that will improve the lives of the inhabitants of the wetlands area.

1.5 Hypothesis of the Study

The hypothesis tested in this study was:

- i. Komadugu-Yobe Basin Wetlands Development initiative Project intervention has no significant impact on the agricultural output, income and livelihood of the participants.

CHAPTER TWO

2.0 LITERATURE REVIEW

In this section, relevant literatures have been reviewed on the basis of the specific objectives as follows:

2.1 Socio-economic Characteristics

Research findings carried out have identified socio-economic characteristics of project participants, revealed that income level, family size, social participation, extension and extent of awareness were significantly related to production. Beyen (1987) found that educational attainment to a certain extent accounted for the socio-economic status and earning capacity of the participants in the Cheerakuzy wetland development project. Akpa (2007) and obasi (1991) found that the level of education attained by a farmer not only increase his /her farm productivity but also enhances ability to utilize effectively and efficiently whatever resources exist in the area.

The continued availability of the above functions and resources depends on the continued functioning of the wetlands as a stable ecosystem. While this had been guaranteed in the past by low population pressure and traditional management strategies: a number of growing constraints are currently undermining the ecological stability of the wetlands and therefore the sustainability of the functions and resources that they provide (Becker, 1994).

Population pressure estimated to be growing at a rate of 3.3% per annum as a result of immigration from the degraded neighboring Sahel and increased reproduction (Chiroma and Polet, 1996) the impact of population on the wetlands is expressed through over harvesting of natural resources such as fuel wood, fish, palm fronds and timber for

domestic use and commerce as well as overgrazing of range lands by herds that have been growing in correspondence with human population (Hollis *et al.*, 1993).

Bashir (2002) found that with respect to farm size the coefficient and T-values, indicated a negative and insignificant relationship with the output in Hadejia-Jama'are river valley project farmers. The study also indicated that farmers participating in wetland development project had some type of formal education and not all of them were illiterate. Most of the farmers fall between the ages of 35 and 45 years. Adekunle *et al.* (2005) in Hadejia-Nguru wetland development project reported that most farmers were male and involved in mixed farming. He indicated that farmers belong to some category of organizations and more participants get hygienic source of water than non-participants.

Another research findings carried out by some scholars have identified socio-economic characteristics of farmers in Malaysia. Jhanke (1982) identified that the model income range for the project participants was between \$ 300- \$ 500 a month and the average monthly income of about 420 certainly mean that the participants were well above poverty line income. Awoyomi (1999) identified that farmers in Nigeria are predominantly small holders with average farm size of between 1 and 2 hectares.

Sharma *et al.* (2003) reported in a study of Indian farm households that all were males headed with an average family size did not vary significantly across the regions where the study was conducted. Likewise, the average age of household heads was above 40 years old; however average age of commercial farmers was lower compared to other farm size categories, which indicates that younger farmers have strong preference for production activity. International Fund for Agricultural Development (IFAD) (1999)

reported that the poorest segment of the Population is characterized by below-average household size, limited labour and no access to fertilizer or credit. They have low crop yields, no marketable surplus and depend on low-income, off –farm activities for the economic survival.

The relatively less-poor segment of the target group has enough family labour to produce sufficient marketable surplus but remains vulnerable. Oyedele (1991) revealed an increase in hectare of land cultivated that resulted to increase yield in an evaluation of Imo ADP. According to Ridd (1968), lack of credit may be a disincentive to farmers' adoption of agricultural technology. Adekunle *et al.* (2005) in a project in Katsina reported that most farmers were male and involved in mixed farming.

In a study on the impact of wetland Development Programmes in Nigeria Joseph (2005) found that not too many young people engaged in wetlands Development Programmes. He also found that most of the participants in the wetlands Development Programmes in Nigeria were middle aged men and women who were between the ages of 51 and 60 years. Joseph (2005) further shows that the overall average age of the rural dwellers was 60, and that the rural population contained a disproportionate number of people who have passed their prime age or who were retired Civil Servants whose productivity on the farm was likely to be low.

Agwu A.E. Ekweme J.N. Anyawu A.C (2009) reported that (55.0%) have family size of between 6-10 members; the average family size according to his findings was put at between 5 and 10 members. The large family size of participants as indicated by the findings above implies more labour supply and utilization on the farm which can

subsequently translate in to high productivity on the farm, thus increasing participant's income and further better their livelihood.

Adeoti (2003) and Olayemi (1997) in a research on technical efficiencies of farms under Fadama Irrigation examined the effect of selected socio-economic characteristics of farmers on the technical efficiency of individual farms. A multi stage sampling technique was employed to get the required sample; the data collected was analyzed using the stochastic production frontier model. The result shows that farm size, family labour and irrigation water are variables that affect output levels; others are hired labour and fertilizer. The mean technical efficiency of the farms is 0.84; the sources of inefficiency are age, literacy status, pump ownership and the residency status of farmers.

A study in Akure by (Emos S; Chukuma G., Lius, I; (2006) on development of predictive trip rate model for three residential density zones in Akure. The systematic sampling technique was used in selecting respondents from each of these zones, and altogether, 2000 commuters were selected for the study. The responses that were collected from the respondents were subjected to statistical analysis and the variables that significantly influenced trip-making in each of the residential zones were identified using step wise regression techniques. The study also noted among other things, that the medium density zone had the highest mean trip rate followed by the high density zone, and lastly by the low residential density zone. This observation was subjected to a statistical analysis and it was found that the observed differential in trip rate values was not statistically significant. The research concludes that residential density types in Akure do not significantly influence trip generation rate.

Oyekale (2002) and Onasanya (1998) in the study of the effect of small holder land use intensity on food crop production in Odogbolu Local Government Area of Ogun State, the data were collected using structured questionnaire, descriptive analysis shows that aged farmers have the lowest land use intensity. The female farmers also continuously cultivate their farm land more than their male counter parts. The ordinary least squares (OLS) regression technique was used to show the relation between total revenue, and land-use intensity, among others the result show that land area, seed cost and fertilizer/tractor cost significantly affect the returns.

Oyedele (1991) revealed that educational qualification, marital status, income, contribution significantly to the farmer use of agricultural information. On the other hand, social participation reliance on indigenous knowledge, tenancy status, gender, size of land cultivated, years of farming experience, part or full time farming, and age did not correlate with agricultural information use.

Umunna (2007) in his research on personal and socio-economic determinant of agricultural information used by farmers in the agricultural development programs (ADP) of Imo State Nigeria, revealed that Nigerian small scale farmer is poor, non literate, and lack access to most basic social amenities as well as improved varieties of inputs and modern farming implements. The consequence of these has been low production and productivity (Olawunmi, 2007).

Aina (1995) revealed that with regard to the extent to the which each of the twelve independent variables contributed to the prediction, the value of the T-ratio associated with respective variable, the result indicate that each of the following variable;

Educational qualification, marital status, income and preferred media contributed significantly to the farmers use of agricultural information. The result further reveals that income was the most potent contributor to the prediction followed by educational qualification, marital status and preferred media in that order.

Ozowa (1995) is of the view that a general lack of awareness among traditional farmers in Nigeria can be attributed to the high level of literacy, which in turn concubines to the low level of adoption of agricultural production technology. Igben (1988) revealed that marital status significantly associated with agricultural information use. One of the most important factors affecting the level of production and productivity on peasant farms is the composition and size of farming family. He further reveals that marital status of the farmers ranged between 94 to 99.5%, with Imo State (where the study was conducted) having the highest percentage of married farmers. Married farmers are likely to be under pressure to produce more, not only for family consumption but also for sale. Availability of family labour could be an incentive to the married farmer to cultivate more crops and to use agricultural information.

2.2 The concept of the Impact

The term “impact” refers to the broad, long term socio-economic and environmental effect of a project on the beneficiaries and the general ecosystem (IAEDG, 1999). Impact of a program can be seen in relation to what the services actually do to the people who receive them, it is the actual programme out come in relation to the desired goal. Impact studies are of paramount importance in wetlands projects, it shows the benefit derived by the participants as a result of their involvement in the project as well as show their preferences to the project. It is therefore important to evaluate impact in

terms of all the goals and objectives that were set when the project was established (IAEG, 1999). In order to establish whether the Project has impacted on the income of the beneficiaries, therefore assessment of all the goals and objectives should be carried out.

Akpa (2007) found that on the basis of paired t-test, participants have mean output of 7538.6333kg, while non participants have 5427.966kg which is statistically significant at 5 percent Probability level with a calculated t- value of 2.157. He further stated that the incidence of poverty also called the head count ratio shows that the value for the participants was 0.5367, while that of the non participants was 0.3215. The poverty gap (poverty depth), also known as the income shortfall allows for the assessment of the depth of poverty among the participants and non participants. The poverty gap for the participants was 0.0337, while that of the non participants was 0.1113. the result on poverty gap implies that the poor participants require 03.37% of the poverty line to get out of the poverty while the poor non participants require 11,13% of their poverty line to get out of poverty.

With respect to farm output he found that the mean difference was statistically significant at 5.0% risk level (since $t(\text{cal}) > t(\text{tab})_{0.025} = 2.00$), but income coefficient was statistically significant at 1.0% risk level. These results on farm output and income compared favorably with earlier studies (Kiodun, 1999). In terms of farm size, the mean difference was not statistically significant at a given level.

Research finding on the impact of agricultural services and farmer- organizations revealed that the income of beneficiaries in wetland crop production (₦8,311,600) was

greater than non beneficiary's income (₦4,985,450), the findings also showed that income generated by beneficiaries in wetland farming (₦11,056,250) was greater than non-beneficiary's income (₦7,440,000), the total farm income of beneficiaries (₦19,367,850) was greater than non-beneficiary's total farm income (₦12,425,450). The difference of ₦6, 942,200 could be explained by the increase in beneficiary's farm output due to the use of improved technologies (Kiodun, 1999).

The concern over deteriorating food supply in Nigeria led to the launching of series of programmes on poverty eradication and food security since 1960s till date (Joseph, 2005). Some of these programmes have been able to reduce the amount of foreign exchange spent on importation of rice and other staple food items, as well as increased local production.

Daudu and Ajayi (2009) conducted another research on the impact assessment of the performance of national special food security programme in Benue State, Nigeria. The result of the study indicated that there was high performance in the following components: farm intensification, water management, diversification, fisheries and group management based on performance indices while input distribution, credit and cost recovery and agro- processing recorded low performance. The study also indicated that respondents expressed satisfaction in the implementation of farm intensification, inputs distribution, diversification, group management, and agro-processing.

Bello (2002) in his research on Haiti hope project reveals that the project has launched a variety of successful activities and programs in building relationship, the project has established relationship with 14 farmer group and provided support to groups with thousand of active members. Today more than 7000 farmers have enrolled in the project

and empowered 40 percent of enrolled farmers are women. The project offered financial services support by promoting access to financial service for mango farmers. And in May 2011, the Haiti hope project partnered with sogesol, a local financial institution, to launch farmer credit. The loan amount began at US \$ 50 per farmer. Segesol is expanding the program to include 400 farmers.

Sheba (1997) studied the impacts of the women in agriculture program in Imo State and reveals that data analysis was achieved using rankings, descriptive statistics and ordinary least square regression models. The result of the finding show that packages as cassava processing into pancake, and cassava flour, processing and utilization of soybeans into flour paste, and soy-meal, cocoyam flour, and processing of fresh tomatoes into paste which recorded high awareness value had low adoption rates. Transferred women in agriculture (WIA) technologies as cassava processing and utilization into; odorless fufu, gari, and tapioca(93.16%); processing of maize into corn meal, and pap (79.77%), processing and storage of fresh tomatoes into paste (86.46%), and dry season vegetable gardening (66.38%) recoded.

It ensured family food security and enhanced children education and women financial and socio-economic status. Primary occupation, annual income, household size and membership of women's group showed a positive and very significant relationship with the adoption of the W/A technologies by the women.

Onyimba (2003) studied rural women in fishing communities and reveals that the information on socio-economic and demographic situation of women in the sample fishing communities and their developmental needs were collected and analyzed, rural

women were imparted training in skill development in fish preservation and processing as well as in credit, public health, child care, comparative management and participation in community development more importantly, participatory group approaches involving women in fishing communities characterized these achievements.

Based on the 'before after' analysis, per capita income of the beneficiaries under the project was observed to have increased by 139 percent with a corresponding surplus in their household budget. Credit which is a major component of CRDAP action research project proved to be of great help to the project beneficiaries. Profit earned from their undertakings was utilized for working capital and additional operational support. The action research project implemented in Indonesia was a 'success', particularly in augmenting household income and raising the level of participation in operational and group activities on the part of the women in fishing communities (Singh, 1992).

Olam (2009) in his study on the impact of Fadama II project on tomato farmers in Niger State reveals that the project exerted a positive significant impact on the income of participating farmers. Omokore (2009) studied the National Fadama Development and reveals the NFDP was an idea conceived by the World Bank, African Development Bank (ADB) and the Federal Government of Nigeria with active participation of the state and local Government. It was a quick and sustainable agricultural and rural development project with a nationwide spectrum targeted at dry season farming and related agro processing and marketing activities all aimed at raising rural productivity and income.

A bi-partite agreement to embark on the Nigerian special program for food security (NSPFS) was signed between food and agriculture organization of the United Nations (UN) and the Federal Government of Nigeria (FGN) on 11th May 2000 with conviction that SPFS offers a practical vehicle for applying innovative low-cost approaches to improving the productivity and sustainability of agricultural systems with the ultimate objective of contributing to better livelihoods for poor people, the FGN embarked on SPFS (National Special Programme for Food Security; 2000; Omokore, 2009 and Jibowo, 1996).

Abubakar (2009) in his study on the impact of National Fadama Development program phase II on the income of beneficiaries in Gwagwalada reveals a positive impact of Fadama II on the respondents in various ways. For instance, about 21% perceived that it has eased their transportation problem while about 30% perceived that, it has created market to dispose goods. Also about 25% perceived that the provision of these infrastructures has reduced the cost of water procurement, while about 24% said it has provided resting points. This agreed with Kancer (1981) who posited that impact of a project is what the project actually does to the beneficiaries.

The impact of project relate to changes in the production and actual living condition among project beneficiaries following from and attributable to the project (Compton, 1984). The impact of a project refers to the positive and negative changes attributable to the activities of the project.

In Nigeria, one of the earliest rural development and resettlement scheme was the Shendam rural development and resettlement scheme started in the late 1940's and

designed to move the peasants from down slope to a more fertile part with relatively low population density at the Shimankar and Wase river. It had the aim of resettling 8,500 farming communities. By the end of the 1950s, about 1740 families had been settled on the land (Oyadale, 1991). Similarly, a case study of resettled farmers in Zimbabwe indicated links between the production of maize in excess of subsistence needs, the accumulation of assets such as livestock and tools, payment of school fees, and acquisitions of inputs etc which subsequently improved the living standard of the farmers above the level of poverty which prevailed before their movement in to the new area (Oyadale, 1991).

2.3 Factors influencing programme Participation

Participation means that people are closely involved in the economic; social, cultural and political process that affects their lives (United Nations Human Development Report, 1993). Several studies indicated that there is a long history of participation in agricultural development and a wide range of development agencies that have attempted to involve people in some aspect of planning and implementation.

According to pan African Institute for Development (1997), participation is a total commitment of both the initiation and the beneficiaries of a programme through the involvement of the participating agencies and the recipients using multi-sectoral approach in which people take part in the decision making, planning, implementation, execution up to operation of the project.

Farmer participation is critical to improve on-farm water management and crop productivity under the command development programmes. Command Area

Development Authority (1997) revealed that farmer participation through water-user associations was measured and it was linked to various socio-psychological and situational characteristics of the participants. Multiple linear regression analysis reveals that adequate, timely and equitable availability of water is cardinal to ensure effective farmer participation in the community wetland project. Bora (1989) revealed that social and situational characteristics are the factors that influence the extent of their participation in the water-user association (WUA) activities in the Cheerakuzhy wetland project. The socio-psychological determinants and the situational factors (FPI) were calculated and the relationship between the independent variable and the farmer participation index was worked out using multiple regressions (Singh, 1992).

A comparison of the data shows that the socio-psychological and situational variables explained about 44.5% of the variations in farmer participation. In particular, two socio-psychological characteristic social participation and attitude towards participation and two situational variables exerted a significant influence on farmer participation. Chackacherry (1993) also reported a similar pattern for Neyyattinkara wetland Development project. Socio-psychological variable, namely social participation and attitude of the individual significantly influenced the extent of participation. This in turn, calls for evolving appropriate extension strategies to create attitudinal changes and awareness on scientific water management among the water-user association participants (Singh, 1992).

In agricultural programme designs, considerations are given to certain aspects which determine the viability and sustainability of such programme. These aspects according to Ani (2007) are social aspects, financial aspects, technical aspects, and institutional-

managerial aspects. The perceptions of farmers on the benefits of any agricultural development scheme will also greatly influence their decisions to accept new practices brought by such scheme.

Besides, other studies have identified a number of factors influencing farmer's participation in agricultural and rural development programme. Edi, D. Paola., G; Ford, R and Samuel T.(2007) reported that labour intensive farming, types and high dependency of household income on farming activities hinders farmer's participation, where as previous experience, easy access to implements, environmentally friendly farm practices and adequate compensation on extra costs encourage participation. Other factors include: agricultural education/training of the farmers, farmer's income level, participation by neighbors or relatives and age of farmers.

Peter (1991) underlined that for most women in the third world, the male-dominated culture and society in which they live are the most formidable obstacle that they face in efforts to be included in development activities. Furthermore he indicated that other factors like political and social environment could have a strong influence on the potential for meaningful local-level participation.

Nkom (1989) has reported a low level of people's participation in wetland Development Programmes in Nigeria and this he attributed to non-involvement of the participants in programmes planning and implementation. Joseph (2005) in a similar study found that the participant were not actively involved in all the activities of the programmes but instead they were passive and patiently waiting to take whatever gets to them from the policy makers and implementers of the programmes. However Fidelis (1998) has

contrasted above findings, in his study, Fidelis (1998) reported a high level of people's participation in wetland Development Programmes and other related Programmes.

Wallace (1990) in her study on the impact of irrigation projects noted a non-participation rate of about 40% during the 1976/77 dry season farming as many farmers could not afford the increasing cost of inputs there by giving out their land to other farmers or left it fallow, Edi *et al.* (2007) reported that labour intensive projects and with high dependence on household income constrained farmer's participation. He however, reported that provided easy access to farming inputs are environmentally friendly and provide adequate leisure time encouraged participation. Dimitiri (2002) also found that farmer's decisions to participate in Agricultural Development Projects in Greece were dependent on their agricultural education/training, economic level and the age of the farmers.

In a study of farm structure and producer attitudes and project outcome, an extensive telephone survey of producers farming in the critical areas of the 21 rural clean water program (RCWP) project was conducted to evaluate differences between farmers who choose to participate in the RCWP and who did not (Gale, B.A. and Francis, E.S. 1993). Farm structure, farm operator characteristics and water quality awareness and attitude were assessed.

Participation in the RCWP project was highly correlated with strong economic indicators such as comparatively larger total acreage farmed, higher gross farm sales and greater property and farm equipment values. Producers who were employed off-farm, or who received only part of their income from agriculture were less likely to participate in non point source (NPS) pollution control projects than were farmers who

worked solely on the farm and earned most of their income from agriculture (Olam, 2007).

Water quality awareness and attitudes were also important in determining participation rates in the RCWP project. Producers who were more aware of water pollution (in general, in the specific area, or on individual farms) participated in greater numbers than farmers who were less well informed. Producers who received most of their water quality and conservation information from government agencies and farm magazines were more likely to change agricultural practices that affected water quality than producers who did not receive information from these sources (Ridd, 1968).

Many of the results of farm operator survey were similar to conclusion of previous studies evaluating factors that influence conservation. Farmers who run large-scale operations, are better educated and more willing to take risk, and have access to government information generally participate at a higher rate in conservation programme than producers without these characteristics. Although farm structure and producer characteristic were important factors in determining which farmers chose to participate in the RCWP projects, external incentives also affected participation. Financial incentives are extremely important, and may be the most factors, in obtaining voluntary implementation of Best Management Practices (BMPs). Financial incentives for voluntary environmental compliance include cost-share funds, Tax relief, payment transfers, and government subsidies (Ozuwa, 1995).

The primary financial incentive in the RCWP project was federal cost-share funding. Each producer could receive up to 75% of the cost of each recommended BMP

implemented. The cost-share rate for the Alabama RCWP project was originally set at 60% few farmers chose to participate until the cost-share rate was raised to 75%. Participation then increased to 100% of the producers in the critical area (Ozuwa, 1995).

A significant barrier to implementation of BMPs is poor economic status of producers. The farm operator survey (Gale *et al.*, 1993). Found a lower rate of participation among farmers who had relatively lower economic indicators. During the early 1980s, many farmers in Oregon were unable to participate in the Tillamook Bay RCWP project because high interest rate limited cash flow, making it difficult for farmers to pay their portion of the cost of installing BMPs. Another hindrance is the high cost of some BMPs such as animal waste management systems.

For many dairy farmers, the maximum cost-share payment was insufficient to make the construction of animal waste storage unit economically feasible. State or local cost-share assistance was offered in some projects as a supplement to federal cost-share funds (Jahnke, 1992). To entice absentee landlords to participate in the RCWP, Tennessee and Kentucky officials added 25% to the federal 75% cost-share rate for seeding alfalfa. Producer also received an additional one – time payment for converting crop land to pasture. Florida dairy farmers participating in the Lake Okeechobee RCWP project received substantial subsidies from the state of Florida to assist them in installing expensive animal waste management BMP systems (Oyadale, 1991).

Edi *et al.* (2007) found that previous experiences, easy access to production inputs, environmentally friendly farm practices and adequate compensation of extra-costs incurred encouraged level of participation.

2.4 Constraints of Project implementation

Various researches on constraints to effective implementation of agricultural development projects have identified a number of factors. Morardet *et al.* (2005) identified inappropriate technology as hindrance in the transfer of many technologies to farmers practicing irrigation. Other constraints include lack of understanding of the socio-economic and socio-cultural elements of the communities or participants by project implementers; lack of appropriate institutional frame work and linkages between the government's agencies and research institutes charged with the responsibilities for management and implementation of agricultural policies and programmes (Arokoyo, 1995).

Farmers often face several problems when implementing technological innovation recommended by a programme. Ekong (2003) reported barriers to implementation of diffused innovations as relative advantage, cost, complexity, visibility, divisibility and compatibility.

Moreover, Beyen (1997) reported that among the problems that hinder participation is political turmoil that culminates in a change of government compounds problems by causing a temporary closure of projects and research centers, which hinders project implementation by reducing the period of the project. Lack of keeping records (Data) thus when the research centers are closed due to political instability, they stop collecting data. These generally undermine data analysis.

Change in economic policies as reported by Kumsa (1991) brought about the demise of farmer co-operatives in Addis Ababa, co-operative project activities were totally disrupted. Arrangements had to be made a fresh with individual farmers half way through the project. Fuel shortage for a long period in the wake of the ebbing strength of government further curtailed implementation period in Addis Ababa (Central Statistical Authority, 1990).

Ozuwa (1995), found that among the constraints in the implementation of agricultural programmes, food security, and poverty eradication programmes revealed that lack of appropriate institutional framework is a constraint to the achievement of its goal of improving the socio-economic well being of the people (Agbamu, 2005). In Nigeria like other places, project implementation has been characterized by many impediments; the most important mentioned was “top down” approach in which the rural farmers were not involved in the concept, planning, and monitoring, which often leads to massive failure in the project implementation. In another study Omokore, (2008) also reported policy inconsistency, lack of political support, shift in approaches by successive governments; lack of effective institutional arrangements for implementation and lack of qualified manpower to provide effective leadership were identified as the major impediments.

Igben (1998) found that some of the constraints experienced in the CIRDAP action research project on RUWFIC include lack of credit facilities, uncertain source of fish stocks, low prices of their catch and limited marketing arrangement and outlets. Paucity of hygienic water, lack of health facilities, unsatisfactory transportation and poor infrastructure were also mentioned as additional problems.

In a study in Malawi (Olan, 2005) reported that the constraints faced by small holder farmers include lack of information and knowledge on markets, technologies and rural financial services, how to set up an information and knowledge system that can reach small holder farmers, how to determine the right mix of policies and investment to drive sectoral regional and regional growth and address the needs of farmers, how to mobilize the required resources and to efficiently allocate those resources among sectors and among different geographic region to benefit. In information needs of small scale farmers in Africa, Ozowa (1995) revealed that some of the problems could be attributed to the treatment of information delivery as a matter of course by most African governments. As often happens, agricultural information is not integrated with other development program to address the numerous related problems that face farmers. Information is an essential ingredient in agricultural development programs but Nigerian farmers seldom feel the impact of agricultural innovations either because they have no access to such vital information or because it is poorly disseminated (Ozowa, 1995).

The non provision of agricultural information is a key factor that has greatly limited agricultural development in developing countries, non accessibility to agricultural innovations is often limited by unfavorable economic, socio-cultural and institutional conditions, the general lack of awareness among small scale farmers can be attributed to their high level of illiteracy, this contribute to the low level of adoption of agricultural production technology (Ozowa, 1995).

Various studies have shown that participating farmers encountered several problems associated with the implementation of programme recommendations (Abdullahi, 2005;

Ekong, 2003). These problems could potentially limit the output of production thus affecting the programme goal. The problems range from technology attributes such as cost, complexity, visibility and divisibility to socio-economic, cultural and political factors among others (Ekong, 2003).

2.5 Theoretical framework

This study was guided by the theory of social change and impact Assessment perspective.

2.5.1 Social change theory

Social change can be viewed as a state of dynamism which precludes stagnation and if well managed and directed, always implies progress, development and functioning of a social system. (Adekoya and Tologbonse, (2005). So also Ekong (2003) has further summed up his definition of social change as the modifications in human attitudes and behaviors pattern as a result of education such as extension activities), and alteration in social conditions as a result of changes in the policies of a social organization, including consequences and manifestation of such changes. Social change theorists believe that for change to take place, society have to move from traditional ways of doing things to modern level (Ake, 1988).

The social change theory will help to provide a frame work for the understanding of the social changes that have taken place in the study area as a result of the introduction of the Komadugu-Yobe Basin Wetlands Development (KYB-WDI) project. It will provide a guide in analyzing the way rural poor farming communities use science-based interventions of KYB-WDI project to reduce extreme poverty and hunger by half, while

improving the situation of the river basin through mechanical and manual clearance of typha grass, Dyking of the river banks, skill acquisition on pomade and dye making as well as minimizing farmer-pastoralist conflict.

2.5.2 Impact assessment perspectives

Impact of social intervention can be defined as an output of an organization which is related to the achievement of the programme objectives.

Sanginga *et al.* (1999) stated that an impact analysis deal with the investigation of the changes that occurred or likely to occur on the people's life as a result of a project programme. According to them, impact assessment tries to find out how far the introduction of technology have been successful in meeting the socio-economic objectives and how well agricultural technologies have satisfied the need and priorities of household and other units in the target population. Impact assessment is a special form of evaluation that deals with the effects of intervention programme output on the target beneficiaries. It is also the influence of social programme on its client and or its social context, the impact of a programme therefore can be said to be what the service actually does to the people who receive them.

In conducting impact assessment, researchers often use 'with' and without' approach to impact method, while others use the 'Before' and 'after' method. The 'with' and without' approach to impact study, involves the study of population, villages or communities that benefitted or did not benefit from the execution of a project. Through this method, the researcher is able to find out the difference between the beneficiaries and non-Beneficiaries or participants and non participants. Mayong *et al.* (2001) argued that impact assessment of agricultural development project is a continuous process and

therefore being a process, it is better conceptualized to use the ‘before’ and ‘after’ impact assessment approach.

For the purpose of this study, ‘before’ and ‘after’ were used; this was because using the approach was likely to give a much proper assessment of the impact of the project in the study area.

2.6 Conceptual Model

In the model developed for this study, the socio – economic characteristics (such as age, level of education, farm size, farming experience, household size, Sex constitute the independent variables, while extension contact, membership of cooperatives, and access to credit, constitute the institutional variables, and participation in the project activities constitute the dependant variables

Independent variables

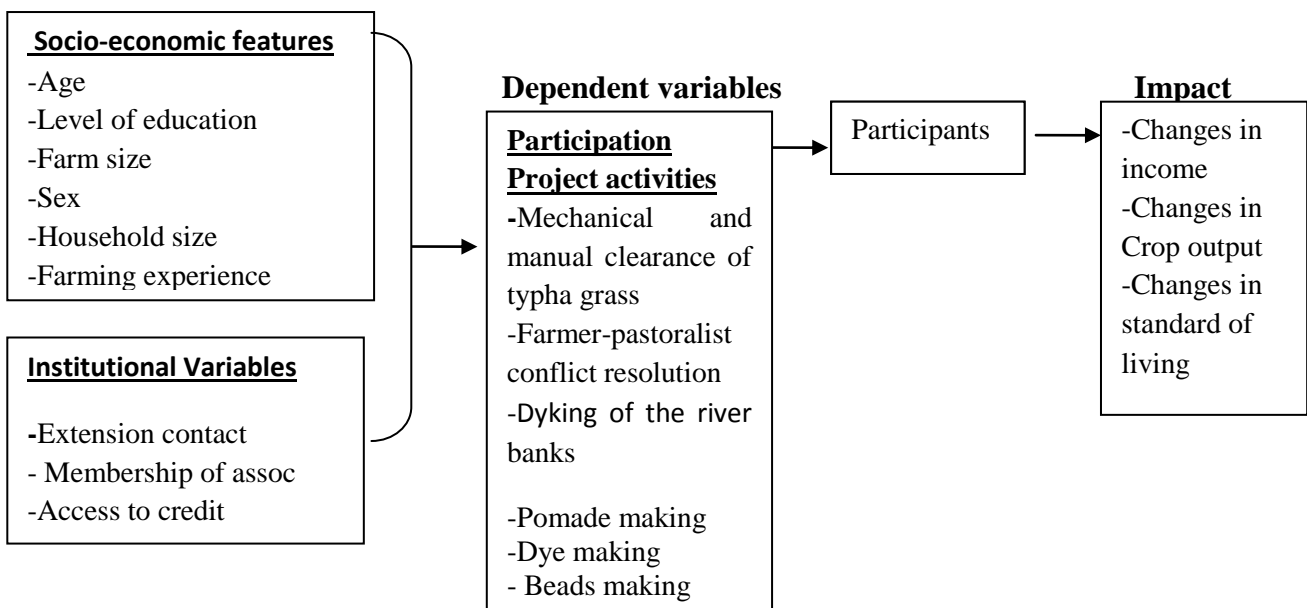


Figure1: A Conceptual model of impact assessment of Komadugu-Yobe Basin Wetland Development Initiative (KYB-WDI) Project on Farmers Livelihood

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Study Area

Jigawa State was created from Kano State on 27th August, 1991. The State lies between latitude 11.00^{oE} to 13.00^o North of the equator and longitude 8.00^{oE} to 10.15' East the Green wich meridian, and covers a land area of 22410 square kilometer as shown in figure 1. The land form is generally undulating, giving way to “Jigawa” which is a Hausa word referring to vast loamy and non marshy soil favorable for cultivation of crops like groundnut, millet, guinea corn, cassava, rice, wheat (Central Information Authority, 2006).

The State is bordered in the west by Kano State, in the south by Bauchi State, and in the east by Yobe State, and in the north by Yobe and Republic of Niger. Most of the State (Jigawa) lies within the Sudan vegetation zone. Jigawa has an arduous climate with relatively wide and rapid changes in temperature and humidity. Humidity at times rises up to 100%, the mean daily maximum and minimum temperatures are 33.10^oc and 15.0^oc, respectively (CIA, 2006).

According to (CIA, 2006), during the months of December and January, the harmattan (Dry north – easterly winds) is at its highest blowing thin dust over the State from the Sahara Dessert. At this period, the temperature can fall to as low as to 10^oc. The year is divided into well marked rainy and dry seasons, the dry season lasts from October to May and rainfall is concentrated between June and September. Average rainfall varies from year to year ranging from 653.00 - 889.00 millimeters.

The Population of Jigawa State in 2006 was 2,829,929, and the projected Population of the State in the year 2015 will be 4,348,649 going by the population growth rate of 3.25 %. The predominant occupation in the state is farming; it is one of the priorities of the government of Jigawa to boost this sector, by increasing the production of both food and cash crops to cope with the rapid population growth. It intervenes to make use of Hadejia Jama'are River Valley that runs through the state, to provide irrigation facilities for optimum food production and establishment of agro-allied industries (CIA, 2006).

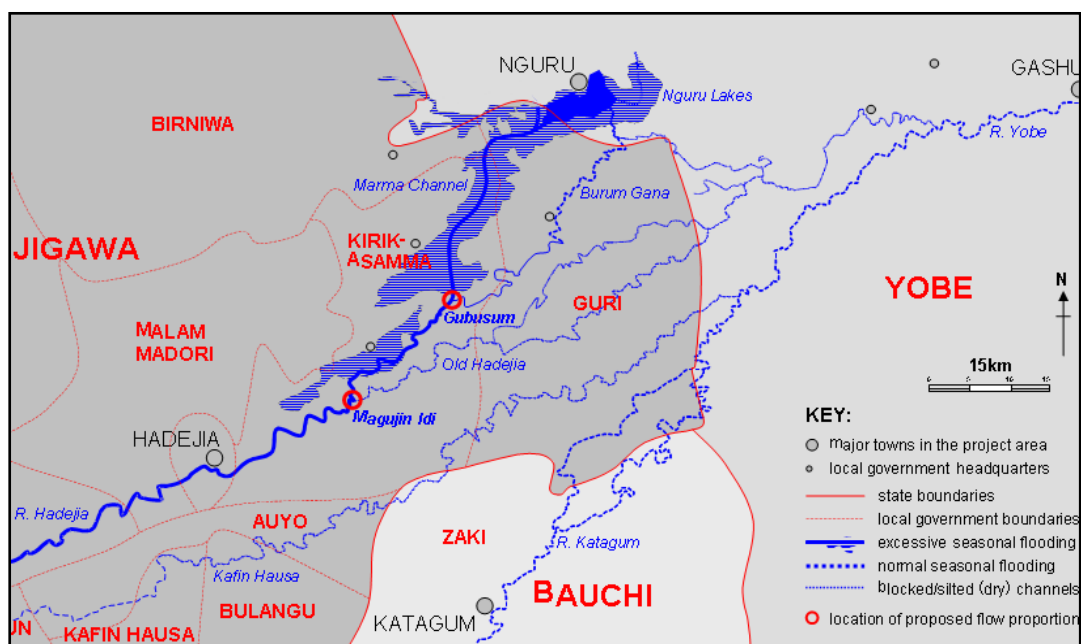


Figure 2: Map of the HN Wetlands showing LGAs covered by the project

3.2 Sampling Technique and Sample Size

The study utilized a multi-stage sampling procedure. In the first stage, three Local Governments Areas (LGAs) out of eight in the Hadejia Zone were selected, these were Kirikasamma, with a population of 191,523 Guri with a population 115,018 and Birniwa with a population 193,334 (wetland areas). The criteria for the selection were based on the fact that the three LGAs were the wetland areas of the Komadugu - Yobe wetlands Development Project (KYB – WDI) in Jigawa State. In the second stage, two villages known with intensive activities were selected from each of the three LGAs.

Hence, a total of six villages were chosen for the study, these were Marma, Likori from Kirikasamma LGA; Guri, Dawa from Guri LGA, Matara uku, and Dagilfanni from Birniwa LGA. A pilot survey of the area identified 459 participants and non-participants, Marma and Likori had a population of 850 and 600, Guri and Dawa 750 and 700, Matara Uku and Dagilfanni 800 and 890 (Federal Office of Statistics, 2014). From these figures, 10% of the population was used as the matched samples of participants and Non-participants as shown in the Table3.1.

Table 1: Showing Sampling procedure and sample Size and of the Respondents

Village	Population	Participants	Non-participants	Sampling Rate%
Marma	850	43	43	10
Likori	600	30	30	10
Guri	750	37.5	37	10
Dawa	700	35	35	10
Matara Uku	800	40	40	10
Dagilfanni	890	44.5	44	10
Total		230	229	

3.3 Data Collection

The study made use of both primary and secondary information sources. The primary data were obtained through the use of structured questionnaire that were administered to the participants of Komadugu – Yobe Basin wetlands Development Project and non participants. During the survey, the (questionnaire) were administered by interviews to the respondents by using enumerators in the local language (Hausa).

3.4 Data Analysis

Descriptive statistics which include the use of averages (means), percentages, standard deviation and frequency counts were used to summarize, classify and tabulate data on farmer’s characteristics and other variables in the study.

Descriptive statistics was used to achieve objective 1, and 4, and Chow test was employed to achieve specifically objective ii. Logistic regression was employed to achieve objective iii.

3.4.1 Chow test

Statistical and econometric test of whether the coefficients in two linear regressions on different data sets are equal? It is also often used to determine whether the independent variables have different impacts on different sub groups of the population.

$$F - \text{Chow} = \frac{(\text{Sc} - \text{S}_1 + \text{S}_2 / \mathbf{k})}{(\text{S}_1 + \text{S}_2) / (\text{N}_1 + \text{N}_2 - 2\mathbf{k})}$$

Where:

Sc = Sum of squared residuals from the combined data

S₁ = Sum of squared residuals from the first group (participants)

S₂ = Sum of squared residuals from the second group (non participants)

N₁ = Number of observations for participants

N₂ = Number of observations for non participants

K = Total number of parameters

3.4.2 Measurement of variables for the chow test for objective II

Impact: In this study, impact was measured by the changes in income and level of living of the participants.

i. Income: This is the amount of money in naira generated by the farmers from the sales of their produce.

ii. Level of living: For this study, livelihood means the standard of living of the participating farmers and that of the non participants. This was measured by the quantity of goods owned by a household such as motor cars, motorcycles,

bicycles, houses, radio, TV, cushion chairs, refrigerator, handset, amount spent on health care per year, amount spent on administration of children per year, total expenditure on food and clothing per year.

3.4.3 The logistic regression models for objective III

To achieve objective III, logistic regression model was employed. Logistic regression model is one of the binary choice regression model in which a dichotomous regression variable is considered as the dependent variable and this dichotomous variable is related to a set of independent variables that are hypothesized to influence the outcome. Hence the model allows one to predict an outcome from a set of paired variables. In this study, the outcome variable i.e. participation is binary (i.e. participants and non- participants) were assigned 1 for participants of the project and 0 for non-participants. To accomplish the goal, the model included all predictor variables that were useful in predicting the response variable. And several different options were available during the model creation. However, menard (1995) recommended that backward stepwise regression appeared to be the preferred method for survey and exploratory analyses and was used to analyze the data generated for objective III. The analyses began with a full or saturated model and variables were eliminated from the model in an interactive process. The fit of the model was tested after the elimination of each variable to ensure that the model still adequately fit the data. One of the main uses of logistic regression in the study provided knowledge of the relationship and strengths of influence among the variables i.e. influence of the socio-economic characteristics and institutional factors on farmer participation.

The logit model, characterizing the influence of the socio-economic and institutional factors is specified as follows:

$$(Y_i = 1/X_j, j=1, \dots, 10) = F(Z_i) = \frac{1}{1 + e^{-Z_i}} = \frac{e^{Z_i}}{e^{Z_i} + 1}; i=1-180) \dots \dots \dots (1)$$

Where:

$$Z_i = \alpha + \beta_1 X_{j1} + \beta_2 X_{j2} + \dots \dots \dots + \beta_9 X_{j9} \dots \dots \dots (2)$$

L F = (.) = cumulative logistic distribution

In order to obtain the value of Z, the likelihood of observing the sample needs to be formed by introducing a dichotomous response variable such that:

$$y_i = \begin{cases} 1 & \text{if } i\text{th is a participant} \\ 0 & \text{if } i\text{th is a non-participant} \end{cases}$$

$x_{ij} = 1-9$ were the socio-economic and institutional factors of the i th farmers defined as:

- X_1 = Age (years)
- X_2 = Educational level (years)
- X_3 = Farm size (ha)
- X_4 = Family sizes
- X_5 = Sex (male=1, female=2)
- X_6 = Years of farming experience (years)
- X_7 = Extension contact (Number of visit)
- X_8 = Membership of cooperatives/associations (years)
- X_9 = Access to credit facilities (Amount)
- X_{1-9} = the coefficient to be explained

3.4.4 Independents variables

Age: This is the number of years an individual has spent from birth to the time of study.

It was measured in years.

Educational level: This refers to the capacity of an individual to acquire western education knowledge and be able to read and write. It was measured by determining the actual number of years spent in school and was scored as follows Adult education 1, Primary education 2, secondary education 3, and Tertiary education 4.

Farm size: This refers to the total land area under cultivation measured by the total number of hectares cultivated by farmer.

Household size: This is the total number of people in one household. It is expected to have an effect on the livelihood of participants.

Sex: This is the biological characteristics for identifying an individual as either a male or female, measured by scoring male 1, female 2.

Farming Experience: This refers to the actual number of years put in farming activities. It is expected that farmers would gain more experience as they spend more years in farming activities.

Extension contact: This is a meeting the respondent has had with extension officials. The role of extension is to create awareness among farmers, enlightenment, and demonstration of innovations and to compare the benefits of the innovations. It was

measured by the number of visits or contacts with extension workers of the Komadugu-Yobe Basin Wetlands Development project and scored as follows, if visited by an extension agent 1 and 0 if otherwise.

Membership of cooperatives/associations: This represents membership of farmers in any association. Membership in social organizations facilitates awareness, economic empowerment and participation in the KYB-WDI activities. It was measured by the number of years the farmer belongs to the associations organized by the KYB-WDI project at the time of the study, 1 was scored if a farmer belongs to any association and 0 if otherwise.

Access to credit facilities: This represents farmer's access to loan received either in cash or in kind. Access to credit has great potentials to influence farmer's interest in innovations. It is therefore, expected that the more farmers have access to credit, the higher the probability of their participation in the project's activities. It was measured by the total amount of money borrowed from financial institutions, availability of credit 1, and non availability 0.

3.4.5 Dependent variable

Participation: is the number of the project activities involved in by a particular farmer.

The project's activities were mechanical and manual clearance of typha grass, Dyking of the river banks, and farmer-pastoralist conflict resolution, Skill acquisition on pomade making, beads making.

CHAPTER FOUR

4.0 RESULT AND DISCUSSION

This chapter presents the results of the study on the basis of its specific objectives as follows:

- (i) Identify the socio-economic characteristics of the participants in the project;

- (ii) Assess the impact of komadugu-Yobe Basin wetlands Development initiative project on farmers in the study area;

- (iii) Identify socio-economic and institutional factors influencing farmers participation in the Komadugu-Yobe Basin Wetlands Development Initiative project in the study area;

- (iv) Identify constraints to farmers participation in the implementation of the project in the study area;

A total of 459 questionnaires were administered to the respondents and all the questionnaires were returned and analyzed for the study.

4.1 Socioeconomic Characteristics of the Respondents

The first objective of the study was to describe the socio-economic characteristics of the respondents. The socio-economic characteristics of the respondents examined by the study were age, level of education, farm size, farming experience, sex, household size, extension contact, membership of cooperatives societies, and access to credit.

4.1.1 Age distribution

The age distribution of the respondents was between a minimum of 20 years and a maximum of 51 years. However, the result in Table 2 shows that 1.7% of the participants fall within the range of 20-30 years, 10% fall within the range of 31-40 years, 77.4% fall within the range of 41-50 years, and 10.9% fall within the range of 51-60. This implies that age played a significant role in crop production and is expected to have positive influence on their participation in project programme in the study area.

4.1.2 Level of education

In terms of level of education, the finding in Table 2 revealed that 21.3% of the participants acquired adult education, 31.7% acquired primary education, and 41.7% acquired secondary education, while 5.2% acquired tertiary education. However, for the non-participants, 52.4% acquired adult education, 27.1% acquired primary education, 20.5% acquired secondary education, and no one among the non-participants acquired tertiary education. The result indicated disparity in the level of education of participants and non-participants, the level of education of both participants and non-participants was low, and this could be attributed to the fact that adult education was much emphasized in the study area, this implied that the respondents lacked the formal education required to comprehend complex new technologies.

The study by Centro Internacionale de majoramento de maize Y Trigo (CIMMYT) i.e international maize and wheat improvement center (1995), had confirmed that education was important for easy understanding of improved methods of agricultural production and make farmers more receptive to advice from extension agency or be able to deal with technical recommendations that require a certain level of numeracy and literacy. C

4.1.3 Farm Size

In the agrarian setting, farm land is an important resource for improving the living conditions of farmers and fight against poverty. Consequently, farm sizes were examined to ascertain the size of farms in the study area. The results in Table 2 show that 73.9% of the participants had less than 2 hectares (Ha), 20.9% possessed 2-4 hectares (Ha) land, and 5.2% of the participants had above 4 hectares (Ha) of land. However, 83.0% of the non-participants possessed less than 2 hectares (Ha), 10.5% of the non-participants had 2-4 hectares (Ha) of land, while 6.6% of the non-participants had above 4 hectares of land. This show that both participants and non-participants owned small holdings, this result agreed with the findings of Federal Office of Statistics (1999), that farm size affects adoption cost, risk perception, human capital, labour requirement, and tenure arrangement.

Table 2: Socio economic distribution of participants and Non- Participants

Variables	Participants	Percentage	Non participants	Percentage
	frequency		frequency	
Age				
20-30	4	1.7	Nil	Nil
31-40	23	10.0	104	45.4
41-50	178	77.4	101	44.1
51-60	25	10.9	24	10.5
Education				
Adult	49	21.3	120	52.4
Primary	73	31.7	62	27.1
Secondary	96	41.7	47	20.5
Tertiary	12	5.2	Nil	Nil
Farm size (ha)				
Less than 2	170	73.9	190	83.0
2-4	48	20.9	24	10.5
Above 4	12	5.2	15	6.6
Household size				
1-3	87	37.8	46	20.1
4-6	136	59.1	142	62.0
7-9	7	3.1	23	10.0
10-12	Nil	Nil	15	6.6
13-15	Nil	Nil	3	1.3
Sex				
Male	230	100	229	100
Female	Nil	Nil	Nil	Nil
Farming experience (years)				
Less than 10	80	66.67	25	20.83
11-25	115	20.6	40	12.50
Greater than 25	35	12.73	164	66.67
Extension contact				
No	97	42.2	197	86.0
Yes	133	57.8	32	14.0
Membership of coporatives				
No	8	3.5	47	20.5
Yes	222	96.5	182	79.5
Access to credit				
No	214	85.5	16	14.17
Yes	16	14.5	213	85.83
Total	230	100	229	100

4.1.4 Household size

The results found in Table 2 show that 37.8% of the participants were having 1-3 persons, 59.1% had 4-6 persons, and 3.0% of the participants also had 7-9 persons. It

implied that the area was dominated by small households. The implication of this is that, there would be more people to cater for, this means more pressure on their income hence their participation in KYB-WDI project. This result tallied with the findings of the international Fund for Agricultural Development (IFAD, 2001).

4.1.5 Sex

The findings in Table 2 revealed that all the participants of the project were male; this indicates that farming in the study area was dominated by males which signify that culture played a significant role in the area as women were not allowed farming by themselves and were not allowed to be interviewed by enumerators as it is believed that when women were allowed to farm, there would be no success or bumper harvest in terms of crop production.

4.1.6 Farming Experience

Table 2 reveal that 66.67% of the participants have been in farming for less than 10 years, 20.83% of the non-participants have been in farming for less than 10 years respectively, 20.6% of the participants had farming experience of between 11-25, while 12.50% of the participants had experience of between 11-25 years. Also, 12.73% of the participants had farming experience of more than 25 years, while 66.67% of the non-participants had farming experience of more than 25 years. The years of experience is expected to translate in to better understanding of the programme which would invariably result in better income, and it is expected that respondents would be able to make sound decisions as regard to resource allocation and management of their farms.

4.1.7 Extension contact

The findings on extension contact in Table 2 revealed that 57% of the participants had extension contact, while 42.2% of the participants had no extension contact. This indicates that more than half of the participants of the project had extension contact. This show that there is need for more visits by the extension workers to the participants of the project in order to enhance crop production in the area.

4.1.8 Membership of cooperatives

Cooperative groups are organized for the promotion of special interest or meet certain needs that cannot be achieved by the individual efforts. They contribute to the dissemination of new ideas, practices, and products as well as in sourcing for loan and farm inputs. The findings in the Table 2 revealed that 3.5% of the participants did not belong to any organization, while 96.5% of the participants belong to cooperative society. This indicates that the more farmers participated in cooperative societies the better the idea, knowledge and benefit derived from among others.

4.1.9 Access to Credit

Table 2 revealed that 85.5% of the participants did not have access to credit facilities while only 14.5 of the participants enjoyed credit facilities. This indicates that the impact of the project on participants would have been more when the participants were able to access loan from lending institution as loan plays an important role in enhancing crop production.

Table 3: Distribution of respondents by socio-economic factors

Variable	Respondents type	Number	Mean	SD
Age (years)	Participants	230	46.44	6.087
	Non Participants	229	52.21	5.462
Education level	Participants	230	38.52	9.220
	Non participants	229	18.16	9.220
Farm size	Participants	230	3.49	1.710
	Non participants	229	2.11	0.990
Farming experience	Participants	230	15.0	6.330
	Non participants	229	14.0	7.940
Household size	Participants	230	5.86	2.284
	Non participants	229	8.02	4.487

Table 4: distribution of respondents by institutional factors

Variable	Respondents type	Number	Mean	SD
Extension contact	Participants	230	2.42	1.533
	Non participants	229	0.41	0.831
Membership of coop.	Participants	230	1.34	0.476
	Non participants	229	1.08	0.276
Access to credit	Participants	230	0.19	0.391
	Non participants	229	0.14	0.351

The result in Table 4 also revealed that participants had more farming experience with a mean value of about 15 years, while non-participants had about 14 years. Therefore with more experience in farming, farmers are less likely to oppose the adoption of new

technologies. A farmers' experience could also generate more confidence, thus, farming experience could have positive effect on farmers decision.

The findings in Table 4 also revealed that the mean extension visit to the participants by an extension agent was 2.42. This implied that participants had contact with extension; this indicated that the necessary agricultural information flowed through the extension agents to the contact participants, while the non-participants derived agricultural information from fellow farmers.

Result of membership of cooperatives societies in table 4 also showed that participants belonged to social organizations registered under the project, this showed that the farmers under the project were properly organized for easy access to credit facilities, an indication that the more farmers participated in cooperative societies, the better the idea, knowledge and benefits derived from among members. The results on access to credit facilities in table 4 indicate that participants of the project have not benefitted from credit facilities.

4.2 Impact of KYB-WDI Project

The second objective of the study was to assess the impact of KYB-WDI project on crop output, income and standard of living of the farmers.

4.2.1 Analysis of impact of KYB-WDI project on crop output, income and standard of living

In order to determine the projects' impact on crop output, income and standard of living of the people, Chow test model was used to compare outcomes of the response variables between participants and non-participants. The entries table 4 shows that the F-calculated on output (2418.23) was greater than the F- critical value (4.12); F-

calculated on income was 5608.46 and was greater than the critical F- value (4.12); and the F- calculated on standard of living (62965.91) was also greater than the critical F- value (4.12), all at 5% level of probability. This indicates that the value of the F- calculated for income, crop output, and standard of living were greater than the F- tabulated, and this implied that the KYB-WDI had a positive impact on crop output, income, and standard of living of the beneficiaries.

The findings supported the development and social impact assessment perspective which stated that whenever project beneficiaries are properly motivated through the provision of functional extension delivery services, the tendency for increased crop productivity, income and standard of living of the people is assured (Sanginga, 1999).

Table 5: Results of the chow test on crop output, income and standard of living

Group	Variable	Residual	N₁+N₂	K	F-cal	F-table
Pool	Standard of Living	2017.52	55	16	62965.91	4.12
Participants	Standard of Living	556.96				
Non-participants	Standard of living	1126.49				
Pooled	Income	178.29	559	16	5608.46	4.12
Participants	Income	4.46				
Non-participants	Income	123.71				
Pooled	Crop output	77.41	559	16	2418.23	4.12
Participants	Crop output	9.14				
Non-participants	Crop output	54.77				

4.2.2 Test of Hypothesis using Chow test

The result of the Chow test indicates that there was significant impact on crop output, income, and standard of living of the participants as the values of the F- calculated were greater than the F- tabulated values, therefore, null hypothesis was rejected.

4.3 Socio-economic factors influencing farmers' participation

The third objective of the study was to determine the socio-economic factors influencing participation in the project. Table 4.6 showed the result of the logistic regression analysis of factors influencing participation. The results of the analysis indicated that the variables, age (0.050), level of education (1.666), membership of Cooperatives (1.916), and access to credit (1.519) were found to be significant at 1% level. Farm size (0.315), Household size (-0.053) were found significant at 5% level. However, farming experience (-0.012), extension contact (0.346), were found not significant. This study is in line with those reported by Okwole (1998), Maskey and Weber (1996), Olufemi *et al.* (2002), Banjo *et al.* (2003) and Edi *et al.* (2007) who noted that age, social participation, access to credit, farm size, and level of education influence participation. This is contrary to the findings of Oni (1991) and Nicholas (2002), on household size, formal education and farming experience.

This is evident from the study that the participants had acquired more than the non participants, implying that farmers with more education become less opposed to adopting new innovations. Similarly, participants were organized in to social groups by the project. Indicating that the more farmers participate in cooperative societies, the better the idea, knowledge and benefits derived from among members. Farming

experience, household size, extension contact on the other hand was inversely related to participation since the values of the coefficients were negative.

Table 6: Logit regression estimate of socio-economic characteristics of the farmers and institutional factors influencing participation

Variables	Coefficient	SE	Z	Level of Sign
Constant	-4.490	3.1941	-1.41	0.160
Age	0.050	0.0220	2.28	0.022**
Level of education	1.666	0.3364	4.95	0.000*
Farm size	0.315	0.1336	2.36	0.018*
Farm experience	-0.012	0.0412	-0.30	0.767
Household size	-0.053	0.0437	-1.22	0.224*
Extension contact	-0.347	0.2293	-1.52	0.130
Membership of Association	-1.325	0.5803	-2.28	0.022*
Years of membership	0.872	0.2307	3.78	0.000**
Access to credit	1.519	0.6680	2.27	0.023**
Sample size	459			
Log likely hood function	-67.656164			
Ch-squared value	-146.6			
Degrees of freedom	-15			
Prob > chi	20.0000			
Pseudo R ²	0.520			

• **P<0.01, ** P<0.05**

Based on these findings on table 4, it implied that age, level of education, farm size, membership of cooperatives, years of membership, access to credit were the most important variables that predicted farmer's participation, they also had strong influence on participation in the KYB-WDI project. Therefore, when farmers are properly organized, greater participation in the project activities may be assured. Similarly, if they are motivated through access to credit facilities, education, membership of association by KYB-WDI, it would likely increase crop output and higher participation in the project.

Overall, the study has justified from diffusion and adoption theory which provides useful insights on the factors studied and how these factors influence the participation of farmers in the project activities and innovations introduced by the KYB-WDI project. On this the proponents of the theory stated that programme interventions are bound to be influenced by certain socio-economic and institutional factors which must be identified.

4.4 Constraints Encountered by Farmers in the KYB-WDI Project Area

The fourth objective of the study was to identify the constraints encountered in the KYB-WDI project area. In spite of the contributions of the project to improve rural livelihoods, income, and crop output, it was found that the project participant's faced some challenges; the major constraints faced by respondents were ranked in the following order by the respondents: low capital outlay; low prices of farm produce; disease and weed infestation; water shortage; and lack of transportation (Table 4.7) these are discussed in details as follows:

Table 7: Constraints of farmers in the KYB-WDI project

Constraints	Frequency	Percentage
Low Capital outlay	49	21.3
Low prices of farm produce	73	31.7
Disease and weed infestation	96	41.7
Water shortage	12	5.2

Low capital outlay

Farmers were constrained by shortage of capital. About 21.3% of the participants complained of lack of capital to invest on large scale farming or to adopt some farm technologies that require huge capital investments. Lim and Douglas (1998) emphasized that; poverty in rural areas is still a significant barrier for small-scale farmers. Therefore, if poverty alleviation measures were not properly put in place in the area, level of farmer participation could be affected. If participants in the KYB-WDI project could have access to loan from financial institutions, then the tendency for improved production may be assured.

Low prices of farm produce

Since farmers had no stand market to sell their produce, a situation that gave rise to an influx of market middle men in the project area, 31.7% of the respondents complained of low market prices for their farm produce. The implication was that farmers are at the expense of these middle men who take the advantage of the situation to get higher income than the farmers.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study was conducted to assess the impact of Komadugu-Yobe Basin Wetlands Development Initiative (KYB-WDI) project on farmers in Jigawa state. Primary data were obtained by the use of a structured questionnaire that was administered to participants and non-participants of the project. The results are summarized below:

The study showed that the respondents were between a minimum age of 20 years and maximum of 51 years with an average of 35, but the participants were younger than the non-participants, and participants might have stronger interest in the project activities than the older ones.

It was found that the respondents had low level of formal education, but the participants were relatively more educated than the non-participants. The farm holdings of the respondents were small with an average of less than 2 hectares per farmer. It was found that the average years of farming experience of participants was 15 years while the non-participants had about 14 years. It was also found that the mean household of the respondents was 9 persons per household head the participants had extension contacts. The participants were also organized in to a plat form of viable associations under the project, while the non-participants were left to organize their social groups, and also revealed that both the participants and non-participants had rarely benefitted from the credit facilities, this means that the participants could have more opportunities to enjoy

credit facilities from the Government and commercial Banks if there was a concerted effort by the state Government and agricultural extension service delivery system.

The result of the logistic regression estimates indicated that Household size (-0.053), farming experience (-0.012), and extension contact (-0.347) negatively influenced participation. Age (0.050), education (1.666), membership of cooperatives (1.916), access to credit (1.519), farm size (0.315), positively influence participation. A unit increase in these variables could lead to the increased participation in the project by their corresponding exponentials (probabilities).

The result of Chow test showed that crop output (2418.23), income (5608.46), standard of living (62965.91) were at 5% level of probability since the calculated values are higher than the table values, the hypothesis tested in the study was rejected.

In spite of the significant impact of the KYB-WDI project, faced with certain constraints which could limit their performance, these constraints were ranked according to the response of the participants. Majority 41.7 of the respondents reported disease and weed infestation, 31.7 of them indicated low prices of farm produce, 21.3 low capitals out lay and 5.2 water shortages.

5.2 Conclusion

It could be concluded that the KYB-WDI project had positive impact on participants as the calculated F- values for income; crop output and standard of living of the participants were greater than the F- tabulated values, hence the null hypothesis that the KYB-WDI project has no positive impact on participants was rejected.

5.3 Recommendations

- i. It is recommended that the project should register more participants as the activities of the project had impacted positively on the lives of the participants, so as to provide more employment opportunities for the youth in the area.

- ii. Access to loan happened to be a factor that militates against the enhancement of crop production in the study area, it is recommended that farmers in the study area be linked with financial institutions or Government agencies by the project to access loan to boost crop production in the area.

- iii. Extension activities which play a significant role in extending information to farmers should be revived by the Government as the ratio of an extension agent to farmers is very low, when extension problems are solved, crop production in the area would be enhanced.

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APPENDIX I: RESEARCH QUESTIONNAIRE FOR FARMERS

SECTION A: BACKGROUND INFORMATION (PARTICIPANT AND NON PARTICIPANT)

1. Name of Farmer -----
2. Village -----
3. District -----

SECTION B: SOCIO-ECONOMIC CHARACTERISTICS AND INSTITUTIONAL FACTORS

4. Age of respondent ----- (years)
5. Sex of respondent (a)male { } (b)female { }
6. Marital status (a) married { } (b) single { }
7. Farmer's household ----- (number)
8. Educational qualification
 - (a) Adult education -----years (b) primary education -----(years)
 - (c) Secondary education ----- (years) (d) Tertiary education ----- (years)
 - (e) Others (specify): ----- (years)
9. Are you a participant of KYB-WDI project? Yes { } No { }
10. If yes, how long have you been a participant of KYB-WDI project?----- (years)
11. How many hectares of land do you cultivate?
 - (a) Less than 2ha (b) 2- 4ha (c) above 4ha
12. How was the land you cultivate acquired?
 - (a) Inheritance { } (b) purchase { } (c) Govt allocation { } (d) Gift { }
 - (e) Lease { } (f) Rent { } (g) Loan { }
13. How long is it from home of residence to your farm? -----Kilometers
14. Do you have contact with extension officials? Yes { } No { }
15. If yes, how many times have you been visited by extension officials since 2012 – date? -----Times, and number of times you visited extension officials -----Times
16. Are you satisfied with the contact? Yes { } No { }
17. If yes, give reasons -----

18. If no give reasons -----

19. Are you a member of any farmer organization? Yes { } No { }

20. If yes, how many associations do you belong to? List associations

21. How long have you been a member of associations? ----- (years)

22. Are you a member of any co-operative organizations formed by the KYB-WDI project? Yes { } No { }

23. If yes, what are the names of the co-operative organizations, and number of years spent in the organizations?

a. ----- (years)

b. ----- (years)

c. ----- (years)

d. ----- (years)

24. What kind of activities of the organization do you participate in?

Activities	Regularly	Occasionally	Rarely
Meetings			
Credit			
Disbursement			
Field days			
Demonstration			
Trade fair/shows			
Trainings			
Others (specify)----			
--			

25. What benefits do you derive from these organizations?

(a) Information awareness { }

(b) Easy access to financial assistance { }

(c) Provision of goods and services at reduced cost { }

(d) Others (specify) -----

26. Have you obtained any credit in the past three years? Yes { } No { }

27. If yes, what are your sources of credit?

(a) Commercial Banks { }

(b) Co-operative Societies { }

(c) Friends and relatives { }

(d) Money lenders { }

(e) KYB-WDI project programme { }

(f) Others (specify) { }

SECTION B: ACTIVITIES PROVIDED BY KYB-WDI PROJECT

28. Do you participate in KYB-WDI activities?

29. If yes, which of the activity do you participate in?

(a) Mechanical and manual clearance of typha grass { }

(b) Dyking of the river banks { }

(c) Farmer-Pastoralist conflict resolution { }

(d) All { }

30. How frequent do you participate in the activities?

(a) Weekly { } (b) Fortnightly { } (c) Monthly { }

31. Do you experience problems on the river basins?

32. If yes, what are the problems?

(a) Flooding { } (b) Siltation { } (c) Proliferation of typha grass { }

(d) Intrusion of potash in to farm land { } (e) Inundation of the floodplains { }

(e) Quelea birds { } (f) others (Specify) -----

33. What benefits do you derive from the river basin?

(a) Irrigated farming { } (b) Fishing { } (c) Others (Specify) -----

34. How much of your land is irrigated by water from the river basin?

(a) All { } (b) Half { } (c) A little plot { } (d) Others (specify) -----

35. Does the water satisfy your need during the cropping season?
 (a) Satisfies { } (b) Does not satisfy
36. How frequent do you make use of water for irrigation during the cropping season?
 (a) Always { } (b) In turn { } (c) Rarely { }
37. What are the sources of labour for the project activities?
 (a) Family labour { } (b) Hired labour { } (c) Co-operative labour
 (d) All of the above { } (e) Others (Specify) -----
38. What is the total amount received as credit from the KYB-WDI project? -----
 ----- Naira
39. What is the total amount received as subsidies from the KYB-WDI project?
 -----Naira
40. Is there available market for your produce? (a) Yes { } (b) No { }
41. How do you market your produce?
 (a) Open village market { } (b) Retailers { } (c) Whole sellers { }
 (d) All of the above { } (e) Others (Specify) -----
42. From the above alternatives, are you satisfied with the marketing system?
 (a) Yes { } (b) No { }

SECTION C: IMPACT OF KYB-WDI PROJECT

43. What type of crop do you cultivate?
 (a) Maize { } (b) Wheat { } (c) Cowpea { } (d) Peppers { }
 (e) Tomato { } (f) Onion { } (g) Others (Specify) -----
44. How much does it cost you to produce crops before the intervention of the KYB-WDI project? ----- Naira
 (a) Maize ----- Naira (b) Wheat -----Naira (c) Cowpea -----Naira
 (d) Peppers ----Naira (e) Tomato ----Naira (f) Onion ----- Naira

- (g) Rice ----- Naira (h) others (specify) ----- - Naira
45. How much does it cost you to process and transport the produce before intervention of KYB-WDI project? ----- Naira
- (a) Maize -----Naira (b) Wheat -----Naira (c) Cowpea -----Naira
- (d) Peppers ----Naira (e) Tomato -----Naira (f) Onion -----Naira
- (g) Rice -----Naira (h) others (specify) -----Naira
46. How much does it cost you to produce crops after intervention of the KYB-WDI project? ----- Naira
- (a) Maize -----Naira (b) Wheat -----Naira (c) Cowpea -----Naira
- (d) Peppers ----Naira (e) Tomato ----Naira (f) Onion -----Naira
- (g) Rice -----Naira (h) others (specify) -----Naira
47. How much does it cost you to process and transport the produce after intervention of KYB-WDI project? ----- Naira
- (a) Maize ----Naira (b) Wheat -----Naira (c) Cowpea -----Naira
- (d) Peppers ----Naira (e) Tomato ----Naira (f) Onion -----Naira
- (g) Rice -----Naira (h) others (specify) -----Naira
48. What is the total amount realized from the sale of crops harvested before intervention of KYB-WDI project? ----- Naira
49. What is the total amount realized from the sale of crops harvested after the intervention of KYB-WDI project? ----- Naira
50. Give total income from other sources of income? ----- Naira
51. What is the total amount spent in the household per month on the followings?
- (a) Feeding ----- Naira
- (b) Health ----- Naira
- (c) Children education ----- Naira

- (d) Energy ----- Naira
- (e) Entertainment ----- Naira
- (f) Clothing ----- Naira
- (g) Lighting ----- Naira
- (h) Others (Specify) ----- Naira

52. Indicate the total number and current value of assets possessed from the profits made before the intervention of KYB-WDI project.

Assets	Number/Type	Unit/Price	Total Value
Motor cars			
Motorcycles			
Bicycles			
Others(specify)---			
Buildings			
Others(specify)---			
Video			
Radio			
Television			
Refrigerator			
Hand set			
Rechargeable lamp			
Cushion chairs			
Health care			
Others (specify)---			
Cattle			
Sheep			
Goat			
Poultry			
Others (specify)----			
Total (N)			

53. Indicate the total number and current value of assets possessed from the Profits made after the intervention of KYB-WDI project.

Assets	Number/Type	Unit/price	Total value
Motor cars			
Motorcycles			
Bicycles			
Others(specify)----			
Buildings			
Others(specify)----			
Video			
Radio			
Television			
Refrigerator			

Hand set			
Rechargeable lamp			
Cushion chairs			
Health care			
Others (specify)----			
Cattle			
Sheep			
Goat			
Poultry			
Others (specify)----			
Total (N)			

54. Which of the following social facilities has KYB-WDI project brought to your area?

- a. Roads { } b. Electricity { } c. School { } d. Clinic { }
e. Good drinking water { } f. Recreation { } g. Communication net work { } h.
Others {Specify} -----

55. What employment opportunities do you think KYB-WDI project has brought in the area?

- a. Trading { } b. Craft work { } c. Bricklaying { } d. Fishing { }
e. Transportation { } f. Others (Specify) -----

SECTION D: CONSTRAINTS IN THE IMPLEMENTATION OF PROJECT ACTIVITIES

56. Were there any constraints associated with the implementation of the project? Yes { } No { }

57. If yes, what were they?

	Frequently	Less frequently	Rarely
a. Low Capital Outlay			
b. Low Prices of Farm Produce			
c. Diseases and Weed Infestation			
d. Water Shortage			
e. Lack of Transportation			

f. Others (Specify)-----			
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58. What do you think is responsible for these problems?

- a. Natural environmental degradation { }
- b. Poor project management { }
- c. Dam construction on some of the rivers { }
- d. Others (Specify) -----

59. Do you experience problem of water shortage for your crops and fishing due to the incidences above? Yes { } No { }

60. Do you encounter outbreak of water related diseases associated with KYB-WDI project? Yes { } No { }

61. If yes, name the disease outbreak and prevalence

	Frequently	Less frequently	Rarely
a. Schistosomiasis			
b. Malaria			
c. Nematodes			
d. Ringworm			
e. Others(specify)- -			

62 What general suggestions can you give to improve the activities of the KYB-WDI project?-----

Thank you for your cooperation
Bashir, U.