A HISTORY OF IRRIGATION FARMING IN KARAYE DISTRICT, 1913 – 2014

BY

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BEING A DISSERTATION SUBMITTED TO THE DEPARTMENT OF HISTORY, FACULTY OF ARTS AND ISLAMIC STUDIES, BAYERO UNIVERSITY KANO IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS OF ART (M.A) IN HISTORY.

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DECLARATION

I hereby declare that this project has been a product of original research work carried out by the author. It has never been presented for an award of any form of degree in any university. All the ideas and views used herein, with the exception of all acknowledged quotation, represent the conviction of the author in accordance with conventional academic tradition.

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APPROVAL PAGE

This is to certify that this work was done by Mamuda Salisu Mohammed and it has been read and approved by the Department of History, Faculty of Arts and Islamic Studies Bayero University Kano. It has also been certified as having met the requirement for the award of Master of Arts Degree in History.

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This work is dedicated to the entire irrigation farmers and traders of assorted agricultural goods in Karaye.

ABSTRACT

This work is on the history of irrigation farming in Karaye 1913 - 2014. It examines the changes on irrigation farming from pre-colonial through colonial and post-colonial periods. The work attempted to document the socio-economic significance of irrigation farming in the development of Karaye community and its neighboring areas. It also attempted to explain the economic importance of Karaye District in Kano's economy. Oral information, written documents (published and unpublished) and archival materials were used in conducting the research. The research discovered that, the development of irrigation farming in a large scale led to significant changes in the economy of the people. Many people became rich as a result of irrigation farming and trades in farming raw-materials and irrigated products. The research has also revealed how farmers interchanged their products with the major marketers as their financiers. Irrigation farming also opened up inter-group relations between the farmers in Karaye and other peoples/farmers from Niger Republic, Daura in Katsina State, Bakalori in Zamfara State, Besse in Kebbi State and Kazaure in Jigawa State. This resulted in the introduction of many seed varieties and news skills and techniques of irrigation farming hitherto unknown to the irrigation farmers in Karaye. The research also discovered that government and non-governmental organizations had to a certain extent supported irrigation farmers in Karaye through programs that heralded the new farming techniques in the period under study. In fact, the research has identified the economic importance of Karaye in the circle of the State economy where the State Government generated revenue for land and water used at the Kusalla Dam. However, flooding of Challawa Gorge dam continues as usage of traditional farming technology; inadequate financing and funding as well as low level participation/involvement of government in the boost of irrigation farming hindered the rapid development of irrigation farming in Karaye.

ACRONYMS

- A. C. T. Arthemeter Complicated Treatment.
- A. D. P. Agricultural Development Project.
- A. E. D. Agricultural Extension Delivery.
- A. F. Additional Fund.
- C. B. O. Community Based Organization.
- C. S. O. Central Statistic Office.
- D. F. I. D. Department For International Development.
- FACU. Federal Agricultural Coordinating Unit.
- FMOH. Federal Ministry of Health.
- FUA's. Fadama Users Associations.
- FUG. Fadama Users Group.
- GES. General Express Service.
- H.J.R.B.D.A. Hadejia Jama'are River Basin Development Authority.
- IFESH. International Federation for Education and Self Help.
- I. G. O. Inter-Governmental Organiztion.
- KASCO. Kano Agricultural Supply Company.
- KNARDA Kano Agricultural and Rural Development Authority.
- KSHCB Kano State History and Culture Beureau
- L.G.A. Local Government Area.
- M.T.P. Management Training Plot.
- M.D.G. Millennium Development Goals.
- NATPT. New Agricultural Technology and Processing Techniques.
- N. A. K National Archives Kaduna.

- NATSP. National Agricultural Technology Support Project.
- N.G.O. Non – Governmental Organization.
- N.N.N.G.O's Nigeria's Network of Non- Governmental Organization.
- N.F.D.P. National Fadama Development Project.
- O.M. Operation and Maintenance.
- P.B.O. Projected Benefit Obligation.
- P.M.F. Probable Maximum Flood.
- P.V.O. Private Volunteer Organization.
- R.B.D.A. River Basin Development Authority.
- R.I. Research Institute.
- S.G. Sasakawa Global.
- SMFPP. Special Mass Food Production Programme.
- U.I.A. Union of International Association.
- U.N. United Nations.
- UNICEF. United Nations International Children Emergency Fund.
- UNESCO. United Nations Educational, Scientific, and Cultural Organization.
- U.S.A. United States of America.
- USAID. United States Agency for International Development.
- USIS United States Information Services.
- WHO. World Health Organization.
- WRECA. Water Resources Engineering and Construction Agency.

GLOSSARY

- *Almajiri(singular)* *Almajirai*(plural) (H) Itinerant Student.
- *Amarya* (H) A local terminology for vegetable traders/farmers refering to the markets lost profit.
- *Bazara* (H) Dry season.
- *Birni* (singular) *Birane* (plural) (H) City/Cities.
- *Burabusko* (K) A meal of Kanuri people in Karaye made from maize, wheat or millet.
- *Cirani* (H) Seasonal migration.
- *Dancirani* (H) A person on seasonal migration.
- *Danjeka kamutu* (H) A market agent who escorted goods.
- *Dankiri* (H) Retailer.
- *Dan matsa* (H) Locally processed Seeds.
- *Danwazai* (H) Wholesaler.
- *Dan Izala, Dan Bakalori, Dan Gulu, Kantayi idda* (H) New introduced seed Varieties of Potatoes cultivated in Karaye.
- *Dundun bature* (H) Name of forest reserve area in Karaye.
- *Fatake* (H) Long distance traders.
- *Fadama* (H) Flood plain
- *Gandu* (H) Farm holding collectively owned and managed by households.
- *Garma* (H) Local Farm Implement used for plough.
- *Jangali* (F) Cattle tax.
- *Kalankuwa* (H) Traditional Hausa festival.
- *Karuwai* (H) Prostitutes.
- *Kauda* (H) Dried vegetables.
- *Kantun Gana, Hallaka kobo* (H) Traditional snacks made from groundnuts.
- *Kasuwar gwari* (H) Vegetable market.
- *Kulikuli* (H) Groundnut cakes.

- *Kwazari* (H) First rain of the season.
- *Kwandagi* (H) Sugar cane variety.
- *Kwandala, Kukuma* (H) Rice varieties.
- *Kwami* (H) Seed bed or Basin.
- *Lokaci* (H) Time.
- *Lambun waya* (H) Wire Garden.
- *Maguzawa* (H) Non-muslim Hausa.
- *Makada* (H) Drummers.
- *Mawaka* (H) Singers.
- *Miyar taushe* (H) Vegetable soup.
- *Mudu* (H) A Measure.
- *Mai Rakuma* (H) Groundnut seed variety.
- *Rukuta* (H) A variety of big, round and light colored tomato.
- *Shanun Gida* (H) Home cattle.
- *Soriyo* (H) Period when groundnuts were affected with fungae diseases that caused drastic reduction of its yield.
- *Suyar Ruwa* (H) Roasted groundnuts.
- *Talla* (H) Hawking.
- *Tsada*(H) Collective bargaining.
- *Tantabara*(H) Groundnut seed variety.
- *'Yar Dakar* (H) Groundnut seed variety.
- *'Yarmahangi, 'Yarfako*(H) Rice varieties.

KEY:

A= ARABIC, F= FULFULDE, H= HAUSA, K= KANURI.

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CHAPTER ONE

GENERAL INTRODUCTION

1.0 INTRODUCTION

Irrigation is an artificial method of water application to enhance the production of crops and to supplement the water available from rainfall, soil moisture and the capillary rise from ground water.[1]In many areas of the world, the amount of rainfall is not enough to meet the moisture requirement of crops. Hence, successful crop production often requires adequate provision for irrigation. The drying of the soil to an everincreasing degree retards and eventualy prevents vegetable growth. Irrigation can compensate for the vicissitudes of nature by supplying water regularly and in sufficient volume. The use of irrigation for agricultural purpose was an ancient practice. It can be traced to early Egyptians who were irrigating fields with water from the Nile River as early as 5000BC.[2] Evidence shows that other ancient civilizations, such as those of Babylonians and the Chinese, also developed largely as a result of irrigation based agriculture. It is also the artificial application of water to the soil to supplement insufficient rainfall. Irrigation is the artificial application of water with good economic return and no damage to land and soil to supplement the natural resources of water to meet the water requirement of crops.

Early agriculture involves mainly food production, which gradually changed slowly to modern agriculture through a continuous evolution of agricultural technologies. This transformation gave a structural and economic base to the human society for its existence and progress. Irrigation has dictated and decided largely the process of agricultural development. The excavation of the ruins of Mahango Daro of the Indus Valley civilization that flourished and

reached its peak in 3000BC illustrated the existence of a network of a well-designed water supply and drainage system.[3]

In Hausaland,farming featured the intensive cultivation of guinea corn,millet, maize and beans, as well as pastoral activities.Most Hausa live in small agricultural villages, which are largely limited to keeping goats and chickens.[4]The Hausa are one of the few grassland groups who practiced traditional forms of irrigation in the country and all over Hausaland.River flood plains usually called *fadama* are put under intensive cultivation during the dry season months.[5] In Karaye, farming concentratedin the villages where rivers, dams and flood plains, which provide the farmers with available land for cultivation and water for irrigation, are found.

Karaye is located 90km west of Kano city and the main economic activity of the people has been farming. Irrigation farming started when the sedentary life began and, in the early period, the area consisted of sedentary agricultural communities. The nature of the soil has for long provided an incentive for the people to engage in farming. The rivers that traverse in the area included Mukugara, Kekasa, Tinjim, Amara, Magaga and Kurma.They provide the water sources with which farmers practice irrigation farming.[6]The production ofcrops has been labor intensive.The shadoof system of irrigation was used to supply water to the farm from rivers or ponds. The traditional irrigation farming was practiced in villages, such as Turawa, Dambazau, Kurugu, 'Yammedi and Dederi situated along the river areas until 1973 when Kusallah Dam was constructed.This contributed to the boosting of irrigation farming in Karaye.

In the colonial period 1903-1945, there was no substantial change on irrigation farming in Karaye by the colonial administration; rather their concern was on the production of cotton and groundnuts, which were cultivated through wet season farming.The irrigation persisted with all

the features of the pre-colonial time where farmers kept growing local seed varieties with low economic return.

Inpost-colonial period irrigation, Karaye witnessed a significant change.With the creation of KanoState in 1967, the State economy became dependent on agriculture.The then Governor of Kano State, Audu Bako, attached the highest importance to the development of agriculture. From 1970-1973, Kusalla Dam was constructed in Karaye for the purpose of supplying drinking water to the area of Karaye, Gwarzo, Getso, Kutama, Ladin Kara, Shanono, Dakwara and Mallawa[7].Consequently, the dam was used for the dualpurposeof irrigation and water supply. In 1992, Challawa Gorge Dam was constructed for the purposes of irrigation and electricity supply to the State. It gave further expansion of irrigation in the area.

1.1 STATEMENT OF THE RESEARCH PROBLEM

Political and administrative studies pre-dominate the literature in the history of the Karaye district. As yet, very little or no significant works are available on economic history, especiallyirrigation farming that provides great economic activity to the people, changing social behavior and introducing new farming techniques.However, the focus of the research, therefore, is on the rate of economic development in Karaye, precisely irrigation farming, from 1913-2014. In this period under study, many developments emerged, though it is not clear why this development occurred and for whose benefits it was provided. This study foundout the areas where the development largely concentrated and why.

1.2 AIM AND OBJECTIVES OF THE STUDY

The aim of this research is to study the history of irrigation farming in Karaye from 1913-2014. The objectives of the study are:

i.To assess the factors that facilitated irrigation farming in Karaye District.

ii. To explore the advantage of irrigation farming to the development of Karaye District and its neighbouring areas.

iii. To examine the Government and Non-governmental programmes towards enhancing irrigation farming in Karaye District.

iv. To identify the problems and challenges of irrigation farming in Karaye district.

1.3 JUSTIFICATION OF THE STUDY

This study is justified by the following reasonsIrrigation is one of the major occupations that attract and accomodate more people during the dry season in the study area. This becomes necessary as this vital sector of economic history has been given disproportionate attention by scholars or those who delved to write on the history of the area.Therefore, this work illustrates how the history of irrigated farming influences the socio-economic development of Karaye communities and the role it plays in the production of fresh vegetables and food items during the dry season. The studyis anticipated to advance our knowledge on how migrants from different places moved into Kraye either as settlers or dry season workers, as well as provide the background study for better understanding of the subsequent development of irrigation in other uncovered areas within Kano State and Nigeria in general. It is also hopedthe study will benefit researchers who wish to write on the economic history of Karaye in particular, as well as be beneficial to the government, Non-governmental Organizations and other international organizations in taking measures towards the development of irrigation farming in Karaye district and beyond.

1.4 SCOPE AND LIMITATION OF THE STUDY

The scope of this work is on irrigation farming in some selected areas with approximate farming acres each, such as Daura, covering 142.5 acres, Turawa,covering 112.5 acres, Ma,covering 170 acres, Yola,covering 97.5 acres[8]and Dambazau,covering 187.5 acres.[9]That give the total area of cultivation as 710 acres in Karaye District.The periods1913-2014 seem to the reseracher as most useful for the analysis of the dynamics in irrigation farming in Karaye.

Karaye is one of the four Ribats of Kano, which was partitioned by Dr. Cargill in 1904 to create the Karaye district itself, Yalwan Danziyal and Tofa District.[10] However, 1913 was not the beginning of irrigation farming in the areas.It rather marked the time when irrigated products were produced below consumption as aresult of a new colonial economic policy of cash crop production.The Colonial Government in most cases did not have to wait on what or what to cultivate but compelled them on the specific products they wanted as a consequence of which they became trapped by compulsory cash taxation of the agricultural products, which they had to sell to the British firms for them to get the currency needed.[11]The production of these crops so much dominated the minds of farmers and accentuated the seasonal cultivation of cash crops, which demanded less water, thereby neglecting the alternative method of cultivating other crops (perishables in particular) after the rainy season. Encouragement by the Colonial Government to farmers to embark on irrigational cultivation can, therefore, be said to be silent for a long period.[12]Farmers were forcedto engage in clearing large unoccupied forests in the dry season for the purpose of cash crop production, thereby abandoningtheir *fadama*for irrigation farming in the period.In the terminal period 2014, there was the increase of irrigation farmersin Karaye as a result of the introduction of dry season groundnuts which proved to have higher economic returns. Therefore, there was an increase of traders on the irrigated products from Niger and KatsinaStates.

The dominant problem identified during the research is inadequate written sources on the study. The only existing work related to irrigation farming in Karaye is that of Nasiru Adamu on tomato production in selected areas.This particularly forced the researcher to search for other related works done on irrigation in other areas.In the course of conducting interviews, most of the informants regarded the researcher with a high degree of suspicion. They assumed that he was a government official collecting information about their economic status on irrigation farming or a Journalist who would reveal their secrets. In view of this, the researcher had to appeal to the informants on the genuineness of the interview for academic purposes than otherwise.

1.5 LITERATURE REVIEW

There is available literature on irrigation farming and most of it seems to have a similar focus. The selected and reviewed material made significant contributions in explaining the agricutiural situations and irrigation schemes that are adopted, particulalrly in Karaye, and Nigeria, in general.

Adamu (2004)[13] dicussed the selected areas of tomatoes production in Karaye, such as Daura, Turawa, Ma and Dambazau as a result of fertile land and *fadama* areas which were suitable for the production of tomatoes. He further discussed the types of soil in the area that comprised sandy, clay and loamy soils and the water requirement of about 105 to110 centimeters. However, the areas mentioned are suitable for the production of tomatoes and provide the required water due to their location along the Challawa and Kusalla dams.The work further disscusses the farming capacity of farmers that ranged from 0.5-1.0ha, 1.1-2.0ha, 2.1-3.0ha.

Adamu's work is relevent to this work as it discovered the selected areas of irrigation farming and the capacity of farming.It further gives way for additional inputs of other crops like pepper, rice, potatoes and onions in the area and the increse in farming capacity due to increased specialization.

Adamu's (2010) dissertation on Marketing Fresh and Dried Tomato in the Kano MetropolitanArea, Kano State[14] discusses the chain of the transaction of tomatoes from the producer at the farm gate to the final consumer.The work further dicusses the nature and problems associated with the trade in fresh tomatoes, such as the decay of the product before it reaches longdistant markets, lack of standard measurement and the price of the products. The relevance of this work to the present research is on how tomato marketing was organised from the producer to the wholesaler(*dan wazai),* the retailer (*dan kiri)* and then finally to consumers.However, Adamu did not unveil how trade in tomatoes created employment opportunities to the producers and traders.

Abbas' (1992) " History of Irrigation Farming in Kura District with Particular Reference to Wheat Production"[15] discusses largely the effects of the boom of wheat production whereby many migrant scholars (*mallamai)* with their disciples(*almajirai)* came and settled in the area during the dry-season period. The advantage of the dry season is that it promote sufficient food as well as labour force on wheat farms that supplement their scholarship activities. Abbas' research has added substance to the ongiong one on how the development of irrigation farming attracts migrant farmers, traders,laborers and scholars to settle at different irrigation centers in Karaye, thereby increasing the population of the people especially during thedry-season.However, the study differs from this research.The former emphasized on wheat as the

type of crop irrigated. Abbas limited his study on wheat production while the present research includes other crops apart from wheat, such as rice, potatoes, onions and vegetables.

Umar (2006) examined the history and development of Kwakwaci irrigation farmers in Kano.[16] He discussed the effects of irrigation on public health. According to him, the water used to irrigate vegetables contains some micro-organisms, which result in the transmission of cholera and typhoid. This work gives the researcher a nexus on how irrigation farming affects health conditions in Karaye and how the land wetted provides a breeding place for mosquitoes, aparasite which spreadsmalaria to the inhabitants of irrigation centers.

Chigozie's (2011) work onEconomic Analysis of Onion Production in the Hadejia Valley Irrigation Project"[17.] discusses the suitable areas for the production of onions in Northern Nigeria, such as Sokoto, Zamfara, Borno and Kano.The areas provide the required types of soil by onions. The work discusses the emergence of collection centers as necessary because a farmer could not adequetly provide the required goods for a vehicle with the capacity of 32 tonnes or 550 baskets at once.Thus, the need to take goods to collection centers for packaging and transportation to the other markets likein the southern part of Nigeria. Chigozie's work has a nexus to the current work,as the onion is one of the commodities produced in Karaye. Most of the farmers in Karaye are small scale farmers who cultivate 5 acres; only a few among them have the opportunity to cultivate 10-12.5acres. This particular reason could have facilitated the emergence of collection centers at different places in Karaye for the short and long distance trade.

Gidan Dalla (2006) examines rice cultivation under the Hadejia Jama'are River Basin Development Authority[18]. He discusses the traditional method of land acquisitions in Jigawa

State through inheritance, gifts, leverages, lease and purchase. Equally, the work traces the origin of rice cultivation on the bank of River India in south-west Kashmir dated to theIce Age period. Rice is the most important staple food crop for a large number of people on the earth. According to Gidan Dalla, rice ranks third after wheat and maize production on a worldwide basis and the Ostava cerealsvariety are cultivated. He further discusses that the construction of a dam at Auyo made people engage in irrigated rice cultivation in the area.The improvement of new technology, such as land preparation, hybrid seeds, insecticides and fertilizer, was greatly in use in the area. The work discusses the methods of rice cultivation in Auyo, such as rainfed farmers, flood plain farmers(*fadama*) and annual irrigation rice farmers.It is a fairly adopted system due to the fact that of not acquire much land but more production. The introduction of new technology did not deminish the old method, such as the maintanance of soil fertility through the use of manure, ashes, animal dung and compound.The rice production in Auyo helped in a rising the income level of farmers and provided food security to the populace as well as employment opprtunities.

Gidan Dalla's workhas relevence to the present research because it shows similarity in terms of land acqusition and the traditional characteristics of farming in the area.The method used in rice cultivation in Auyo is also similar to that of Karaye. The area where the former differs from the latter work is that the former is only concerned with rice cultivation without other crops, which the present work covered.

Shu'aibu's (2006) "A History of Karaye Town in Kano State 1800-2005"[19] discusses Karaye as an old and historic town in Kano. The work relates the establishment of the town to one from the Kwararrafa kingdom, named Karaye from whom the place derived its name. He further states that the early settlers were traditional worshippers worshipping trees, such as Rimin Yaki Yaki, Rimin Kwatankwaro, Rimin Tagwaye and Rimin Kofar Zango. Onthe relationship

between Sarkin Karaye Kure (1104-1177) and Sarkin Kano Yusa,according to Shu'aibu, Sarkin Karaye Kure built the first palace at Tsohuwar Karaye and initiated its fortification (*ganuwa*) with three gates, such as east, north and south.The work discusses the various rivers and dams that provided water for irrigation since pre-colonial times, such as Mukugara River, Kurma River, Magaga River, Kekasa River and Kwakwaci River.

Shu'aibu's workis significant to the present work into the understanding of pre-colonial administration, trade and local industries in the area, the early Emir's palace and defence of the area. He further mentioned the various rivers that traversed the area but did not discuss their importance in relation to irrigation farming a vacuum which the present work will cover. The work, on the other hand, has a short coming of not presenting the period when the early settlement was established by a leader from Kwararrafa, nor mentioned the various groups of people who livedin the area at different times.

Shehu's (1997)"Kano State under the Administration of Audu Bako, 1967-1975[20] discusses the various efforts ofAudu Bako's government (1967-1975) on agriculture, which was regulated by available water resources. She, however, states that the long dry-season of about 7-8 months that characterised the state climate affected the flow of rivers; that only the principal rivers of Kano-Challawa-Hadejia-survived the dryness.Based on this problem, about 40% of farmland was largely uncultivated. Kano State under the adminstration of AuduBako focused its attention on the need to implement the production of food and cash crops. Atotal cost of seven point two million (7.2m) pounds was earmarked by the Government to cover the following: minor projects 90,000, the Kano River Project 6,000,000 and the Hadejia Valley Irrigation Project 1,151,000. The development plan from 1968-70 and 1970-74 led to the construction of many dams in Kano State, such as Birnin Kudu 1968-1970, Kadawa irrigation pilot and Tiga

Dam to complement irrigation farming. Among these dams was Kusallain Karaye, which was mainly to conserve rainwater in the rainy season and used for irrigation purposes as well as a source of drinking water that became the great Government concern.

Shehu's work gives an insight into the present research on the beginning of large-scale irrigationfarming in the State and theGovernment's concernin boosting irrigation farming. This study has further investigated on the development of irrigation along Kusalla Dam by the subsequent governments after Audu Bako's administration.

Karaye and Shea's (2013) *History of Karaye*[21] dicusses the history of Karaye from the pre-colonial through colonial and post colonial periods. It gives a description of the land and settlement at different times. Other thanthe early settlers and the transformation up to the present time with their culture, norms and values of the peoples,the work further discusses the first contact between Karaye and Kano during the reign of Sarkin Kano Yusa (Tsaraki) and Sarkin Karaye Kure at the Magaga treaty on the Ribat system.It discusses the history ofthe emergence ofvillages under its political control,such as Turawa, Daura, Dambazau, Yola and Kurugu,which were the major irrigation centers in Karaye.The work gives an account of how Karaye lost its foundamental elements of glory, autonomy and territorial control and why it was placed under Kano by colonisalists as well as the changes that took place as a result of British conquest. Karaye and Shea further discussed the introduction of local government reforms, when Karaye became a Local Government, and in 1997 Rogo Local Government gained its autonomy out of Karaye.

However, the relevance of this work to the present is that it gives the background study of the present research though it did not put in place the nature and contribution of irrigation

farming in terms of socio-economic development in the community understudy where the present reseach will cover.

Majundar's(2004) [22]*Irrigation Water Management* gives a clearcut definition of irrigation farming,the classification of irrigation farming that are adopted among different irrigation communities of the world, such as surface irrigation, sub-surface irrigation, over-head or sprinkler and drip irrigation.The importance of irrigation to any community involves the choice of the crops that enable farmers to grow cereals and high value crops, such asvegetables, potatoes, rice and sugarcane. Multiple cropping, fertilizer usage, crops quality, economic returns provide employment opportunity to the teeming population.

Though Majundas' work is not particularly on Karaye, it has given an insight on thesystem of irrgation farming. Other peculair features or the characteristics mentioned by Majundar could also be identified in Karaye.Irrigation farmers in Karaye, for instance,decide on the types of crops to produce twice in a season or a year, such as new varieties of rice, potatoes and other vegetable crops.Some of the irrigation methods suggested by Majundar like surface irrigation, sub surface irrigation and furrow irrigation are suitable to the nature of irrigation farming in Karaye. The irrigated crops in Karaye have high quality yield compared to these of rainfed ones,which easily decay due to excessive rainfall.The development of irrigation farming in Karaye has brought employment to the teeming youth, who hitherto depended on seasonal migration to southern Nigeria and some cities in Northern Nigeria.

Smith (1997),[23] in his work *Government in Kano 1350-1950,* discusses the Hausa (*habe)* government in Kano, which regulated the public affairs of the State, such as immigration, war, peace, alliance or vassalage,development of city, town building,fortifications and defence. The

Chieftancy/kingship known as the Sarauta system in Hausa reserved itself to all the regulations of local right in land, including the right of grazing, mining or building, the use of trade routes and the occupancy of farm land.The maitainance of law and order as well as other social activities were controlled by the King. He further discusses howthe senior territorial chiefs of Rano, Gaya, Dutse and Karaye were generally consulted on most important decisions of State, such as war and peace. The work discussed the nature of tax collection on the doctrine of Islam. Smith's work has added substance to the present work on the nature ofthe political system of Karaye to the colonial period.

Mahdi (1982)[24] discusses the physical features of Kasar Kano, such as rainfall, vegetation, soil minerals and population distribution of *Kasar Kano*(the *Kano Region)*. In this work, he divided the Kano region into the Eastern and the South-Eastern, the North and the North-Eastern and the Western. Karaye falls into the Western part of *Kasar Kano* where the author discusses the physical featuressuitable for agricultural purposes, such as land fertility. The region is covered by furruginous tropical soil and that about half of the region lies in the cotton belt of Hausaland. According to him, staple food crops such as*dawa*(guineacorn),*gero*(millet), beans, cotton, indigo and rice were planted in the area. The work also discussesthe peopling and people of *Kasar Kano* where he posits that the earliest known period of a large scale movement into *Kasar Kano* took place probably towards the end of the first millenium A.D. Thepeople consisted of sedantry agricultural communities whose ancestory occupyed the area. They belongedto Afro-Asiatic language groups and spread to different parts of *Kasar Kano,* including Karaye.

Mahdi's work is relevant to the understanding of the researcher on the physical features and types of crops cultivated in western Kano, which include Karaye in the 18th and 19th

centuries. The work has also given an insight on the period of the study area. However, it does not provide an insight on the irrigation farming in Karaye as it did to other spheres of economic activities in the western part of *Kasar Kano*, thereby creating a vacuum to be filled by the present research.

Rafukka (1985)[25] discusses on traditional methods of irrigation farming that includethe acquisition of land, the organization of labour and taxation. According to him, excessive labour requirements not only stagnated the work on small scale land holding but also made some irrigation farmers leave their *Fadama* land vacant in the dry season inspite of its potentialties. The work further discusses that farmersfarmers had to pay taxescolonial to the government on the basis of land ownership and agricultural production.The system of tax collection in the period was known as *Taki* (farm to farm assessement) carried out by village heads or wardheads together with some British Colonial officials.

Rafukka's work has added substance to the present study in the context of irrigation farmingand its problems in northern Katsina,but itequally shares similarcharacteristics with the present research. The effects of the colonial agricultural policy that prevailed in northen Katsina was the same in Karaye. It was until the post war years(1945) that the colonial government encouraged irrigation farming by introducing new variety of sugarcane, known as*kantoma*. And in 1948 through the end of the colonial period,irrigation farmers began to participate in agricultural shows.

1.6SOURCES ANDRESEARCH METHODOLOGY

The sources for this study include primary and secondary materials, written documents and oral information. Archival records on the Kano Province with emphasis on the Karaye

District were sourced from the Kano State History and Culture Bureau andthe National Archives, Kaduna.Selected informants that were contacted included irrigation farmers, marketers and the civil servants within the age range of 38-80years. Interviews were conducted in places within the Karaye District. The medium of the interview was Hausa.The researcher also made use of published works in form of books and journals, which were studied and analysed.Unpublished Ph.D theses, M.A and B.A dissertations at the Bayero University Main Library and the departmental library of History Department Bayero University Kano were consulted.

Infact, the research had devoted much time in search of materials in Government libraries and offices. Some of which are in Karaye Local Government, KNARDA and KASCO offices in Karaye, the Bayero University Main Library and the Department of History library. Nevertheless, as difficult and time consuming as this research work turned out to be, through much of the cooperation derived from various people, particularly my informants, much relevant data were collected. This on the other hand, contributed in putting up a pioneer work on this aspect of irrigation farming in Karaye through a historical perspective.

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CHAPTER TWO

THE LAND AND PEOPLE OF KARAYE IN THE PRE-COLONIAL PERIOD

2.0 INTRODUCTION

This chapter discusses the land covered byKaraye and its geographical features and the distinct ethnic groups that inhabited the area at different times. The economic activities such as dyeing, blacksmiths and thePotmaking industrythat attracted sedentary communities to the study area are also highlighted. The chapter covered the pre-colonial system of administration, taxation, land tenure and agricultural activities, especially irrigation farming, in the period.

2.1 THE LANDAND PHYSICAL FEATURES OF KARAYE

Karaye District is located 90km West of Kano city with a total area of 513 square km[1]Karaye became a local government on 1st May, 1989and between 1996 and1997 Rogo was carved out of the Karaye local Government area. Presently, Karaye borders with Gwarzo Local Government to the north, Kiru Local Government to the south and south-east, Kabo Local Government to the north and north-east and Rogo Local Government to the west[2].It is situated on latitude 11°45N and longitude 8°05E and has the tropical continental type of climate. The annual rainfall in the area is about 120 centimeters and the temperature varies.The climate changes with the temperature and humidity, which can use up to about 100% in this area. The daily maximum and minimum tempreture is 91.60% and 60%.The area has rainy and dry seasons. The dry season lasts from October- May and during the month of December and January the harmattan is at its highest, blowing dust over the area.At this period,the temperature falls as low as 50%.[3]The rainy Season begins from June to September,thoughKarayeexperiences its first rain in April known as

kwazari that gives signals for farmers to prepare their land for planting. The month of June always turns out to be the time for planting in the area.[4]

Karaye is traversed by rivers, namely: Makugaralocated north of Karaye, Kamanda andKurma located east of Karaye, Tinjim located south and south-west of Karaye, Magaga on the eastenpart, and Kekasato the west.[5] The vegetation of Karaye has been quiet dense.Several large tracts of forests found, especially in the extreme south-west of the region, and the most notable species of trees are *dorawa* (locustbean), *kadanya* (shea nut), *gawo* and *kuka* (baobab).[6]The area has four forest reserves, namely Tsauran Sanka, Darbuji, Dundun Bature and Garun Amina.[7] The forest provided a hunting ground for hunters. In the case of the soil type,the extreme southern and western parts have forruginous tropical soils. The area is very famous for its indigo and is even believed that the best type of indigo is cultivated in the area.[8]The fertile soil makes pasture available, a situation that becomes favourable the nomads, who flock annually after harvest with their animals in search of food. It has been recorded that during pre-colonial and colonial periods, there was the movement of domestic cattle (*shanungida)* from Gwarzo, Shanono, Katsinato Karaye in search of pasture.[9]The fertile land of the area makes the farming profession the most advantageous occupation.The main subsistence crops produced are guinea corn, millet, peas, beans and cassava. Farming strengthens the economy and food security in the area under study.Specialized crops include tomatoes,maize, sweet potatoes, sugarcane, rice, wheat and groundnuts.[10]Interms of minerals and natural resources Karayehas been blessed with feldspar, quartz,mila, alluvial gold, tourmaline andemerald[11].

2.2 THE PEOPLE AND FOUNDATION OF KARAYE.

Karaye featured prominently in the early written history of Kano. Its first old settlementwas known as*Tsohuwar* Karaye(Old Karaye), which lies about four miles north of the present town. The early settlement walls that could barely be traced measured about one mile in diameter.[12]From *Tsohuwar*Karaye, the town was moved westward to a place Kure Hamlet or*Unguwar Kure*by Sarkin Karaye Kure where he settled with his people in a place near a creek called 'Yar Tubani west of the house of Dandango 900 years ago.Apart from the walls, the other indication of the early occupation were the *kuka*(baobab) trees, which stand in a cluster in the north-eastern part of the settlement.[13]The existence of Karaye began simultaneously with the reigns of the king and leaders of Kano, such as Kano, Dala, Garageje, Barbushe and Bagauda before 999 A.D. "Dundunzuru" was the name of the territorial area from Wateri to Karia (Karaye).Its leader and the land were known as "Karia" later reported as "Karaie" then "Karayi" and now Karaye.[14]Karaye also used to participate in the annual religious rituals at Dala Hills during the reign of Barbushe.[15]

The founder of Karaye, as it is known today, was Wambai Abdullah Giwa in the year 1620. He built the town wall with clay and sand. He was also the one that built the present palace of Karaye. The palace has four angles and faces west.[16]It has twelve gates as follows: Eastern gate, Burga gate, Zango gate, Northern gate, Kukoki gate, Danboka gate, Sha Talla gate, Getso gate, Western gate, Limanci gate, Kwatankwaro gate and Torankawa gate.[17] Zango gate leads to Kano, the Northern-Western and Getso gates leads to Getso town and Katsina state while Limanci gate leads to Zazzau. Torankawa gate leads to Kiru and Rano.[18] Research has been conducted to find the early *sarakunan kofa* (gate-keepers) but only one is available on Torankawa gate. According to Alu Nahinde, the present Sarki of Torankawa gate, the first Sarki was Alu Maisango whose period of reign was not mentioned.[19]Other present *sarakunan kofa* in

Karaye are Torankawa Alu Nahinde, Limanci Alhaji Yusuf Nadabo and Zango Garba Nakwadaga, respectively.[20]

There are several theories as regards to how pre-colonial states and towns emerged in West Africa. Most of the theories attached considerable importance to the role of migration in their evolution. Most areas needed basically some economic potentiality to grow and develop as urban centers. Others needed not only economic potentiality but also a certain strong political authority to boost that economy and determine its specific direction.[21] However, the immigration of people into Kasar Kano and Karaye inparticular has been taking place imperceptibly through the ages.[22] The earliest known period of the large scale movement of people into Kasar Kano, particularly Karaye, was probably towards the end of first millennium A.D. This appears to have been occasioned by widespread famine brought about most likely by drought in many parts of the Central Sudan, particularly from the northern part of the region, like Borno, Adar, Daura and Air.[23] The majority of the inhabitants of this country, at least in the early periods, consisted of sedentary agricultural communities whose ancestors occupied the area known as *Kasar* Kano, including Karaye. The early inhabitants of Kano belonged to Afro-Asiatic language groups,[24] but were not homogenous. They developed a common identity and common cultural traits, possible to what may be called a sub-group among them. They included the *Rumawa, Kutumbawa, Kurmawa*, *Aurawa, Diryawa, Ajawa, Warjawa* and *Maguzawa*.[25] It is clear that the early inhabitants of Karaye were the *Maguzawa*. The *Maguzawa* seemed to have spreadwide in *Kasar* Kano and were largely found in the area of Wudil, Gaya, Rano and Karaye.[26] The second group who inhabited the areas were the Hausawa.[27]

Another group which moved to *Kasar* Kano and Karaye in particular from the west, but whose earliest date of arrival was unknown,were the Fulani. Their arrival in Hausaland was reported to

have taken place in the second half of the fifteenth century with their great number of cattle. However, by the first decades of the sixteenth century, the Fulani might have been numerous in *Kasar Kano*.[28]Therewere flourishing grazing cattle from Gwarzo, Shanono and Bichi to Karaye due to fertile land for grazing. This led to the migration of many cattle herders to the Karaye area.[29]Furthemore, the first record of the large scale movement of the Kanuri into Kasar Kano was in the reign of Sarki Dauda in the fifteenth century. They arrived under the headship of Dagachi, a Borno prince.[30] The influx of Kanuri from Borno, Baghirmi and other adjacent region took place continuosly and by the end of the nineteenth century they were found in all parts of Kasar Kano.[31] However, the Kanuri were said to have appeared in Karaye since the 16th century,thus their influence on the title of Sarkin Karaye as "Mai" Karaye.[32]

Anotherof the earliest people who arrived in Karaye were the Wangarawa from Mali during the reign of Sarkin Karaye Wambai Abdullah Giwa in the 17th century with their leader,Sheikh Garba Habibullah Maihadda, who resided at Ragezali Quarters and later moved to KwarGetso. The Wangaraw played a significant role in the construction of the fortification wall (ganuwa) of Karaye.[33] They were closely associated with Islamic judicial and administrative works, increasingly came to be associated with manufacturing and long distance trade and became famous for their industrial output.[34] The Islamic and judicial activities of theWangarawa have been justified in Karaye due to the expertise of Sheikh Garba Habibullah on law and jurisprudence, known as "*Ihkamil ahkam ala Tihfil Hukkam*" authored by the Spanish, Sheikh Muhammad bin Yusif al-Dafiyyi that Karaye earned the name *"makarar maganar Kano*", simply because, judges from Kano sometimes had to consult with the Sheikh on difficult judicial cases.[35]

Another economically important group who now constitute part of the Karaye population were the Tuaregs(*Buzaye).*They are mainly from Azben and Agades, also in present Niger Republic, known as Azbenawa and Agadasawa, respectively. These groups were particularly found in great concentration in and around Kasar Kano, such as at Bichi and Kura in the 19th century, as a result of the flourishing dyeing industry.[36] While at Karaye,they were also attracted to the area due to available indigo for dyeing and the existence of dye pits such aszangon marina at Limanci close tothe town gate, "Yarkasuwa, kekasa,Torankawa and kuduka dyepits.[37] It was evident that a village emerged about three miles east of present the Karaye town, called *Gidan Buzaye* (Tuareg's House).

Karaye was surrounded by villages and settlements, such as Tinkis, Daura, Turawa and Ma, which were among the major irrigation centers in the District. Smith's theory on state formation seems suitable for the foundation of the settlements in Karaye.The Smithian model was more concerned with the formation of state wide political organization and the development of its core as a city or *Birni*. The first stage he identified began with individual independent family groups. But at a certain level of development, which must have been a product of necessity, various independent family groups came to live together within nuclear hamlets(*unguwanni)*guided by individual family heads who, in turn, appointed from among themselves a leader. In the course of time, the *unguwanni* developed into villages (*kauyuka) and* then to town (*Gari)*. The authority of the political head extended to the surrounding countryside to embrace several Birni or city.[38]

The emergence of Tinkisvillage located about two miles west of Karaye town could be traced from the itinerant traders heading east that came from Rogo but passed through Karaye. That at the time they reached the place, they were so tired that they began to move slowly (*tinkis*

tinkis). As a result, they slept there and later named the place Tinkis[39]. The foundation of Daura town/village sited four miles west and south-west of Karaye had traced its foundation as a result of peoplecoming from Daura in the present Katsina State under the leadership of Namargi, a royal aristocrat, who lost a contest for the throne of Daura. Namargi was said to have settled near the 'Yarzodama pit and normally went to the bank of the Kekasa creek, where he discovered that the place was good for posture. That he cleared a farm, built a dye-pit and later his house. Eventually, the site became known as a Daurawa/Daura village/town in Karaye.[40] Ma town was traced to a group of people from Dutsin-ma, also in the present Katsina State, and that it was named after them. There was a wall in*Unguwar Jama'ar Manzo* that was built around 1770 by a Fulani, who came along with his slaves.[41] This was indicated that the area was inhabitated by the Fulani before 1770 A.D.

The original inhabitants of Turawa village were the Habe headed by Amada. The name of the village was derived from the Turakawa of the Jobawa clan of Fulani tribe from Utai, who came under their leader, Turaki, who established the villagenear River Jare during the jihad of Shehu Usman Dan Fodio in Karaye.[42] They comparised people such as Hausawa, Kanuri, Fulani, Buzaye.The population of Karaye Local Government was 144,000, as provided by the 2006 National Census figure.[43]

2.3THE POLITICAL ORGANIZATION OF KARAYE.

The political organization of Karaye from pre-colonial timeS haS been surrounded by the Bayajidda dynastythat had, by that time, spent a century ruling the seven Hausa States. On the eastern part of Karaye, it was the ruling family of Bagauda in Kano. On the southern part it was the ruling family of Zamnakogo in Rano. Similarly, it was the ruling family of Gunguma in Zaria

to the west, while Katsina on the northern part was the ruling family of Kumyau[44].Since then, Karaye has maintained this territorial boundary up to 1903 when the Nigerian area was brought under colonial masters. The leader of Karaye from the early period was first known with title 'Sa', which literally means a Bull or 'San' which depicts "a Bull belongs to…". In Songhai, "San" meant "Princess".[45]It was not until 1104 when the title was changed to Sarki under the first king of Karaye, Kure. There was an encounter between Sarkin Karaye Kure andSarkin Kano Yusa where the latter raided Karaie and camped at Badari for five months till the inhabitants submitted to him.[46] Since then, the title of Sarki has continued up to the 16th century, when he assumed another title as 'Mai' with the influence of immigrants Kanuri in Karaye. In this period, the Emir of Karaye is called Mai Karaye.[47]At the early stage of the development of *Sarauta* (kingship), division of labor had not yet taken a definite shape. The institutions as well as their functions were not sharply defined. It was the economic portentialities and the demographic compositionthat provided the necessary conditions and sufficient factors which favoured the emergence of a centralized political system.The *Habe* (Hausa) government in Karaye has a complicated structure similar to the government of Kano, which regulated the affairs of the country and the population by means of diverse and elaborate procedures.It was clear that in the pre-colonial government of Karaye, the king had absolute control on all immigrants and all movements and relocation of people within the territory on immigration, war, peace, alliance, town building and fortification. Others included the regulation of all the local right in land, the right of grazing, mining or building and the occupancy of farm land.[48]Thus, on shifting their homesteads to new farm sites, family heads had to inform the local chief and obtain his approval of their occupancies. Example could be seen from how the king of Karaye Wambai Abdullah Giwa in the 17th century received the immigrant scholars and gave them shelter.[49]

On the issue of peace and war, the senior territorial chiefs of Rano, Gaya, Dutse and Karaye were generally consulted. On such occasions, these chiefs were summoned by couriers to Kano for a full discussion of the situation under review. They also enjoyed corresponding security in their tenure in office. Lesser *hakimai* and rural chiefs were dismissible by the ruler independently,but since most of the offices were hereditary, such dimissed officials were usually succeeded by kinsmen in some cases on the king's choice or the choice of the group's senior members or after consultation with a local council of leaders.[50] However, Karaye was among the militant and well-armed kingdoms as a ribat of Kano and had protected the kingdom of Kano from attacks on the western flank for a long time. This is the reason why Karaye town was referred to as "*kurar baya*" and its ruler as the "*kyauran yammawa*" (defender of the western flank). Indeed, Karaye participated actively in all the battles fought by Kano against Damagaram, Maradi, Katsina, Ningi, Zazzau and Hadejia.[51]

The State also regulated through its courts and senior executive all the local actions that breached or threatened peace and order, assault, theft, wounding, kidnapping and violence of any kind. Individuals suspected of such offences would be taken into custody by the ruler's police or the retainers of the local chief and brought before the Muslim Court where the *Alkali* (Muslim Judge) would investigate the case. In effect then, all punishments for homicide and comparably serious offences were subject to the ruler's discretion, following the adjudication of the charge by the local Qadi (Judge).[52] This system had been practiced all over the territories under the political control of Kano. Karaye was one of the extensions of Kasar Kano to the west that applied the same method of law in pre-colonial times.

In thecontext of finance,the major sources of the traditional authority were taxes levied on land, agricultural products, manufacturing, trade and personal properties.[53]Historicaly, there

was a strong relationship between herders and farmers in Karayewhere they supported one another. They supplied people with milk and meat, which are important sources of protein. They also provided manure for the farmerswho hosted them in their farms temporarily. The farmers in return provided food for their animals. The nomadic Fulani served as an important source of revenue to the traditional authority. *Jangali* or cattle tax was fixed on their cattle, which theypaid annually[54]. The system of tax collection was uniform.Taxes on agricultural products were collected in kind and produce was then stored in especially large granaries under the care of the local chiefs and head-men, who collected it.When the chief was informed by the latter(*hakimai)* of the amount, types and locations of the grains involved as recorded by his scribe,he might then distribute a portion of this to courtiers, *mallams*(scholars), visitors or his kin. [55] However, Chiefs retained the bulk of their local tax (zakka) but transferred one-tenth of it to Kano.[56]

2.4THE LAND TENURE SYSTEM IN KARAYE

Land tenure system refers to the set of rules that determines how land is used, possessed, leveraged, sold or in other ways disposed of within societies. These rules may be establishedby the state or by custom and rights may accrue to individuals, families, communities or organizations. There are two broad ways or types of land tenure system, as suggested by GidanDalla, the traditional and the modern.[57]Before the emergence of a central authority in Kano and Karaye in particular, land, whether utilized or not, was vested in the hands of various communities for their common benefits. But with the emergence of a centralized state in Kasar Kano, the ownership of all lands passed over to Sarkin Kano.[58]In Karaye, which was an administrative unit of Kano, land was under Sarkin Karaye. In the first half of the fifteenth century, when Sarki Dauda was faced with the problem of accomodating the large number of immigrants led by Dagachi from Borno, he remembered that since he owned “everything”, he

could settle the immigrants anywhere in his domain.[59]The reign of Sarkin Karaye Wambai Abdullah Giwa (1619-1646), when he received immigrants,such as Sheikhs Ahmadu Maigari and Garba Habibullah, he allocated an area for them to live.[60]

The acknowledgement of the king's ownership of land was expressed by the payment of various taxes. It has been suggested that the wide spread practice of throwing a clutch of earth or dust over the head among peasants, especially in the period before the jihad, symbolized their recognition of the king's claims to the ownership of the land in his kingdom.[61] By the end of the first half of the nineteenth century, it became an established fact that failure to pay taxes meant the deprivation of the use of land or even explusion from *Kasar* Kano. This method of land allocation continued in Karaye up to the beginning of the twentieth century, where those who failed to pay their taxes had to secretly run away from the area. Some of these run away people were Liru from Limanci, who moved to Kaduna State and Tambaya from Mabuga quarters that moved to Niger State.[62] However, the officials were aware that the land belonged to the Sarki and whatever authority they had they were merely exercising it on his behalf .[63] This helped the traditional authority to regularize the use of land in Karay.Therefore, most subjects enjoyedsemi-permanent or absolute land tenure. The Sarki and his officials were conscious of the fact that they had to guarantee the tenure of land to all the subjects as long as they fulfilled their obligations to the state. The households exercised direct control of their respective land holdings, believing that they would own the land they were farming.[64]Through the system of land tenure all the available forest reserve in Karaye, such as DundunBature,which covers an area of 310.98 hectares, [65] Tinjim forest, Mukugara forest and Danfangi, were given to the subjects for cultivation by the traditional authority.

Presently, land tenure in Karaye involves the transfer of ownership through inheritance, purchase, borrowing and gift because most of the land for cultivation belongs to the subjects or individual farmers. In the event of the death of thefamily head, the estate left by the deceased, especially land, fragmented among his families, according to religious, traditional or customary laws. On the other hand, land could be transfered from one individual owner to another or between organisations to another through purchase. The third was through gift. The fourth was borrowing, whereby an individual owner of a land can give out his land to another person for cultivation and in return the person pays the rent fee to the owner in cash or in kind. Equally, when a farmer settled in one particular district and sees the area suitable for cultivation, that farmer informs the Sarki or the district head in anticipation of being granted permission to clear the site at no cost. Although there is no evidence to suggest stringent laws guiding the acquisition of new land,it seems that there is conflict related particularly to fertile lands, such as *fadama* (marsh-land) and land that has been cleared and subjected to cultivation for a long period of time.[66] There is also the practice of *kasa mu raba,* whereby a person works a piece of land and shares the crops from it with the owner.[67]Qur'anic *mallamas* and studdents were also provided with plots of land where they cultivated crops for their needs. These were called *tsangaya*.[68]All the traditional methods of acquiring land continued to flourish in Karaye, as people continued tooffer gifts to the district head of Karaye for thepurpose of granting them the permission to clear a site at*DundunBature* forest reserve for farming. As a consequence, from 2003-2007 the forest reserve in Karaye was encroached and endangered.

The organization of labour, on the other hand, was largely based on the labour of members of the family who use their own instruments such as hoes, looms, etc. In a number of cases, peasant families undertook to cultivate individual family farms collectively.This was

referred to as *aikin gayya*.[69]In the pre-colonial time *aikin gayya* was more practice inKaraye.In some cases, when one was sick, people collectively came in form of *aikin gayya* to cultivate his farm. In addition, when you married someone's daughter you must have come to his aid in the event of the wet season to cultivate his farm before moving to your individual farm.This was called *aikin gayya* or *taimako* (help).[70]However, this differed from'communal labour' to the state, which could be distinguished into two types. The first was rendered to the state as contribution to the community or the public in general for its maintenance of such facilities as town walls or the production of weapons for the state by blcksmiths. On the other hand, there was 'communal' or more precisely "corvee" labour bypeasants on the farms of individual aristocrats.[71] The second type of 'communal labour' was more pronounced in Karaye where at the beginning of the season peasant families cultivated the Emir's farm (*gandun sarki*) before their individual farms. In the event of this "corvee" drummers and singers were organized to raise the worker's morale. At this juncture, each farmer tried out his miracle power and effectiveness in land cultivation and the most source of labour in the time was through slave labour.[72]

2.5THE ECONOMIC ACTIVITIES OF KARAYE PEOPLE

In pre-colonial Hausaland,hunting had beenone of the important economic activitiesas far as the Neolithic period up to the last millennium BC.[73]In Karaye, there is evidence indicating hunting as the major occupation with a high socio-political organization and influence as well as a means of individual and collective socialization and training in the arts of weaponry and knowledge of games and the forest environment. This could be seen from the emergence of Sarakunan Dawa (chief hunters), a hereditary title from the pre-colonial period to the present. Some of the *sarakunan dawa* in Karaye wereNakura, Baushe and Dodo. Nakura was bestowed with a miracle

by which any time he removed his cap while at war, bees would be swarming out from his head to attack his enemies.That was called "*sarkin zuma*" (chief of bees). Dodo, on the other hand, was expert in hunting and whenever there was a local harvest festival (*kalankuwa*), he would show a miracle by sowing any type of seed and it would grow instantly and ripen.[74] Other chief hunters were Tsoho Namri, Tambo Nacuna, Tsoho Dantarko, Almun Amina, Ali Danzaki, Isan Nazoza, Kaura Fura,Kaura Mutum, Duna Na'anya and Dan Asabandodo that emerged at various times.[75] In other words, hunting is a very important reservoir of knowledge of the world of fauna and flora that has been preserved by every human society that has evolved from hunter-gatherer to herbalist.[76]

Many people engaged in this economic activity as a way of earning their living and source of income. Others engaged in it as a supplementary economic activity. The availability of large forest reserves in Karayeknown as DundunBature,which covers an area of 310.98 hectares, Tinjim forest, Mukugara forest, Danfangi forest, Dan'amarya forest and Rugu forest provided the basic means for hunting expeditions.[77]Another factor that contributed to the development of the hunting expeditions in pre-colonial Karaye was the emergence of black-smiths, who produced the required weapons for hunters, such as, knives, arrows, swords, spears and traps.Later a local gun was produced for the hunters.

Fishing is another economic activity practiced in Karaye. It involved the use of a man-made method to trap and capture aquatic resources, particularly the available fishes. Fishing as an occupation is divided into two main form, the large specialized form solely depended on byfishermen, especially at riverines as a means of their livelihood and existence. The other group depended on fishing as a secondary source of livelihood.[78]The existence of rivers and gorges, as well as barrow pits, made the environment suitable for fishing.For example, River Tinjim of old

Turawa village and the Mata-lukui River among others became accessible to the fishermen in the study area. Basket,spears andswimming were the instruments and method used by pre-colonial fishermen in Karaye.[79] This process persisted to the beginning of the post-colonial period when the two major dams[Kusalla and Challawa Gorge]were constructed and brought a substantial change on fishing activity.A new method of fishing was introduced, such as the use of canoes, seine-net and cast-net. It is evident that in 1996 the first and the only fishing festival in Karaye was held at KusallaDam[80].This justifies that, apart from agriculture, fishing is one of the mainstay economic activities of the Karayecommunity from earliest times to the present.

Blacksmithing is an old and historic profession that has utmost importance to any society, especially in the olden days. This profession is widely practiced in the town and villages. Smithers in Karaye are of two types: the white smithers (*makeran farfaru*), who are known for the production of different types of necklaces, ear-rings and bungles made from silver and bronze, while the second category black-smithers(*Makeran babbaku)* who deal with heavy iron from rods. These rods were used in producing farming equipment and weapons, such as hoes, arrows, knives and swords. The products of the black-smith made a significant contribution to Karaye warriors and agricultural activities[81]. Other local industries are pot-making and weaving. In the pot-making industries, jar-pot (*randa)* or (*tulu)*, pot (*tukunya)* and bowl (*akushi)* of clay as well as other household items using the available clay found in the north-western part of Karaye town were made in a place calledkwarin bakuwa.These industries are old and historic professions that are of high importance to any society.However, the product of these local industries started to decline with the importation of European finished goods, such as clothes, shoes, bowls, knives and swords.

From the early times, trade had existed between North Africa and the Sudan across the Sahara Desert. The trade existed around the 2nd century AD after the Roman occupation of North Africa and the subsequent Arab conquest of North Africa in the 7th century.[82] North African tribes migrated south and settled in the Sudanese cities as merchants. The commodities of the trade were salt, copper, glass beads, cloth, dried figs and dates, firearms, gold and slaves. Evidence of the tran-Saharan trade in Karaye could be seen from Malam Umar Bagwanje, a very industrious trader who travelled as far as Gwanja, now in Ghana, and who finally settled in Karaye during the reign of Sulaiman Ndoje (1804-1830).[83]He traded in woven and dyed cloth materials, farm and war equipments produced by Karaye blacksmithers in exchange of other goods like salt and ornaments. The existence of the trade is justified by Shea,whoposited that a village to the west of Kano specialized in producing cloths for export.[84]There were numerous dye-pits that emerged for centuries like the 'Yar-Zodama dye-pit in Limanci, Tsohuwar Karaye dye-pit, 'Yar-Kasuwa and Kofar-Getso dye-pits.This made trade possible between Karaye and other communities.[85]Trade is one of the significant sources of income and livelihood of the Karayehost community. The people are traders and businessmen. The traders are classified into domestic traders, who practice their business and trade within the town and the neighboring villages. Other categories of traders are inter-regional traders or long distance traders, known as *fatake*in Hausa. The *fatake* were responsible for conveying goods to the southern part of Nigeria.Some of the commodities involved in the trade included sorghum, millet, maize and cowpeas, as well as domestic animals, such as cattle, goats anddonkeys, in exchange of palm-oil, kolanuts, etc. However, the development of irrigation farming in the area led to the exportation of perishable goods, such as tomatoes, pepper, onions, pumpkin, water-melon, cucumber, potatoesetc. to the southern part of Nigeria. There is a market in Karaye town situated in its Northern part named

*Kasuwar Maciwo*before it was transferred to the southern part in an area called Torankawa. This market is multi-purpose where all market activities take place and it operates weekly,on every Wednesday.

The availability of rivers in the area of study made people practice irrigation in pre-colonial times, though the rivers in Karaye are seasonal.They reserve large amounts of water at different intervals which were used for irrigation in the dry-seson. Even the smaller rivers or streams like Kurma and Kekasa have a chain of ponds along their beds, such as Amara and Danfangi.Such areas became suitable for irrigation agriculture due to the dampness of the land along the valley of the rivers even in the dry-season. However, the *fadama* areas of Mata Lukui, Kogi and parts of Kekasa rivers were mostly being utilized for their dampness and ground water in the dry-season rather than their surface water.Infact, the strategic location of Karaye between the two major dams, ie Kusallaand ChallawaGorge, provided an added opportunity to irrigation farmers for the production of vegetables and food crops especially in the 1970s. Irrigation farmers produced crops like tomatoes, wheat, sugar-cane and vegetables.[86]

The pre-colonial variety of tomato is *rukuta* (lycopersicone sculentum).It is big and light of skin that could not endure a long journey or period of time. The seed was introduced into Europe from Mexico in 1523 AD by the Spanish after they conquered Mexico. From Europe, the crop was introduced into Africa and probably reached Karaye after this period[87].Wheat production in Nigeria dated to many centuries when seedlings were introduced by the Arabs in the part of Sudan and Sahelian zones of the country. What makes wheat production suitable in Karaye were the same conditions that made it favorable in the northern part of Nigeria becauseit shared the same geographical location. The wheat crop planted in November and December while harvested in February and March. During this period, the northern part of the country

records the lowest temperature of between 21°c and 23°c while humidity ranges from 0-10 percent. These conditions make the production of wheat suitable in Karaye.Generally, wheat has to be grown under irrigation and well drained alluvial soil is considered to be the best for wheat cultivation for easily obtaining higher yield and prosperity for farmers.The pre-colonial wheat varieties arePavon 76 and Florence aurore 8193.Its season lasted for 130 days from planting date to the harvest.[88]

Other factors that made irrigation possible in pre-colonial Karaye are the presence of *fadama*or flood plains that conserve moisture throughout the year that is favourable for the cultivation of sugarcane, wheat and other vegetables. The production of crops in the pre-colonial period had been labor intensive that it involved the use of shadoof.This prevented production in large quantity. *Shadoof*consists of a long tapering nearly horizontal pole mounted like a scissors. A skin or bucket is hung on a rope from the long end and a counterweight is hung on the short end. The operator pulls down on a rope attached to the long end to fill the bucket and allows the counterweight to raise the bucket and the content is channeled to reach the desired crops[89]. Farm holdings were collectively owned and managed by households in system of communal labor, popularly known as *gandu,* and the system was generally adopted by wet and dry season farmers in Karaye. At the same time, eachirrigation farmer who occupied a piece of Fadama land has the freedom to sell it or the right to give it on a pledge (jingina) to another person in exchange for money or loan. However, the village or ward head was only needed to certify for the transaction and to collect fees for the exchange.The farming implements used by the farmers were the locally produced tools, such as hoe, cutlasses, local hand ridges (*garmarhannu)* and axes*(gatari*). The seed germination for trans-planting is by the individual farmer. Basins (*kwami)* were constructed under the shadow to spread the seed and press it into the soil not more than a half

centimeter deep andlightly covered with corn-stalk or grasses to avoid leaching up to three weeks.The farmers used 0.5 – 1 acre per individual farmer or a household.[90]

The soil types also facilitated irrigation farming in Karaye, such as Dabaro.This soil was heavy and also difficult to work[91] but was good for irrigation farming due to its retention of moisture for a long time. Thesoiltype is mostly found around Daura Sako. Another type of soil,Laka (alluvial silt-loamy), was found in low-lands and depressions subjected to floods orwater lodges during the rainy season. It is black to greyish in colour due to its accumulation of silt brought by the rivers in the rainy season. In fadama areas, especially Turawa and Amara, this type of soil predominates the surface layers.[92]However, the major type of soil used by irrigation farmers in Karaye was the *jigawa*. The soil is light sandy, relatively fertile and easy to work and also extremely sensitive to manure.[93] Moreover, the predormination of the *jigawa* and loamy soil types provided farmers with the opportunity to use simple tools for tillage.

2.6CONCLUSION

The chapter discusses much of the history of Karaye about the land, the people and their economic activities. The vast territory west of Kano could be assumed to be the land of Karaye from Wateri Stream to the western borders.Karaye came into contact with Kano in 1104 and the founder of Karaye, as it is today, was during the reign of Wambai Abdullah Giwa in 1620. The period of his reign witnessed the coming of migrant scholars, such as Sheikh Garba Habibullah Mai Hadda and Ahmad Maigari Al-Maghili. The chapter also related the early inhabitants of the area to Afro-Asiatic language group.They practiced various economic activities like hunting, fishing, dyeing, blacksmithing, weaving and pot making. Agriculture is an age old economic activity and the people have practiced irrigation from time immemorial. The land tenure system

was directly related to the territorial overloadship of the aristocracy. Although these aristocrats did not have ultimate individual ownership over the land, we have seen that they had control over official estates and regulated the use of land through various other public offices in general.

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CHAPTER THREE

THECOLONIAL POLICY ONAGRICULTURE AND IRRIGATION FARMING IN KARAYE

3.0 INTRODUCTION

The British conquest of Kano in 1903[1] coincided with the reign of Sarkin Karaye Usman (1903-1922). Karaye is one of the four Ribats of Kano that covered vast territorial control in the pre-colonial period. However, from 1904-1906 the British Resident of Kano Province, Dr. Cargill, created a district out of the territorial sovereignty of Karaye, which included Karaye District, Yalwan Danziyal District, Tofa District, then Kiru and Madobi hitherto under Karaye were placed under Kura District.[2]One of the major goals ofthe British occupation of Northern Nigeria was to exploit the economy of the region as well as to actualize colonial self- finance.To actualize the objective of colonialism, the British colonialists introducedpolicies on land and taxation.The establishment of colonial administration brought about substantial changes in the local administration, technology and economy. As an agrarian society, the traditional peasant economy was gradually altered by colonial legislation and the enforcement of monetization. The British currency was imposed on the peasants and wasthe only legitimate means for market exchange. Moreover, taxation laws were enacted commodity prices and markets were regulated by the colonial administration.[3]

3.1 THE LAND TENURESYSTEMINCOLONIAL PERIOD

The first policy introduced by the colonial government, which had a great impact on agricultural production, in Karaye was the change in theLand tenure system. After the conquest of Northern Nigeria and to ensure loyalty and compliance, the British introducedseveral measures to regulate the land ownership system. The Land and Native Right Ordinance of 1906 prevented an enclave of foreign investors and the ownership of land was only to the inhabitants of the protectorates. Foreign firms invested instead in trading activities.[4]A land committee was appointed in 1908 under the High Commissioner for the amendment of the 1906 land law. The 1908 proclamation was a landmark in the history of the land tenure system in Northern Nigeria and Karaye in particular. This amendment had given power to the High Commissioner that was not even given to pre-colonial rulers, because it transferred all the power concerning land control to the High Commissioner in 1910. It was apparent that with the arrival of British all the land came under their control.[5]

However, in practical terms land remained under the management ofEmirs and their agents, but with colonial administrators in ultimate control.[6] The British administrators realized that radical change in land tenure would undermine the authority of traditional rulers and bring about the emergence of non-indigenous wealthy landowners, which would not easily cooperate with local authorities.[7] The colonial policy of preserving land for Nigerian farmers played a dominant role in the organization of agricultural production to date. One of the major results of land legislation on land tenure was that it prevented the emergence of new a landholding capitalist class, which was not under the control of traditional rulers. The colonial policy on land tenure had four distinct characteristics. The first of these characteristics was the outright expropriation of land by the colonial state. The second was the transfer of land to companies on the basis of certficates of occupancy or prospecting and mining licenses, that is, the direct

appropriation of land by the colonial government and the establishment of certain largely financial conditions for the rights to land ownership usage. The third factor was the combined effects of taxation and the destruction of cottage industries,leading to the increasing improverishment (sales of land inclusive) of productive sectors. Lastly, these factors laid the foundations of a situation in which there was no legal recognition of land usage, which was not based on the colonial certificate of occupancy.[8]However, the last category of land tenure listed aboved was predominant in Karaye under the colonial period.This act preserved the pre-colonial social and economic structure, which was central to Lugard's concept of Native Administration.[9]

After land tenure was labour. Labour refers to the all-productive resources as obtained through the mental and physical efforts of human beings.[10] Though the colonial enterprise sought to justify its imperial mission by the need to abolish slavery, as in the case of pre-colonial periods where people largely depended on slave labour,thus in a report to the Secretary of the State, Lady Lugard, as quoted in Bello's,said that:

> ….He had lectured the aristocracy, the major slave holders,that they would buy and see the advantage of paid labour, which (the British) considered more profitable and better than slave labour, and thus by pressure of circumstances the slave owners will cease to exist.[11]

In the new order of things, owners recognized that it was not merely unnecessary, but an expensive and troublesome form of labour contract. This contributed to the dissolution of slave labour and the further emergence of "free" labourers, who, though not individually owned, only possessed as individuals their labour power and were collectively under those controlling property in land and money, etc, in the colony.[12] Village heads were responsible for the marshelling and organization of the force labour. They undertook to supply a given number of men for a given period.[13]Though noavailable record exists on the amount of force labour sent to

the colonial government from Karaye, the labour organization in the study area was the same method, as suggested by Bello. The members of the labour force were responsible for supplying the necessary tools for the work in question and also, in most cases,for their own sustenance while on the job. In a number of cases, freed slaves and other destitudes were also organized in the form of forced labour camps that were sometimes referred to, in the colonial literature, as "liberation villages".[14] During the colonial period, the production of groundnuts and cotton was all over the district where there is a concentration of loamy soil (*jigawa*), such as Kwanyawa, Tudun Kaya, Jangero,Bauni, Ma, 'Yammedi, Dederi, Zoza and Damagari. The Colonial Government in most cases did not have to wait on what or what to cultivate but compelled them on the specific products they wanted as a consequence of which they became trapped by the compulsory cash taxation of the agricultural products, which they had to sell to the British firms for them to get the currency needed.[15]For example, cotton marketing regulations made it illegal to sell cotton outside the marked cotton stations, even though the prices outside these stations, such as the Karaye, Gwarzo, Birnin Kudu and Dawakin Kudu districts, were higher.[16]

Previously, much of the native varieties grown were *gandi* or *bagwandara* planted fresh every year and*chukwi* or *labai* similar to the above mentioned, '*yar-gari* or '*yar-larifi* grown three to four years.[17] Over time, especially due to the impact of the first World War, the indigenous cotton seeds were prohibited from being planted in cotton growing areas in place of the American long-staple cotton seed, which began to be shown in 1919 in areas as Turakin Manya and Sarkin Karaye districts in Kano the division.[18]The average farmerat that time cultivated about one hectare to produce the groundnut or cotton to raise the sum needed for tax payment.The production of wheatalong with other food crops, such as millet and guinea-corn,drasticallyreduced.Irrigation farmers were also compelled to engage in preparing vast areas

of land in the dry season for the production of groundnuts than the staple crops. As a result, unoccupied lands at Dundun Bature, Danfangi and Dan' amarya began to be cleared for the production of cash crops[19].

There was a claim that the groundnut seed was introduced into the Nigerian area, especially the northern part, by Portuguese explorers in the 16th century[20],though this claim had a short coming of how the seeds were carried from the coast by local traders into the interior part of Nigeria, particularly Karaye, where the seed had been cultivated since the pre-colonial period. There was another evidence to justify that groundnut was in use long before the16th century, as traditional Hausa women especially in Kano's Emir palace and those of district head centers, had learnt from Arab settlers certain delicious north African dishes and confectionaries for the ruling class and wealthy merchants, Such as *gurasa* and *alkaki* some of which were fried, cooked or dressed up with traditional groundnut-oil.[21] However, the British conquest of Kano in 1903 brought substantial changes in the local administration, technology and economy. This particular situation brought the production of groundnut for export. The Wiger Company began to purchase hundreds of tones. The momentum was heightened by the completion of the railway that connected Kano and Baro in 1912.[22]

The British greatly needed groundnuts because there was increased demand of vegetable oil, which was used for margarine, cooking oil and soap. The need for soap grew as a result of black burning smoke and waste by-products brought in by industrial cities and made soap a necessity rather than luxury[23] In this regard, Lugard stated:

> The tropic produces in abundance a class of raw-materials and food stuffs which cannot be grown in temperate zone and are so vital to the need of civilized men…[24]

This was an indication that Nigeria was blessed with all the necessary raw materials needed by the British industries.Multifarious policies were introduced and Lugard also mentioned the aim of these policies when he stated that the objective of British policy (in Nigeria) was to promote the interest of the Englishmen by every legitimate means.[25]The rise in the margarine industry in Europe, which stimulated demand for vegetables oils, raised prices substantially during the years 1911-1913.That brought a decline in cotton production as well as a rise in groundnuts production.[26]Between 1906 and 1914, however, with the rise in margarine consumption which was rampant in Germany, the need to source for further prospective areas other than Senegal and Gambia for groundnut production emerged. Northern Nigeria was then identified as one such region with Kano becoming very much involved in its cultivation due to its favourable climatic and soil conditions.[27] By 1927, the agricultural station in Kano was itself carrying out expirements on the use of artificial fertilizer on groundnut and the use of bullocks in ploughing as the best method for the production of cheap groundnut against local ploughs and cultivators.[28] In 1951, a new variety of groundnut called 'K50' was introduced into the Kano region. It was claimed that use of this variety with fertilizer raised yields by 38 percent.[29]The traditional method of shelling with mortar, very destructive of the seed, was gradually replaced with small mechanical decorticators, which were widely adopted by farmers.[30]However, in Karaye the mechanical decorticator was given to merchants who were colonial agents of groundnut rather than to farmers,such asAlhaji Danyaro Torankawa, Alhaji Muhammad Daura, the late village head of Daura town, Malam Dankuku Limanci and Alhaji Mudi 'Yarkasuwa Karaye.[31]The introduction of the bullock plough and decorticating machine limited the number of the labour required to a certain extent.This resulted to low wages to labourers.

3.2 IRRIGATION FARMING IN KARAYE IN COLONIAL TIMES

The production of these crops mentioned above (cotton and groundnuts) so much dominated the minds of our farmers and accentuated this seasonal cultivation of cash crops, which demanded less water, thereby neglecting the alternative method of cultivating other crops (perishables, in particular) after the rainy season. Encouragement by the Colonial Government to farmers to embark on irrigational cultivation can, therefore, be said to be silent for a long period.[32]Farmers still interested in irrigational agriculture were left with the old method or irrigating crops in the river valleys, using their handscoops for watering vegetables in small areas or the shadoof method.The irrigation farming in the area decreased. The colonial government had introduced a program calledthe agricultural show, which was an event practiced since 1903[33] for the purpose of encouraging farmers to produce cash crops. The show featuredall agricultural crops, including irrigated crops and domestic animals,though it was purposely organized to encourage cash crops producers. The government gave loans to groundnut producers through traditional rulers to merchants then to farmers. Some of the merchants who benefited from the loans in Karaye included Alhaji Danyaro Torankawa, Alhaji Aminu Gobirawa, Alhaji Muhammad Daura, the late village head of the Daura ward, Malam Dankuku Limanci and Alhaji Mudi 'Yarkasuwa Karaye.[34]The colonial government introduced the use of chemical fertilizer and ox-plough to the farmersinstead of local or farm- yard manure, handtillage.[35] The government did not give loans to the irrigation farmers who were cultivating staple food crops like wheat, vegetable and guarden fruit, as it was to cash crop producers. The shift from food crops to cash crop production was among many reasons that led to the famine in the period under study. It should be emphasized here that the chain of famine that occurred in the first half of the 20th century (1930) was not solely due to lack of enough rainfall. The changes introduced by the colonial agricultural policy seemed to have contributed even more than the problems of droughts. This resulted in

replacing granaries of surplus agricultural produce with cash crops that would make little help in the periods of the general shortage of food crops.[36]Consequent to the drought of 1930, the attention of farmers in Kano and Karaye in particular was gradually turned to irrigation to provide food required by the populace. In1944, an irrigation engineer from the colonial service was sent to look at the irrigation potentials of Northern Nigeria, including Kano. As a result, irrigation was declared apriority in Kano and Karaye in particular.[37]The declaration of official interest only led to the limited improvements of the indigenous irrigation system that was the use of shadoof and *fadama* farms. Many *Fadama* areas which were left fallow for uplandcultivation area, such as Kunki, Amara, Kekasa,Sankurmi andFarfaru were turned to intensive cultivation by irrigation farmers.[38]

In the post-war period, a new emphasis was placed on gardens crops, such as tomatoes, carrots, and fruit cultivation (mangos and guava)were also encouraged. These fruits and vegetables have since become important aspects of the agrarian economy of the Kano region in which Karaye was included, particularly in the dry season. A new type of sugar-cane, the *kantoma* variety, was also introduced in this period in response to the red rot infestation of the local variety[39]. The new variety was integral to agrarian production in Kano and Karaye eventhough,wheat cultivation which had been use for many centuries the source of food was not encouraged.

3.3 CONCLUSION

The colonialist came and restructured the administrative system of Karaye when Dr. Cargill visited the area in 1904. Karaye, a western Ribat of Kano, was affected by theofficial visit of Dr. Cargill.The territory was divided to form a district and minimize theburden of colonial administration. To this end, Karaye was cut into three districts, such as Karaye, Yalwan danziyaland Tofa district.This brought to the end of the Ribat system. The production of cash crops,such as cotton and groundnuts,was more pronounced and encouraged by theColonial Government at the expense of food crops production in the area. The Colnial Government from inception did not bring any substantial changes in the method of irrigation as opposed to the pre-colonial method; rather it continued as in the pace of the pre-colonial method of the shadoof means and handscoop method of irrigation. European currency was introduced in this period as only means of tax payment to the Colonial Government.As a result, the colonial Government compelled cash crop production through propaganda in the media as well as giving loans to farmers through their agents.This led to the gradual decrease in irrigation farming. These reasons combined with the drought of 1930 contributed to the famine not only in Karaye but in the state generally. However, in post-war years the Colonial Government introduced a new seed of sugar-cane, known as *kantoma.*This can only be regarded as a new development brought by the colonial Government directly to the development of irrigation farming. The general development of irrigation in the area was started in 1970 under the administration of Audu Bako when the constrcuction of Kusalla Dam began. The dam construction brought substantial changes and the development of irrigation farming in Karaye as highlighted in the next chapter.

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CHAPTER FOUR

THE DEVELOPMENT OF IRRIGATION FARMING IN KARAYE,1973- 2014.

4.0 INTRODUCTION

This chapter documents and puts in perspective the importance ofsocio-economic changes due to the expansion and development of irrigation farming in Karaye.The role of government and non-governmental organizations towardsthe expansion of irrigation farming in Karaye is examined in the chapter.Irrigationdevelopment in the Kano region from the late 1960s, is associated with the zest of Audu Bako. Between 1969 and 1978, 14 dams were built in Kano State.In Karaye, Kusalla Dam was under construction from 1970 and completed in1973 under the administration of Audu Bako by the Water Resource Engineering and Construction Agency (WRECA) at the cost of £250,000:00. The construction further encouraged the activities of KNARDA and KASCO in the area that significantly contributed to the boosting of irrigation farming through the *Fadama* I programme.From 1982 and in 1992, another dam (Challawa Gorge) was constructed and led to the development of *Fadama*III that further rebumped irrigation farming in the study area.Farming gradually began to be regarded as a professional rather than a poor man's job or the last resort for a career. Most farmers were unaware of the benefit and viewed the introduction of such a large irrigation scheme as a radical change geared towards changing their farming practices, land tenure and even resettlement. However, the people around Dambazau, Tumfafi, Kurugu and Unguwar Dagaci that surrounded Kusalla Dam since the pre-colonial period had viewed this project as retrogression because it resettled them and occupied most of their agricultural land as well as Daura, Turawa and Daura sako, who where resettled as a result of Challawa Gorge Dam.

4.1 THE DEVELOPMENT OF IRRIGATION FARMING IN KARAYE

There was a drought in the early 1970s, which led to the creation of the Eleven River Basin Development Authority (RBDAs) in Nigeria charged with the development and management of the irrigation scheme.[1]In Karaye,large scaleirrigationfarming commencedin 1973 when the Kano

State government constructed Kusalla Dam. Therefore, from 1973 to 1979, irrigation farmer landholding rose to 1.5 – 2 acres against 0.5 – 1 acre in the pre-colonial period.[2] The name Kusalla was derived from the activities of the immigrant Sheikh AhmaduMaigari bin Muhammad Almaghili, who kept calling people to prayers(in Hausa *kuyisallah).* That earned him anickname as*Sharukusalla*or *Sidikusalla*.The area where the dam was constructed was named after him but refered to as Kusalla.[3]According to Aisha, Kusalla Dam was proposed to facilitate daily water supply to the areas of Karaye, Gwarzo, Kiru and Shanono. The successful completion of the Bagauda and Kadawa experimental irrigation scheme made Kano State embark on a large and more ambitious scheme[4]. With regard to this, Kusalla Dam was predominantly to conserve rain water in the rainy season and use it for irrigation andas a source of drinking water to those areas in the dry season.

In 1989, Karaye local government was created from Gwarzo local government. After the creation of the local governmetanother development took effect from1992,when theChallawa Gorge Damwas constructedby theFederal Government of Nigeria with the objective of generating electricity to the state and to supplement irrigation farming.[5]The principal uses of the dam were to supplement water from Tiga Dam for the irrigation of about 25,000 hectares of the Hadejia Valley project, 40,000 hectares of the Kano river project phase II and other farms downstream for the production of rice, wheat, sugarcane, vegetables and other crops. For the maximum utilization of the supplementary dam, it was recommended that Kano river irrigation project phase II and HadejiaValley irrigation project II should be considered for immediate construction.[6]From 1993, Challawa Gorge Dam provided the available source of water for irrigation farmers around Turawa, Daura, Tinkis, Ma and Yola and thus brought a substantial farming increase wherethe average farmer cultivated 7.5-10 acres.[7]

4.2THE METHODS OF IRRIGATION IN KARAYE 1973-2014.

Majundar had suggested different methods of irrigation that have been used all over the world on irrigation that included: surface irrigation, sub surface or sub irrigation, furrow irrigation and sprinkler or over head irrigation, etc.[8]However, in Karaye only three methods suggested by Majundar were applicable by irrigation farmers, such assurface irrigation, sub-surface or sub-irrigation and furrow irrigation.These are the modern means of irrigating crops in this area, as they involved the use of steam power to pump the water from its source to reach the land where the desired crops are grown. All these methods are applicable to any other crops with exception of furrows which was only suitable for maize, potato andgroundnut cultivation. The farming implements for the modern irrigation scheme of 1973-2014 in Karaye are similar to that of traditional or pre-colonial tools used there. For example, in thepre-colonial period farmers used hoe, rake, cutlass, local ridger (*garma)*and axe while these implements are still in use by irrigation farmers in Karaye. However, there was a slight modification such as the introduction of a multipurpose machine (tractor), spraying machine and thrashing machine. Others included the intensive use of chemical, discriminative and non-desccriminative herbicides.

Furrow Irrigation: in Karaye, the land which is suitable for this method is wait land. From August to June every year, Challawa GorgeDam subsides as a result of opening the valve and thus results in the release of cultivation land, which is called wait land.[9]When the land is released for two –three weeks, farmers follow to bull-plough the area for the cultivation of potatoes, maize and groundnuts. Aconstructing row will be done between every two rows of crops to let the water wet the land surface and moves laterally to un-wetted areas below the ridges.Water pump machines are used forwater supply to the field while the farmer keeps opening and blocking the rows to enablethe water to wet the whole field.[10]

Surface Irrigation:refers to irrigating lands by allowing water to flow over the soil surface from a supply channel at the upper reaches of the field. Farmers use constructed basins, which are arranged in rows. There are four rows of 25 basins each called *wuriya* per 2.5 acres and space is left between each *wuriya*to allow the water to pass between. In each *wuriya*, links were made between basins to fill with water. The water reaches the field from the supply channels, using constructed open ditches. This method requires intensive labour to adequetly wet the farmland. The method is prompted to erosion and evaporation problems, though its operation is cheap compared to sub-surface irrigation.[11]

Sub Surface Irrigation: thismethod involves irrigating crops by applying water from beneath the soil surface either by constructing trenches or installing underground pipe lines. The same method is applied with that of surface irrigation. However, what distinguishes the two is that, sub-surface does not require open ditches in supplying water to the field. The underground pipes are used but haveproved expensive to farmers. According to Garba Magaji, the cost of the materials used for sub-surface is varied, depending upon the distance from the water source to the farmland. He further states that in his farm alone, over 100 pipes were used and each pipe cost two hundred and fifty naira.[12]The adoption of these three methods in Karaye made possible to understand the level of their development of technology in using modern farming techniques.

4.3THE ROLE OF GOVERNMENT IN THE DEVELOPMENT OF IRRIGATION FARMING.

However, the Kano State government in its bid to provide food security and employment opportunity in the state had created programmes through irrigational agriculture to attain the desired goals. To this end, theKano Agricultural Supply Company (KASCO) was created in

1981and the Kano Agricultural and Rural Development Authority (KNARDA) in 1982[13] under theMinistry of Agriculture and MineralResources. The above mentioned authorities are discharging commercial activities of agricultural inputs, as well as providing extension services to the farmers in Karaye through the Fadama program.

The *Fadama*programmewas a World Bank assisted project[15] funded by the Federal Government, State and Local Governments andfarmers. Funds for the establishment of sub-projects were granted after all the necessary prerequisites were met. The farmers contributed 30% as down payment and then 70% of the total cost of the project was granted to the community, such as agricultural inputs.Inthe case of small scale community owned infrastructure, 90% of the total cost of the infrastructural facility was granted to the community/farmers and the rest of the 10% of the total project provided by the community either in kind or in cash to the government.[14] From 1982-2013, there were two Fadama programmes initiated in Kano and Karaye in particular in forms of Fadama I and III.

Fadama I: 1982-1990

The main objective of theFadama I programme is to assist farmers in the provision of a complete irrigation package comprising of 7,000 water pumps, either wash bores/tube-well and delivery hoses that were used to irrigate 7,000 hectares that brought tofarm land expansion and simplified the farmers' shadoof, which was tedious and of low economic returns[15]. In the course of the program,out of the 7,000 agricultural inputs in the state, Karaye got 28 boreholes, wash-bores and tube-wells as well as more than 250 water pumps and hoses. Some of the beneficiaries like Ubale Mai Alkama explained that, in 1987, he received a water pump with two hoses that helped to increase production from 2 acres to 1.5 hectares. Between1987 and 1988, Abdullahi Ibrahim also received the same kind of inputs and increased his farming capacity from 1.5 acres to 1

hectare.Many bore-holes were constructed at Unguwar Dagaci and Daura Sako. Other beneficiaries were Yaro Wakili Turawa and Abdullahi Ibrahim (KASCO) to mention just a few.They benefited from Fadama I in Karaye in terms of agricultural inputs. The overall performance of the National *Fadama* Development Programme I(NFDP) was sartisfactory in terms of meeting the stated target objectives, though implementation was extended to six and half years from a target of four years due to problems of the unsatisfactory delivery of wells construction and pumps. Generally, participatory farmers and communities benefited much from the project, particularly inKanoState, where technology adoption increased by 6% for garlic, 62% for tomatoes, pepper 29% and wheat36%.[16]

Fadama III: 2008 - 2013

Fadama III was a five year development plan from 2008-2013 with main development objectives, such as sustainable increase in fadama user income. This was meant to assist in reducing rural poverty, increase in food security and contribute to the achievement of the Millennium Development Goals (MDGs). The second objective of the project was conflict reduction on scarce agricultural land, whichwas effected through the Agricultural Development Plans (ADP) when the strategy to be adopted is within the possible list of activities admissible in the project[17].The Fadama III project was developed based on lessons from Fadaam I.Under Fadama III, 533 Fadama Users Groups (FUG's) were trained in New Agricultural Technology and Processing Techniques (NATPT) the by Ministry of Agriculture through KNARDA.[18]In Karaye, 30 FUG's had benefited with agricultural input supply through the project, such as

assorted fertilizers, assorted seeds and agro-chemicals from 2008-2011.[19] The Fadama Users Groups (FUG) was made on zones (*shiyya*) and each zone comprised 10 groups with 25 persons each. Zone (A) was named the Daura/Turawa zone (*shiyyar Daura da Turawa*), which were initiated in 2008/2009 as a pilot to the project. The groups that involved here are Daura-cikin-gari, Daura Sako, Salihawa, Unguwar Mani, Janbawa, Madobawa, Turawa-cikin-gari, Zare, Karaye and Namaje. In 2009/2010, zone (B) was created named Yola/MaZone (*shiyyar Yola da Ma*)with the following groups Yola-cikin gari, Yola Tsohuwa, Ma, Jama'ar Manzo, Romon Kunne, Danzau, Limanci, Tinkis, Bauni and Tudun Kaya. However, Zone (C) was formed in 2010/2011 and it was the last zone created under the Fadama III project, which was named Dambazau /Kusalla Zone with 10 distinct groups of Fadama Users, such as Dambazau, Kusalla, Unguwar Dagaci, Kafi, Kurugu, Amara, Dederi, 'Yammedi, Tumfafi and Kauyen Ture.

However,from 2012-2013, a new system of distributing agricultural input through the phone known as General Express Service [GES] was introduced.The system entailsthe registration of farmers through the FUG where phone numbers, addressesand farming were capacityrecorded. At the distribution of farm inpust, alert were sent through farmers' phones notifying them about the collection center of the materials, the quantity and the price,though the system had not yielded positive results since the input had not reached them appropriately. In addition to this, the price is high compared to 2008 and early 2011. This problem happened due to corrupt leaders and other officials who were responsible for complementing the program.The Fadama program was carried through KASCO and KNARDA to the irrigation farmers in Karaye.. In an interview with Ali Malami Karaye, he disclosed that at the inception of the program farmers refused to register because many felt the promises by the government were hardly fulfilled, and thus farmers showed lesser interest.In addition, farmers complained that the

input provided through the programme was sub-standard and was of low yield and lesser economic gain.

The Kano Agricultural Supply Company (KASCO).

The company was established and incorporated as a limited liability company in October 1981 and started operation in 1982. Its primary objective was ensuring the provision of appropriate agricultural inputs in sufficient quantity and quality yield to the farmers in the State through its retail outlets all over the State.[20]In Karaye,the retail out-let was located at the eastern part of Kofar Kudu (southern gate) or Torankawa gate and at Yola/Sabon Layin Yola 12km, west of Karaye town.From 1982-1990 under theFadama Iprogram, the companysentagricultural inputs to the farmers in Karayethrough the National Fadama DevelopmentProgramme (NFDP) at a subsidized price payable within one year or one and half 1 ½ years, depending on the monetary value of the inputs[21]. Such agricultural inputs included water pumps, ploughs, sprayers, thrashers, insecticides, herbicides and cereal seeds, such as wheat, rice, maize and vegetable seeds like carrots, cucumber, tomatoes and onions. Thesupply of the agricultural inputs was done through the Fadama Users Association (FUA). Ten(10) groups that comprised 25 memberseach benefited from the programme, as the following Table illustrates:

Table 4:1:ShowingDistribution of Agricultural inputs to Fadama Users Association in Karaye 1983-1990.

S/N 0.	GROUP NAME	GROUP MEMBER	YEAR FORMED	INPUT PROVIDE
1.	Kusalla People FUA	25 Person	1983	Water Pump,Ferlizer, seeds and Chemicals.
2.	Limanci FUA	25 Person	1983	Fertilizer, Seeds and Chemicals.
3.	Turawa Youth FUA	25 Person	1983	Fertilizer, Seeds,Chemicals and water pump.

4.	Kafin DafgaFUA	25 Person	1984	Fertilizer, Seeds and Chemicals.
5.	Daura Sako FUA	25 Person	1985	Fertilizer, Seeds and Chemicals.
6.	Yola Tsohuwa FUA	25 Person	1985	Fertilizer, Seeds and Chemicals.
7.	Tinkis FUA	25 Person	1987	Fertilizer, Seeds and Chemicals.
8.	Daura Cikingari FUA	25 Person	1988	Water pump, fertilizer, seed and chemicals.
9.	Amara Young Farmers FUA	25 Person	1989	Water pump, fertilizer, seed and chemicals.
10.	Ma/Jama'ar Manzo FUA	25 Person	1989/1990	Fertilizer, seed and chemicals.

Source: Kano Agricultural Supply Company (KASCO) office, Sabon Layin Yola outlet, Karaye Local Government, Kano State.

The effort put forward by the Kano State government through the*Fadama*I programme led to the formation ofthe Fadama Users Association (FUA) from 1983, asis indicated in the aboveTable. The first three FUA, such as Limanci FUA, Turawa FUA and Kusalla FUA, were formed as a pilot to the *Fadama*I objectives and the areas that formed the group were marsh-land concentrated areas suitable for dry-season cultivation. In 1984, Kafin Dafga FUA was formed due to the fact that the first three groups had done better and the government objectives of the*fadama* programme had been shown to be attainable.Government inputs were supported fadama farmers throughgoups or associations rather than individuals. However, in 1985, two additional associations formed, that is, Daura Sako and Yola Tsohuwa FUA. In addition, the two associations of 1985 were formed in the area with more marsh-land than all other parts.In 1987, Tinkis FUA followed the example of others and Daura Cikin gari in 1988 and Amara Young Farmers in 1989.The associations had awarded agricultural inputs, such as fertilizer, seeds andchemicals. On the other hand, Amara Young Farmers and Kuslla People FUA were given water pumps as a result of the Kusalla Dam location in the areasupply adequate water to

irrigation farmers.Dry season farmers in Karaye responded that they accessed the facilities provided during the famada I programme.

The Kano Agricultural and Rural Development Authority KNARDAwas established in 1982 with the primary aim of revamping agriculture to boost food and cash crops production along with infrastructural and rural development. It is also responsible for Agricultural Extension Delivery (AED) in theState.KNARDA coordinated programmes between the Federal Government of Nigeria, the International Bank for Reconstruction and Development (World Bank) andthe Kano State government. The objective is to provide the State with a more coordinated approach to its rural development effort[22].A five year plan (1983-1987) was drawn to achieve the set objectives. In 1984, the FGN and the world Bank grantedthe extension of the project period three times on an annual basis to 31st December 1990, which includedthe construction of rural feeder roads, drilling boreholes and the rehabilitation of wells, the improvement of the State training capability and the provision of a management structure supported by the adequate technical and administrative staff.[23]In Karaye, KNARDA was established in 1982 and had its office at the KarayeoldLocal Government Secretariat. Farmers were taught the use of better seed agronomy and new farming technologies instead of using old methods and the localseeds variety of that had low quality and quantity yield.

In 1980, 50 hectares of land was fenced by Kano State government in an effort to improve food security through irrigation farming. The acres were allocated to farmers on request and in 1981-1984 the farmers' ability to effectively cultivate the allocated lands was determined if they could be given more acres.[24]The charges per acre from 1980-1984 were free. However, from 1985-2014 farmers were charged at different costs on the allocated irrigation farms at Lambun Waya (wire garden) per acre, as is shown in the table below:

Table 4:2;Showing the Cost of Allocated Irrigation Farms in Karaye, 1985-2014.

S/N0.	YEAR	COST PER ACRE
1.	1985-1990	N 300.
2.	1991-2000	N 500.
3.	2001-2005	N 1000.
4.	2006-2008	N 1500.
5.	2014	N 3000.

Source:Oral interview with Bala Malami Karaye (irrigation engineer) at Lambun Waya Kusalla Dam, Karaye, on 05/07/2014.

The above table indicates the changes on the charges for allocated irrigation farms from 1985-2014. The changes were as a result of the increasing demand of irrigation farmsfrom 1985-1990 marked that farms were given to farmers at low price due to their inadequacy to takeover the whole land at all cost.From 1991–2000, the charges rose to N500 due to the change in the demand of land use. However, from 2001-2005, the charges rose to N1000 and N1500 in 2008,as a result of farmer competition over the fertile land of the area.Equally, in 2008 marked the period

when dry season groundnut cultivation was introduced to the area.On the other hand,2014,was the prosperous year when farmers witnessed increase in yield in all the irrigated crops, especially the available groundnuts and potatoes that led to the increase in the charges to N3000 and N500 for water usage.

The use of chemicals, fertilizer, pesticides and herbicides was introduced by theKano State government in the field of irrigation farming. Later in the first decade of the 21st century (2003and2004), further development was witnessed with the introduction of improved seed varieties of vegetables, such as "U.C and Roma". The production of wheat formed the main motive for securing *Lambun waya* (wire garden)but was gradually abandoned due to its difficult and intensive labour requirement. Between 2003and 2004, Kano State through KNARDA under theMinistry of Agricultureintroduced new seed varieties of vegetables, such as Tropical, Danni and Rio to the area of study which replaced the Roma,[25]as a result of the lowdemand in the market.The production of the Roma variety decreased as well and the yield compare with the new varieties.

A feeder road of about 2.5 km lengthwas constructed from Tumfafi village to Kofar gabas(eastern gate) also called kofar Zango in Karaye town to facilitate the movement of farmers and their goods to and from Kusalla dam as well as to facilitate the easy movement of goods from the farms to the market centers. The construction of the feeder road had a limitation of fund to be spent on, which amounted to N1.5 Million.On the other hand,for theconstruction of the feeder road farmers must pay 10% of the money for project executionwhile government and other interested agencies, such as non-governmental organizations and the World Bank, paid the remaining amount.[26]In Unguwar Dagaci,16 boreholes were constructed and 12 at Daura under the Fadama I programme[27].

As a booster in attaining self-sufficiency in agricultural production in the State, KNARDA provided extension services. Thus, from 1982-2014, the number of extension agents increased from 200 (at project inception)to 1249.In Karaye, the number ofextension staffrosefrom 30 in 2010 to 35 in 2014. The agricultural extension services operated under the pattern of the Training and Visit Extension System (T & V) [28].Furthermore, KNARDA gave extension services to the irrigation farmers in Karaye through Management Training Plot (MTP) or Demonstration Farm. The extension system was supported by an effective "On Farm Adaptive Research and Seeds Multiplication Programmes". The on-farm adaptive research provided ways for trying out known or newly introduced technology at farm level and farmers participated actively. In this process, proven technologies and high quality seeds were identified in KNARDA seeds farms.[29]

M.T.P entails testing the quality and yield of new seed variety and new farmingtechnology adopted by extension workers at individual farmholdings. The extent to which farmland was used for M.T.P is one acre maximum and half acre minimum.Extension workers cultivated the acquired acre from individual farmer against his farm for the farmers around the area to learn a new farming technology, as adopted by KNARDA farms. Through the use of M.T.P approaches, farmers were learnt to construct 100 basins of 5m by 5m length per 2.5 acres as opposed to 70-80 per 2.5 acres before 2008, the use of improved seeds and other methods of farm operations. The extension workers used individual farms to tryout such On Farm Adaptive Research or M.T.P, which was funded bythe Federal Government, State Government or private companies to advertise their products.Farmers, such as Danfulani Umar, Ubale Mai-Alkama, Aminu A. Mamman, used their farms for M.T.P from 2008-2010.[30]

Between 1990 and1991,the Kano State government made an effort to improve wheat production in the State through KNARDA activitiesas a result of the 1986 ban on wheat

importation during President Ibrahim Babangida's administration, 1985 -1992. The program was launched at Kafin-Gana,Birnin Kudu Local government area .The ban was aimed at sourcing raw-materials locally. Prior to the ban, wheat importation was at a high rate. For example, between 1974 and 1976 the import rate rose from 400,000 to 733,000 metric tones valued at N96 million [31]. Sequel to this,the Kano State government put more efforts on wheat cultivation through the program referred to as the extension of *Fadama* I program where more inputs had been provided to the farmers to encourage the production of local wheat.[32] To achieve the aforementioned efforts during the extension of the *Fadama*I programme, farmers in Karaye, such as Ubale Mai-alkama, Haladu Tela Tinkis, Gambo Yaro, Abdullahi Ibrahim and Yaro Wakili Turawa, among others, were supplied with inputs, such as fertilizer, water pumps and pesticide chemicals at subsidized rate payable in kind after harvest to boost production capacity.[33]

Gradually, wheat cultivation was replaced from 1995 with other vegetable and grain production in the area, such as tomatoes, pepper, onions, potatoes and rice.[34]The reason accredited forthe transformation from wheat to other crops was the problem faced by the wheat farmers in Karaye.Farmers realized that the new crops had very good economic return and were cheap in the production process compared to wheat. There was the outbreak of *Jantau* worms in 1994 that destroyedwheat, even the grasses and soil were affected. In the following season, wheat was not well grown in Karaye. In addition to these, peasts, birds and rats, attacked the wheat at milking stage, destroying it and leaving the plant with a few grains in the panicles.[35]Thus, it made many farmers evacuate from wheat production to other crops.

Moreover, Kano state under the administration of Malam Ibrahim Shekarau (2003-2011) spentmore than 10% of its budgetary allocation on agriculture.[36]In 2004, a Special Mass Food Production Program (SMFPP) was initiated and farmer groups were increased from1,000 to

10,000. KNARDA provided the groups with input and expertise.Similarly, in the 2006 budget, N7.6billion was allocated to agriculture, which is more than 15% of the total budget for that year. This ledto the continuos training of farmers at the local level to provide adequate food security to the State atwhich irrigation farmers of Karayewere included. Underthis administration, morethan 100,000 metric tones of fertilizer at a subsidized price were provided.In the period 2006/2007, Karaye received about 300 tonnes of fertilizer at the rate of N1000:00 per bag of 50kg.[37]

4.4THE ROLE OF NON-GOVERNMENTAL ORGANIZATIONS TO THE DEVELOPMENT OF IRRIGATION FARMING IN KARAYE, 1987-2014

The Non-Governmental Organization (NGO)is typically independent of governments[38] or voluntary groups of individual or organizations are usually not affiliated with any government. They were formed to provide services or advocate a public policy[39] NGOs have been active in Nigeria since 1930 but were mostly limited to social clubs and organizations established by the various missionary institutions operating in the country. Although it was not classified as an NGO, the idea of formalized collaboration between the Federal Government of Nigeria and NGOs was first originated in 1987, when the Federal Ministry of Health (FMOH) designedthe active involvement of NGOs in the health sector. Between 1990 and1991, the FMOH held consultative meetings to mobilize NGOs to support the Federal Government in the Expanded Program on Immunization (EPI); drugs abuse and subsequently in the Human Immuneo-Deficiency Virus (HIV aids) campaign, which widened the spectrum of collaboration with the Federal Government. In 1992, with thecollaboration of FMOH, the United States Agency for International Development (USAID), the World Health Organization (WHO), the British High Commission, the Ford Foundation, the United NationsIndependent Children Education Fund

(UNICEF), the World Bank,the British Council, the Department For International Development (DFID) and the United Nations Information Center (UNIC), the Nigerian Network of NGO (NNGOs)was established by 60 NGOs. It was the fastest growing coordinating body for recognized NGOs involved in developmental activities in Nigeria[40].

In Karaye, the first NGO to donatewith irrigation farmers is the International Foundation for Education and Self-Help (IFESH). IFESH was a non-profit Private Volunteer Organization (PVO) with its regional office based in Lagos, Nigeria since 1987.The mission of IFESH is to pool the resources towards six world problem areas: hunger, illiteracy, unemployment, health care, economic development and agriculture.Itsfoundation continued to operate at different areas in the states of the country with Karaye included under Kano state. In 1994, IFESH in collaboration with Federal Agricultural Coordinating Unit (FACU) officials assessed the status of the National Fadama Development Project (NFDP) to identify specific areas where its assistance could improve project effectiveness to achieve sustainability. After a careful review of the *fadama* project structure and with theWorld Bank and governments of Nigeria inputs, IFESH rendered assistance on training materials for the*Fadama* Users Association (FUA) and train the trainer's programmes with water users[41]. In this regards one of the KNARDA staff, Saidu Idris, was the trained personnel who later trained Karaye *fadama* farmers.[42]

The IFESH curriculum for the trainingcuts across group formation, group dynamics and management, credit or loan management, agronomy and farm planning in irrigation system, water management/ pump operation and maintenance.Experts/ consultantsdeveloped training manuals, Fillips charts and hand-books for the *Fadama* Users Association (FUAs); instructor manuals/ hand books for extension workers and contacted farmers in the local languages of Hausa and Fulfulde.[43]This marked the period when farmers in Karaye benefited from the

program. Mallam Ya'uHaladuTinkis disclosed thatthey were trainedat Daura,Katsina state, Gwarzo and Karaye in Kano State.A manual/hand book was given for guidance.[44]Mallam Ya'u further stated thathe was trained in new farm management and the use of improved seeds agronomy for a better yield. In 2000/2001, he sampled farmland that covered three(3) acres usually yielding 550-600 baskets under the pre-trained techniques, while the adoption ofnew techniques increased the yield to 750-820 baskets in the area[45].

Another NGO concernedwith the irrigation farming in Karaye is Sasakawa Global 2000 (SG). SG has the slogan "We are happy to associate with Nigerian farmers" The SG 2000 Nigeria project began in 1992 under the guidelines of the memorandum of understanding between the Federal Government of Nigeria, the Sasakawa Africa Association and Global 2000. The two states that where chosen for the pilot projects were Kano for irrigated wheat production and Kaduna for rain-fed maize production. The main objective was to accelerate the diffusion of improved technology in wheat and maize among thousands of small scale farmers by establishing a large scale demonstration program. Also, the project aimedat assisting the Agricultural Development Programs (ADP) in developing quality extension services and seeds production by improving the technical training of front-line extension staff and providing some limited assistance in logistic support[46]. One of the important achievements by this organization to the irrigation farmers in Karaye was the introductionof dry season maize known as Sasakawa maize which now forms a significantsource of farmers' income, as it has become a commodity of trade to urban markets.

Moreover, next to Sasakawa in Karaye is the Millennium Development Goals (MDGs) 2010. The organization undertook the construction project of irrigation channels along-sideChallawa Gorge Damand was expected to supply water to 500acres. However, the project

wasa constituency project brought by the then Senate member representing the Kano south constituency, Alhaji Kabiru Ibrahim Gaya.The project was placed under the supervision of the Hadejia Jama'are River Basin Development Authority (HJRBDA). The project is, however, moving slowly due to funding problems that militate againstits fastest completion.Through the 2012/2013 financial budget, more funds were placed on the project. The need for speedy execution of this project is mainly to make the farmersself-sufficient and to promote sources of employment for the teeming youth population[47].

Other profit-making private companies, such as NOTORE and SYNGENTA, became widely involved in agricultural activities through agricultural extension services and cooperative societies in Karaye. The main objective of the Companies is to advertise their products based on quality and efficiency for use to farmers, especially dry season farmers. NOTORE 2010, which produced quality fertilizer called NOTORE, produced more fertilizer for sale to the farmers and in Karaye its product assumed greater recognition by irrigation farmers**.** This was based on the measures taken by the company to mobilize the farmers on their quality product through the formationand sponsor of Demonstration Farm by KNARDA. In 2011, one of the participants Ubale Mai-Alkama,opined thatthrough such demonstration ½ acre of his farmat Dambazau was usedby extension workers under the sponsor of the NOTORE Company to test its quality and effectiveness in bringing higher economic return[48].

The SYNGENTA Company produced chemicals like pesticides, herbicides chemicals and seeds,such as tomatoes, pepper and cabbage to dry season farmers and other vegetable seeds such as, tomatoes, pepper, cabbage. Like NOTORE, SYNGENTA followed the same process in advertising their products.In 2014,a Demonstration Farm was set up at the Danfulani UmarDaurafarm.Half of an acre was usedfor the demonstration by KNARDA officials. He

further explained that,favourable to the climatic condition in Karaye, the farmers benefited in acquiring new techniques of farming and new seeds varieties were introduced,though the improved seeds produced by SYNGENTA were very expensive to the farmer.For example, the price of 10g packet was sold at N1,800:00- N2000:00. This compelled the farmers to rely on a local method of seed processing called *Dan Matsa/tatsa*[49].

4.5CONCLUSION

There was a gradual change in irrigation farming from 1973 – 1979, though it would not be considered a large scale irrigation development.Large scale irrigation in the area began in 1980 when Kano State Government made an effort on food security in the State through irrigation farming whereby governmentsecured fifty (50) hectares of land for irrigation farmers. The State had established KASCO and KNARDA from 1981 – 1982 where the retail outlet of KASCO was placed at Karaye as well as KNARDA office that carriedout extension services and the distribution of inputs to farmers through Fadama programs. The construction of Challawa Gorge Dam in 1992 further expanded irrigation farming in the area. Many people who were previously not irrigation farmers now began to engage in the scheme. The development led to the introduction of mechanized farm tools, improved seeds and new methods that replced the shadoof. The two dams that led to the expansion of irrigation had further attracted non-governmental organizations and even private companies to support the farmers with new farming technology and inputs of all kind.

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CHAPTER FIVE

THE EFFECTS OF IRRIGATION FARMING IN KARAYE

5.0 INTRODUCTION:

The chapter examines how irrigation farming had effects on the economy of the farmers and traders of irrigated goods,how it opened up inter-group relations with other people who came to Karaye and how such better communities as farmers, labourers and traders led to a population increase, especially in the dry-season.Other social effects include inter-marriages as well as the revival of Hausa cultural heritage like*Kalankuwa*(social gathering), at the harvest period. The chapter also explained the negative effects/problems of irrigation farming, especially in the areas where largely irrigation farming concentrated.

5.1ECONOMIC EFFECTS

Irrigation as an economic activity in Karayepaved theway for farmers to become rich. The level of farmers' income was significantly changed. The average farmers' income from 1973 to1993 was about ₦20,000:00 but from 1994 – 2000 it rose to ₦40,000:00. However, from 2001 to 2014, the income level seemed to be higher because within a period of two to three years many farmers built modern houses, paid for thepilgrimage and married additional wives[1].Similarly, labourers from various settlements came to Karaye as seasonal migrants to complement the gains in the wet season and acquired a job opportunity in the dry-season.The average income of a labourer per day was estimated at N450:00 from 2008 to 2010 and ₦800 between 2013 and 2014. This was because of the influx of more migrant farmers, laborers and traders. Even the incomewomenderived in their matrimonial homes wasincreased because they prepared food for sale to labourers and traders.According to HajiyaBaraka, a food seller at Turawa village,she usually got N100 to N150 as profitdaily; from 2008 to 2013, she earned more than N1,500:00 daily inthe dry season.[2]

Women Participation in Trade in Irrigated crops

Irrigation farming turned many women to take part in the local trade on irrigated crops while in their matrimonial home. Suwaiba Ali of 'Yarkasuwa quaters lamented that she sourced perishable goods from her husband who was a trader of the same commodity. This type of trade increased her prosperity and she became very popular in Karaye[3]. Apart from Suwaiba, there were many other women who were involved in this trade in Karaye and its villages, such as Turawa and Daura from1996 due to the available space for drying tomatoes and pepper, which are locally called *kauda.*[4] The most impressive effect of the large scale irrigation in these areas was the formation of an organization called *Matan gwari* (women vegetable traders) in Turawa around 2000 under a chairlady named Rakiya. The organization started with four members and by 2014 the membership had reached forty (40).[5] While in Daura, the organization started with six members, including chairlady, Furera Sani.By 2014, the membership rose to thirty five (35) women.[6]In the period of a bumper harvest, such women bought much of the produce, dried and sold it in the scarce period, especially from July-August.This development reduced the losses by irrigation farmers, especially when the goods congested the markets.[7]

Male Petty Traders

Furthermore, in 1997, males from outside Karaye, such as Ibrahim Ali, an immigrant from Hunkuyi Local Government, Kaduna State contributed in the expansion of the trade.[8] He went to vegetable collection centers to purchase left over goods and those liable to decay. In fact, presently people engage in this form of trade of dried vegetables (*kauda)* than on seasonal migration to other places in the dry season.

One petty vegetable trader (*dangwari)* who operated in an open place near the town gate (*KofarKasuwa)* explained that he started the trade in 2005 with capital of not more than ₦2,000:00, but by 2014 his capital base had increased to approximately₦100,000:00. He

postulated that vegetable goods or trade in vegetable goods whether at the local or national level had no standard price and the trader in such goods cannot justify his capital while goods were at hand until when sold.Thus, the trade's acronymn as "*gwari danyan kaya,gwari bakudiba sai an saida,gwari daki da duhu shigar ka sai anshirya",*meaning:"perishable risky goods, goods that are only quantified when being sold, a very challenging business". In fact, a trader who buy goods at a higher price but sells at a lower price entails selling at a loss[9].

Another trader,Sani Umar, diclosed that he started the tradeof irrigated goods in 1996 with a capital of ₦150,000:00 to trade in tomatoes and potatoesat Lagos and Niger Republic.In 2014,his capital increased to over one million naira₦1,000,000:00[10].In a period dated back to 1980, there was a pesticide seller in Karaye town named Alhaji Gambo, who traded on goods, such as seeds, chemicals and pesticides, and solely depended on wet season farmers up to 2000, while the capital at the period mentioned was about N30,000:00. However, from 2007- 2014 the capital increased to more than five hundred thousand naira(N500,000:00). This was as a result of the expansion of irrigation farming in the area.Thus, many chemicals, herbicide and agricultural inputs, such as spraying machines, tubes and hoses are now provided for the farmers but were not used in the past.[11]

Emergence of Collection Centres

One of the economic impacts of irrigation farming was that the farmers and traders fromDamagari,Zoza, Jajaye and Tudun Kayaall in Karaye formed an organization, which consequently led to the establishmentof *Gwari*market, named *Dazojat* at Damagari in the early 1980s. In 1996,the creation ofRogo Local Government out of Karaye local government causedDamagarivegetable market (*Dazojat*) to fallunder Rogo Local government area[12]. As a

result, a number of collection centers that served as vegetable markets emerged at different places in Karaye. For example, there were collection centers at Unguwar Mani, Daura, SabonLayi, Ma-Turawaand the Karaye main market.In 1997, a new vegetable market,Kasuwar Gwari,was established in Karaye around Sabuwar Unguwa to replace the lost one in Damagari in 1997,[13] even though the market did not survive due to the in availability of goods in the proposed site[14]. However, there was a general increase in the trade of all kinds of goods, especially consumables. For example, at the collection centers varieties of commodities were sold, such ascooked-food, soft drinks, provisions, clothes and other materials. Others werepesticideschemicals, fertilizers and seeds.

Sources of Funding

Some of the major traders in irrigated products funded the irrigation farmers in Karaye through providing loan.NasiruAdamu (2004) presents in the following Tablethesources of finance for farmers in Karaye:

Table 5:1: showingSources of Finance for Irrigation Farmers in Karaye from 1995-2002

Source of Finance	**No. of Respondent**	**Percentage**
Personal Saving	43	86%
Local Money Lenders	2	4%
Banks	5	10%
Total	**50**	**100%**

Source: N. Adamu (2004), "Tomatoes Production and Marketing in Some Selected Villages in Karaye area of Kano State". Post Graduate Diploma Project, Usman Danfidio University Sokoto. P.29.

The Table shows that majority of the farmers in Karaye source their capital through personal savings, which constituted86%.The remaining sources of 14% were acquired in Banks and local money-lenders. Further analysis on the above Table has revealed that the major marketers of assorted goods in Karaye, namely: Alhaji Bala Abdullahi, Sani Umar, Alhaji Amadu Abdullahi and Ubale Mai-alkama, gave loans to the farmers annually. For example, Alhaji Bala gave a total loan of₦900,000:00 in 2006; N1,100,000:00 in 2008 and in 2013/2014 the loan rose to

N4,000,000:00 due to the increased number of farmers and the acres cultivated. Sani Umar gave farmers loans of₦200,000:00 in 2008 and ₦400,000:00 in 2013/2014, respectively.[15]

On the other hand, the major source of finance for farmers like Garba Magaji, Aminu A. Mamman Turawa and Alkassim Abdullahi, was to acquire loansthrough the traders.The loans were settled with produce after harvest. Based on the data obtained from informants, very few farmers relied on their personal savings.Sani Umar, a trader in sweet potatoes and tomatoes, often give loans to such farmers.[16]. Mallam Lurwan A. Dabo stated that he sourced the fund for irrigation farming through his personal savings at the end of wet season harvest with which he bought two cows for rearing.After some months, he sold off the cows and rised the money in irrigation farming in 1993[17]. Other source of farmer finance in irrigational agriculture was inheritance. At the death of the head of family, his estate is usuallyshared among his families some of whom used to invest in either agriculture or in any other business.

High Yield Seeds' Varieties

Rice cultivation assumed an additional significance of cereal production in Karaye. There are many views about the origin of rice.For example, Rotimistated that "the white variety originated in south India and China spreading to other parts of the world, including U.S.A in 1685 and also into west Africa with the arrival of the Portuguese in the same century"[18]. Prior to the introduction of a white variety of rice in Karaye, there were red and a short variety referred to as*kukuma* and '*yarfako*.The white variety introduced in Karaye is known as *yarmahangi*.[19]However, the*kukuma* and *yarfako*are short and roundgrainvarieties cultivated under wet season farmingand needed no fertilizer application.They are also tolerant to low water temperature but take a long time in cooking.Othernewseeds of rice, such as Tos, *Kwandala*, C.P and *Yar das,* were brought to Karayeby farmers from the Kura local government area around

1999.In 2002/2003, MallamAlkassim Abdullahibrought a new seed of rice called Jeepand Jamila from Bakalori in present Zamfara State. According to him, the seed could be harvested twice in a season when properly managed and constituted a higher yield than the other varieties. TheTable below shows the varieties of rice cultivated in Karayeand the yield obtained per acre:

Table 5:2 shows different rice varieties cultivated in Karaye from pre-colonial time.

SEED VARIETY	PERIOD	NO. OF BAGS PER ACRE
Kukuma, 'Yarmahangi.	Pre-colonial period	8-10 bags
Tos, Kwandala, Cp, Yar das.	1999	15-18 bags
Jeep and Jamila.	2002/2003	18-20 bags

Source: interview with Abdullahi Ibrahim a farmer and Alkassim Abdullahi a farmer, on10/10/2014 and 08/06/2014 basically.

The maize cultivated under irrigation in Karayewas mostly consumed while it was fresh. It is consumed in two ways, such as either boiled or roasted. The sale of boiled and roasted maize became the source of income to many people in the dry season. There wereunderaged girls who went to the farm to purchase maize in bulk and cooked and sold at retail prices, known as*sari*andthe girls are referred to as'*yansari.*Other householders who instead of going on seasonal migration(*cirani),*engaged in selling roasted maize to earn their living. The production provided the regular food supply and consumption in the areas. It also provides the means of trade with other communities outside Karaye. For example; there were traders of fresh maize to other marketsin Kano city and as far as Abuja.Some of these traders became prosperous. Dalladi Ali, a trader on corn maize, disclosed that, before 1999 when the cultivation of dry season maize started in Karaye, he traded on wet season potatoes and maize.After 1999, his income increased due to the trade on dry season maize. For example, in 2007 he earned ₦200,000:00as profit and ₦300,000:00 in 2009. However,the profit fell to₦90,000:00in 2012 because farmers were not

producing more maize as a result of high cost fertilizer, which was beyond the affordable rate for them.[20]

The expansion of irrigation farming led to the introduction of new seeds of potatoes, called *kantayiiddah*.The name was coined because, when a farmer planted at the time he divorce his wife, before she completed her three months waiting period, known in Arabic as *iddah,* the crop has riped to allow him to marry another wife. It was believed the name is more incurred to its rapid growth and harvest. There is another variety called *Dan izala*.It was given this name because it has a big tuber and short cover leaves. These new varieties over shadowed the *Dan bakalori* and *Dan gulu.Dan izala* and *Kantayi iddah* brought higher economic return to the farmers. Their cultivation in Karaye started around 2005/*2006* but with little recognition by the farmers until 2008 when they became accepted by the farmers due to their yield. In one acre, a farmer could produce 40-45 bags of *Dan izala* or *Kan tayi iddah* while for *Dan bakalori* and *Dan gulu* not more than 20-25 bags.[21]

Groundnut was another crop widely cultivated in Karaye through an artificial water supply. Karaye is one of the major centers of groundnut production in the Kano Emirate since the pre-colonial period up to 1973. The groundnut production in Karayeup to 1973 was in the wet season cultivation. However, the same year marked the disastrous period of groundnut production, locally called (*soriyo)*. In the period (1973), a farmer who cultivated about five acres of farmland, might find it difficult to harvest two measures (*mudu)* of groundnuts[22]. The years after 1973 witnessed a gradual decrease in groundnut production.This particular situation compelled the traders in Karaye to venture out as far as Lantan in Plateau State and Niger State forgroundnuts supplies. The process continued up to 2008 when the farmers acquired a new

farming technology through the irrigation system. From 2008, the interest on its production was restored as a result of the concentration and development of irrigation farming in the area.

The dry season groundnut seed, 'Yar Dakkar, was introduced in 2008 as a result of contact between Karaye and another community from Niger Republic.It was called 'Yar Dakar because it came from Dakkar in Senegal through Mali to Niger Republic and then to Karaye.People engaged in the irrigation scheme for the purpose ofgroundnut cultivation due to its cheap labor and higher economic return. In one acre, a farmer could produce 15-20 bags of groundnut and more than 40 bags of its fodder.[23]The development restored the history of groundnut production and trade in Karaye as it was during the colonial period. The network through which this seed came to be known by the farmers in Karaye was a result of the activities of traders and coordination between Niger State farmers and traders from Karaye as well as contact between farmers and traders in Karaye with that of Niger Republic.

The Development of External trade

The development of irrigation farming in Karaye led to the development of external trade between the producing communities to the neighbors andthe southern part of Nigeria. According to Chigozie,the existence of collection and transport centers in the north for southern markets was necessary because most of the farmers of vegetable goods (onions) collected, loaded and transported such goods to southern markets as far asMile 12 in Lagos, HeadBridge in Onitsha, Mission Road Benin City and D. line in Port-Harcourt.[24]

However, the exportation of irrigated goods from Karaye, especially vegetablegoods, organized from the collection centers(*tasha)*to southern Nigerianmarkets, as suggested by Chigozie.Collection centers became necessary in Karaye because a farmer could not supply the

required goods for vehicles with the capacity of 32 tonnes or 500-1000 baskets of tomatoes or 400bags (*solo)* of pepper at once.This made the collection centers necessary whereby a group of farmers and traders converged for such collective transportation. Transport fees and the pricesof the goods were uniformly fixed at the centers. It is often clear that at centers, goods were selected and graded,grade ones for long journeys. Those that fell under grade two were transported to other markets in the North as Dei-Dei in Abuja and 'Yankaba in Kano city, while the rest were sold off totraders in the local market who in some cases dried them to *kauda.* The type of transportation in fact provideda job opportunity to more than 100 people who earned their living on a daily basis at each collection center. There were also big farmers,, such as Aminu Mamman, Ubale Mai Alkama and Dan Fulani Umar Daura, who exported their goods directly from their farms to the urban markets in northern and southern Nigeria.

When farmersloaded up a vehicle for the long distance markets, a representative was attached to oversee the goods along the road. He was also responsible for the payment of inter-state revenue for the goods. The person referred to as a guardalso known in the traders' language as(*Danjeka kamutu)*, usually returned with the cash of the sold goods.[25]The transaction kept flourishing up to 2004.To minimize the risk of carrying cash, a transaction was undertaken through bank transfer in 2005.Furthermore,before the emergence of external trade on irrigated goods, the escorts/guards('*yanjekakumutu)*hitherto were seasonal migrants to southern Nigeria where they engaged in petty trade and left their families for five- six months.However, trade in irrigated goods changed guards/escorts to a sedentary life and seldomly travel for a week or 10 days away from their families.

There werebrokers (*dillalai)*who acted as middlemen between the traders and merchants,wholesalers or retailers. The wholesaler(*danwazai)*in Hausabought thegoods from the

broker.He separated at least 5-20baskets of tomatoes, pepper, onions or potatoes to his business partners, known as *dankiri,* plural '*yankiri,* who then sold to retailers at a fixed price. Thus, he took the profit and paid the price[26].There were many brokers, wholesalers and retailers at different vegetable markets in southern Nigeria, such as Sasa Ibadan, D.line Port-Harcourt and Miles 12, Lagos who claimed Karaye origin and greatly prospered through the goods supplied from Karaye.The*Danwazai* and '*yankiri*also negotiated withfarmers/traders who directlysent them goods from Karaye.Vegetable goods produced in Karaye had an insatiable demand in the market due to their quality.

On the part of drivers, they also witnessed an economic boom, as there were more worksor goods to convey to different market centers[35].In the same vein, laborers who loaded up and off-loaded the goods and the harvesters who packed and arranged the baskets also benefited from this scheme in Karaye, as they earned their livelihood there.

Similarly, irrigation farming promoted the trade in empty baskets from the urban market centres to Karaye. There were many people whoturned rich through the trade. The trade in baskets is of two types, the new ones andsecond hand baskets. The new ones were supplied from Onitsha and the other came from Lagos. At Karaye, the baskets were sold in bundles than in pieces.Each bundle contains 30 pieces.From1996-2004, a bundle was sold at ₦2,500:00-₦3,000:00 and from 2006-2010 the price rose to ₦5,700:00-₦7,000:00.While in 2013-2014, it was sold at ₦9,000:00- N10,000:00. In the case of the second hand type, it was sold at₦5,000:00-N6,000:00 in 2013-2014. The regular increase in the price of basket is as a result of the high demand of it due to the expansion of the irrigation scheme in the area and the trade in assorted goods.[27]In an interview with LurwanDabo,who took part in the tradesince 1996,he

explained that, when he conveyed goods to the market, instead of returning with money, he bought second hand baskets and that increased his incomes.[28]

Irrigation as Source of Revenue Generation to Karaye Local Government

The development and expansion of irrigation farming in Karaye provide a significant source of income to the federal, state and local governments due to their involvement in the scheme. The state and federal governments generated their revenue in Karaye from irrigation farmers through land allocation and the charges for water usage. However, our primary concern is howKaraye local government generated revenue from this scheme. The system of revenue collection in Karaye is placed under revenue office in which farmers pay their revenue at theregular harvesting period through KNARDA officials assigned with such responsibility by thelocal government authority.Crops that were revenue payableincluded, tomatoes, pepper,onions and potatoes, which were charged per basket.In case of tomatoes, and per bag in case of pepper,onions and potatoes. Each basket or bag of any kind of crops was charged₦10:00 from 1996-2001, ₦15:00 from 2002-2010 and₦20:00 in 2011-2014. This made Karaye Local government earn₦75,000:00-₦100,000:00 per day in the harvest period.The total amount of revenue collected from the farmers and remitted intothe local government account at 2014wasN11,250,000:00-N15,000,000:00per season.[29]

The revenue collected and remitted to the local government account indicates that each collection centers, such as Daura, Turawa, Ma, Sabon-Layi and the Karaye main market, provided one thousand baskets of tomatoes/bags of pepper,onions and potatoes while collecting N20:00 each will rise the sum of ₦100,000:00 per day and ₦3,000,000:00 per month. However, from November to June, the local government remitted ₦15,000,000:00 and above. But in some

cases,₦15:00 where collected and the amount was ₦75,000:00 per day and ₦2,250,000: per month and₦11,250,000:00 per season.

Apart from the revenue collected from the farmers,traders on irrigated crops also paid revenue to the local government. The open shops (*rumfuna)* used for trade in irrigated cropswere under the authority of the local government. Each open shop (*rumfa)* paid₦1,000:00 monthly to the local government. This made Local Government remit₦1,200,000:000 into her account per dry-season. There were 50 shops in the Karaye main market that paid N1,000:00 per month that rised the sum of₦600,000: per annum.About three thousand open shops (*rumfuna*) at the Karaye main market and other four collection centers that paid ₦200:00 per month raised N600,000:00 per annum. However, when summing up the total revenue collected shops and *rumfuna* will arrive at the total of ₦1,200,000:00.[30]According to Abdullahi KASCO, there was not muchof a problem encountered between revenue collectors and the farmers until when there was low market demand but more supplied goods. In regard to this, farmers refuse to pay the revenue in consideration of the poormarketcondition. Based on this situation, the revenue collectorswill agree on compromised charges for the goods. For instance, instead of collecting ₦20:00 per basket or bag,₦10:00 will be collected.[31]

Negative Economic Effects

Despite the positive economiceffect of irrigation, there were negative effects or problems that militate againstthe rapid growth of the scheme. Thelow financial ability of the farmers in Karaye formed a serious problem associated with irrigation farming. Farmers could not afford the required quantity of packets of improved seeds due tohigh cost.As a result of the financial constraint, they use a local method of obtaining seed locally called *dan matsa*. [32]While many

other farmers depend on loans from major traders, which are settled in kind than in cash.. A farmer, Danfulani Umar Daura, explained that in 2008 government provided tomatoes seeds at a subsidized rate of N200:00 per bag of 10g, which was then sold at N500:00 to N600:00 in the market. The governmentwas disappointed by the contractors.Instead of supplying the farm**ers with** varieties such as Dunu, tropical and U.C, they were rather provided with Roma, which was regarded as an old variety with a low yield.[33]

Lack of modern means of irrigation,such as the channels that supply water to distant areas, also makes irrigation farming in Karaye difficult and expensive. In fact, most of the farmers largely depend on water pump machines and hoses for water supply.Small-scale farmers could not afford the water pump machines and rely on borrowing, which could not be obtained at the right time. Local farming procedure and poor government participation in the field of irrigation farming cause a problem.Farmers use local tools, such as hoes, hand ridger (*Garma),* rake, cutlass, axe and ox-plough thanmodern farm mechanization.[34]In different interviews with Danfulani Umar and other farmers, they argued that acquisition of modern mechanized farm tools was thegovernment's responsibility and wealthy individuals.This is because it is too expensive forsmall scale farmers to afford and maintain as well.[35] According to a KASCO official, government provision of mechanized tools in Karaye (local government) halted in 1996 when three tractors were procured for the local government to support agricultural activities. The effort forward by government failed due to official mismanagement. In consequence, the fees were not adequetly remitted to the government account and that gradually made the system collapse.[36] Another problem that militated against the development of irrigation farming in Karaye are the endemic corruption by leaders and other officials that hold public offices.Agricultural inputs, such as fertilizer, seeds and chemicals,that had been provided by the

government at subsidized prices were diverted. A very good example is the GES program.Irrigation farmers in Karaye opposed that GES provided nothing to theiragricultural activities because the subsidy did not reach them. Government supplied goods not in the required quantity needed by the teeming farmers.For example, Alkasim Abdullahi, Danfulani Umar and Ubale-mai alkama needed about 50-80 bags of 50kg fertilizer per season, but government (officials) supplied them with only 2 bags of 50kg, which was not adequate for their farming needs.[37]

Flooding Challawa Gorge Dam posed a threat to the farmer economy.Towards theend ofOctober and early November every year, the dam is at full capacity and that coincidesthe first planting season for irrigation farmers where crops are planted along its banks. From November, the dambegins subsiding as a result of opening valves through which supplements flow toother irrigation farmers outside Karaye, such as Wudil River, Hadejia Jama'are and Yobe. Farmers follow the release land called wait land to cultivate from January. Most of the crops planted like groundnuts, cowpeas, maize and potatoes, with the exception of maize, all require little water for growth. The released land is wetted and usually it retains moisture for about two 2 months.Cow-pea, water melon and groundnuts require little water to grow and their highest period of the growing season is three months.This makes farmers rush for the land. In addition to this, the land is morefertile compared to the left over land, which the farmers use to produce vegetables, such as cucumbers, melons etc. This lead to farmers' competition for occupying the fertile land for cultivation and paves the way for corruption by government officials in a bid toallocate the land to the farmers.[38] What makes the soil fertile is that tropical forest plantation often shows rapid changes in soil physical properties and chemistry, especially when trees are planted on old agricultural fields. Pore size distribution and distribution measurement are becoming

increasingly used to characterize soil structure, which is important in water transmission and storage functions and growth. The influence of trees in soil physical properties is important in augmenting the overall capacity of land productivity.[39]However, the wait land which is competitive by the farmers is extremely fertile because the water carries dead and decayed remains of animals.The leaves and the remains of plants had added more nutrients to the soil and thus turned it more fertile and encourage the potentiality of competition by the farmers.

At the end of May and June every year, the wet season begins, especially at the commencement of the first rain (*Kwazari)*. MostChallawa tributaries supply the dam with water that gradually leads to over-flood to occupy the former wait land. In this period, most of the farmers do not harvest their crops, such as potatoes, rice and groundnuts.From June /August, this over-flooding causesthe mass destruction of crops and compell farmers to harvest the crops prematually. Similarly, traders price the goods at lower cost.At thisjuncture,farmers record lost profits.[40]Moreover, farmers who planted crops at the left-over land face problems of inadequate water supply due to the distant location of farms away from the water source due to the fact that the valve is open. As a result, the crops usually dry up.

Farmers also found it difficult to evacuate their agricultural produce for sale. Most of the farm products perish or get spoilt before reaching to their destinations due to poor roads[41]. The poor condition of roads and traffic congestion in Nigeria affect the retail trade as well as delay the transportation of goods in time.This results in severe loss byfarmers and traders.Independent major farmers,such as Bala Abdullahi, Aminu A. Mamman, Ubale mai alkama, Ya'u Muhammad and Alh Dabo Daura, who trade their goods to southern Nigeria faced problems in the course of the journey.Also,in the period of goods congestion due to low demand,their goods decayed and got spoiled. In addition, the urban markets where they delivered their goods have no

driers who buy produce and dry itfor future use. As a consquence, the stringent condition forces the farmer escorts/guards to run away or disappear from the market area because they are at a loss and so could not afford to pay the commission agent fee, government revenue, balances for the driver, and so on.[42]This leads to a letter called bride (*Amarya* in their local terminologies) from the broker, which contains the details of how much the goods are sold, the balance paid to the driver, the amount paid to commission agents and the government revenue. At the end the letter discloses the farmer/trader's indebtedness than gains.

5.2**SOCIAL EFFECTS**

The emergence oflarge scale irrigationin Karaye led to the changes of social behaviour. Some of these changes include: change in the source of labor fromcommunal or family labor and *aikingayya* in pre-colonial and colonial periodsto the paid labour in the post-colonial period.It furtherdeveloped the inter-marriagesand social relations and the adoption of new skills through contact with other communities.

Most of the societies engaged in the irrigation scheme as a result of the emergence of wide-spread unemployment and abject rural poverty with the main objective to settle landless farmers[43]. This had connection with irrigation farming in Karaye where the teeming unemployed youth engage in the irrigation scheme. Mallam Garba Magaji nicked named *Sarkin noma* (king of farming), explained that, in the period prceeding 1993, most of the youth were redundant in the dry-season or went on seasonal migrantion to southern Nigeria as far as Lagos, Ibadan, Port Harcout, Warri and many other towns and cities in the north.While those who could not afford seasonal migration remained in abject poverty to the turn of the wet season. However, the development of large scale irrigation in Karaye had incorporated youth to dry-season farming and that changed their economic status in the dry-season period.[44]

There was a high demand of labour on irrigation farmand thus itencouraged the potentialities of migrant labor into Karaye.Laborers came from Maradi in Niger Republic,Daura in Katsina State, part of Zamfara, Kebbi, Sokoto and Jigawa States.There were two bargaining methods for labour: one is*tsada or jinga*(collective bargaining), where the amount paid would be in ransom and based on the gravity of the work. The second was *lokaci(*time*)*, whereby the labourersare paid based on a set timeframe. Therfore, the cost of labour depended on the type of method applied. For instance, labourers that worked morning hourswere paid ₦300 per headin 2008 – 2010for those worked (8:00-12:00 oclock) were paid, while₦150 for the evening hours worked (3:00pm – 5:00pm).As a result of the changing economy and the devaluation of the naira between 2013- 2014, the price of labor increased to ₦500 for morning hours and ₦300 for evening hours.[45] The social interaction between the Karaye host community and the outside community further led to the introduction of new varieties, which were not cultivated before. For example in the Daura ward, the inflow of irrigation farmers from Danbatta resulted in bringing new seeds of onions and cucumber, which yielded positive results in the development of farming in Daura, as people became aware of such varieties, which they never knew before[46].

The major labour supply was derived fromevery agile youth, especially those not gainfully employed by government or any organization.Some were seasonal migrants("*yanCirani)* who camefrom different places, as mentioned, in the dry season (November-May) and returned to their home towns at the end of dry season(June-October) in preparation for wet season farming. The coming of such migrant farmers and labourers was from Daura(Katsina State),such asDauda and Kamilu,whileAbduwa and Bawada from Niger Republic,to Karayewere they settled in Daura ward permanently with their families[47]. In the

same vein, itinerant scholars and their disciples form another group of seasonal migrants who provide labor required on the farmland.

Irrigation farming serves as a factor that attracted population growth, especially in areas where it has been largely practice, such as Turawa, Daura, Ma, Dambazau, SabonlayinYola, Amara, Kurugu, UnguwarDagaci,Tinkis and SabuwarUnguwaKaraye comprisedthe places served as settler communities.Inter-marriages between the host and migrant communities further enhanced the growth in population, as a result of multiple child birth visa-vis the increase in polygamous households.[48]Data obtained from field work has shown that morethan twenty seasonal migrants married indigeneous people at Daura and Turawa and took theirwives back to their home-towns. In aninterview with Ali Ya'u, a trader on vegetable goods opined that he was a migrantdisciple (*almajiri in Hausa*) from Ringim since 1976. After some years of his peripatetic scholarship in Karaye, he decided to start a business to earn a living. Thathesettled in Karaye where he married two wives, while he married his third wife from his home town. He equally gave out his daughter for marriage in Karaye[49].Economic potentialities attained by the people in these areas through irrigation farming further encouragedthem to marry as many wives as four.Irrigation farming allows the introduction of high-yielding crops for cereals, legumes and vegetable crops, which could not otherwise be grown in that locality as a result of inter-group relations. It supported very high rural population density, for example, due to this scheme Karaye experienced the inflow of immigrants to the area either as settlers or seasonal migrants (*Yan Cirani)* for the purpose of irrigation farming.

The inter-group relations between the host and migrant settlers communities was favourable andwas strengthened through cultural festivals like the traditional dance (*kalankuwa*) celebrated after harvest in the Northern part of Nigeria, especially during the dry-season

(November/December).Young men and women come together in a peaceful and friendly atmosphere to entertain themselves. It is celebrated in many villages in Karaye. In the event, drummers, dancers and singers are invited to each *gwari*market or *gwari* collection center to perform different cultural displays to entertain the people.For instance, in a season about twenty different singers (*mawaka)* and drummers (*makada)* were invited to Turawa, Ma, Daura, Sabonlayi and Damagari vegetable markets.This had a great influence in the society.[50]Also,whenever there is a local harvest festival (*kalankuwa*), a farmer named Dodo shows, acrobatic displays on farming skills and techniques by sowing any type of seed grow and ripen instantly.

Negative Social Effects

Despite the positive social advantages of irrigation farming, it has also negativeeffects on the host community.One of the effects has been on the health of the people of Karaye and its environment. Constantirrigation farming keeps the soil always wet and the crops planted provided a breeding place for mosquitoes. The spread of mosquitoes accounts to the spread of malaria fever. To this regard, the number of people infectedby malariahas increased. However, some non-governmental organizations, such as"Roll Back Malaria"Sunmap, put more efforts in reducing the level of malaria attacks through curative and preventive measures in form of treatments of Arthemeter Complicated Treatment (A.C.T) by NGOs like Sunmap and Roll Back Malaria (R.B.M).[51]The following Table shows the population of people infected in Karaye from 2011 – 2013:

Table 5:1 Showing population of peoples infectedby Malaria, in Karaye 2011-2013.

Year	**No. of Male**	**No. of Female**	**Total**
2011	3470	3505	6975
2012	7900	7947	15847
2013	1843	3686	5529

Total	**13213**	**15138**	**28351**

(Source:Karaye Local Government Malaria Elimination Project 2011-2013)

The malaria attacked person as lebeled in theTable above showed increase in 2012 with about 8872 infected persons ahead of 2011. This was as a result of the concentration of irrigation farming in most of the areas withoutthe people being provided with proper health care facilities. The increase in malaria attacks might cause low productivity because a sick person cannot farm and this may likely expose him to food stavation. Thus, in an attempt to curtail the malaria spread, some Non-Governmental Organizations in collaboration with the Nigerian Government, such as Sunmap, Roll Back Malaria (R.B.M), provided the treatment against the malaria spread like Arthemeter Complicated Treatment (A.C.T) and mosquitoes' net distributions as their support. As a result, the malaria spread showed a drastic decrease in 2013 with about 10,318 infected persons compared to 2012 when the figure rose to 15847 as against 5529 persons infected in 2013. Sequel to this, irrigation farmers recovered a tremendous increase in farming in 2014. This was because farmers where in good health and became productive as against 2011 and 2012, respectively. Moreover, when there are low or no malaria attacks in the society, the tendency for mortality reduces and the birth-rate increases.Other diseases prevalent in the area include Cholera and typhoid fever. The water used for irrigation mostly contains some micro-organisms responsible for the transmission of water-borne diseases. The crops in Karaye are irrigated with water, which is not free from such micro-organisms.The water needs chloronation and sedimentation to keep it away from all sorts of micro-organisms, which are the agents ofcholera transmission and typhoid fever[52].

Prostitution also becomes a regular activity in the aforementioned irrigation area. AdamuZoza, a trader at the Damagari vegetable market,explained that prostitution was practiced virtually in any vegetable market (*Kasuwargwari)* or collection center.The presence of

prostitutes (*karuwai)* in Karaye was more rampant atthe end of the dry-season just as was identified in other areas like KurminKogi in Ikara, Kaduna State.In some cases, the prostitutes did migrate from Karaye to such areas.[53]The social gathering at collection centers and vegetable markets recorded nagetive effects on the Karaye host community because.It changedthe moral values of youth. Men and women met together (independently), which, in some cases, resulted to immoral behaviors, such as fornication, smoking cigarettes and Indian hemp.

Other negative effects of irrigation could be viewed from the perspective of farmers/ herders relations.Animal enchroachment destroys crops,which raises crises and conflict between herders and farmers. The aftermath of the crisis and conflict poses many villages and ward heads in irrigation areas to kepp on settling disputes between farmers and herders over grazing land. Great misunderstanding between them follows after occupying most grazing land and blocking routes for the source of water for animals.

5.3 CONCLUSION

The chapter discussed that the development of irrigation farming in Karaye brought substantial changes in the economy of farmers, traders and labourers. Many people became rich and those who were hitherto dependant on seasonal migration got settled at home to practice their economic activities in the event of the dry season period.Some business organizations were formed for the purpose of trade on irrigated goods, such as *Matan Gwari* (Women Vegetables Traders). The development of irrigation further promoted social relations through inter-group relations that positively yielded inter-marriages between Karaye and the migrant communities. The chapter further discussed that the development of irrigation hasled to acquiring some bad social conducts, such as prostitution, drugs abuses and other intoxications form mostly at collection centers.Some people became indebted as a result of farming and trade in irrigated

goods. The malaria infected persons was increased in 2012, as a result of irrigation development and lack of proper health care facilities. The increase in the spread of malaria in 2012 was forced the government and Non-governmental organizations to take a curative and preventive measures to eradicate the malaria. Thus, from 2013, the number of malaria infected persons showed a decrease, and the production of irrigated goods was increased. Other negative effects of irrigation farming discovered in this chapter, was the deterioration of the former relationship between farmers and the herders in Karaye.

ENDNOTES

1. Interview with Ubale Mai-Alkama.Farmer/Trader Age: 60, at Dambazau village, Karaye, on 12/06/2014.
2. Interview with Baraka Mai Abinci.Trader Age: 55, at Turawa Village on 10/12/2014.
3. Interview with Suwaiba Ali. Trader Age:50, at 'Yar kasuwa quarters on 08/09/2014.
4. Interview with Aminu A. Mamman. Farmer/Trader Age:38, at Turawa village on 01/17/2014.
5. Interview with Rakiya Inusa. Trader Age: 48, at Turawa village on 13/05/2014.
6. Interview with Furera Sani. Trader Age: 42, at Daura village, Karaye, on 16/06/2014.
7. Interview with Aminu A. Mamman. Farmer/Trader Age:38, at Turawa village on 01/17/2014.
8. Interview with Ibrahim Ali.TraderAge: 40,at Sabuwar Unguwa on 30/08/2014.
9. Interview with Alfa Abdu.Trader Age: 48, at Kofar Yamma quarters on 22/06/2014.
10. Interview with Sani Umar.Farmer/TraderAge: 40, at Limanci quarters on 11/09/2014.
11. Interview with Alhaji Gambo Kofar yamma, Trader, Age: 57, at his shop in Kofar Yamma quarters, on 04/05/2014.
12. Interview with HaladuAdamuZoza. Trader Age:52, at his shop in Damagari vegetable market on 10/09/2014
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15. Interview with Bala Abdullahi Karaye. Farmer/Trader. Age:50,at Limanci quarters,on 12/09/2014.

16. Interview with Lurwan ADabo. Farmer/Trader. Age: 45, at Daura village, Karaye, on 03/07/2014
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20. Interview with Dalladi Ali Limanci. Trader Age:56, at Limanci quarters on15/10/2014.
21. Interview with Bala Malami Karaye.Irrigastion Engineer Age: 55, at Kusalla dam on 05/07/2014.
22. Interview with SadauMuhammedNakura. Farmer Age: 70, at 'Yar Kasuwa quarters on 25/10/2014.
23. Interview with Alkassim Abdullahi. Farmer Age: 50, at Tinkis village on 08/06/2014.
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25. Interview with Sani Umar. Farmer/Trader Age: 40, at Limanci quaters on 11/09/2014.
26. Interview with GarbaBasiruRagezali.Trader Age: 43, at Ragezalquarters on 15/09/2014.35
27. R.A.I Anyanwuocha '(1993), *Fundamental of Economics*. Africana publishers limited. P.91.
28. Interview with Lurwan Dabo.Farmer/Trader Age:45, at Daura village, on 03/07/2014.
29. Interview with Abdullahi Ibrahim (KASCO). Age: 45, at his office Karaye Local Government Secretariat on 27/11/2014.
30. Ibid.
31. Ibid.
32. Interview with Danfulani Umar Daura.Farmer/Trade Age: 50,at Dauravillage, on 15/10/2014.

33. Interview with Danfulani Umar Daura.Farmer/Trade Age: 50,at Dauravillage, on 15/10/2014.

34. Interview with Sa'idu Idris Karaye. Extension Worker Age: 49, at Torankawa quarters on 20/09/2014.

35. Interview with Danfulani Umar Daura.Farmer/Trade Age: 50,at Dauravillage, on 15/10/2014.

36. Interview with Abdullahi Ibrahim (KASCO). Age: 45, at his office Karaye Local Government Secretariat, on 27/11/2014.

37. Interview with Sa'idu Idris Karaye. Extension Worker Age: 49, at Torankawa quaters on 20/09/2014.

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46. Interview with Lurwan Dabo.Farmer/Trader Age: 45, at Dauravillage, on 03/07/2014.
47. Interview with Ubale Mai-alkama.Farmer/Trader Age: 60, at Dambazau village, Karaye, on 12/06/2014.
48. Interview with Ya'u Muhammad Daura. Village head Age:70years,at his palaceDaura village, on 03/09/2014.
49. Interview with Ali Ya'u. Trader.Age: 52,at 'Yarkasuwa quarters, on08/09/2014.
50. Interview with Lurwan Dabo.Farmer/Trader Age: 45, at Daura village, on 03/07/2014.
51. Interview with Kabiru Dandabo. Civil servant Age:48, at his office Karaye local government Secretariat,on 01/09/2014.
52. Interview with Auwalu Garba. Civil servant Age: 47, at at his office Karaye Comprehensive Health Center, on 02/09/2014.
53. Interview with HaladuAdamuZoza. Trader Age: 52, at his shop in Damagari vegetable market, on 10/09/2014.

GENERAL CONCLUSION

Irrigation farming was practiced in Karaye in the pre-colonial and colonial periods. It was significantly transformed in the post-colonial period with the construction of Kusallaand ChallawaGorge Dams from which large scale irrigation farming started. Such monumental developments changed the pattern and method of irrigation farming in the area. This results to the acquisition of new farming techniques practiced by irrigation farmers.

The study discusses the importance of irrigation farming in reducing unemployment and abject rural poverty in Karaye.The agile youth of Karaye who often moved to the southern parts of Nigeria, such as Lagos, Port Harcourt and Warri, as seasonal migrants for five to six months settled at home and exercised economic activities to complement the gains of the wet season instead of seasonal migration. Consquently, Karaye experienced the influx of migrant farmers to the area either as settler or seasonal migrants for the purpose of irrigation farming. Irrigation

farming opened up multilateral relations, which developed between Karaye and other communities.Thus, bilateral relations contributed the enabling environment for the outflow of people from Daura, Kebbi, Danbatta, Kaduna, Kabo and Niger Republic to Karaye. In turn, migrant farmers brought in new seeds, such asgroundnuts, onions, potatoes, rice, tomatoes and so on, which were hitherto not grown in Karaye. The introduction of high-yield crops replaced the old varieties. On the other hand, the establishment of economic relations resulted in strengthening social relations through inter-marriages between the migrant farmers and the indigenes of the area. The most tangible benefits derived from irrigation farming were the income from the export trade. The choice ofcrop enabled irrigation farmers to grow the cereals and high value crops mentioned above. These crops require high volumes of water, a large quantity of manure and fertilizers, good seeds and cultural management. All these are needed for irrigation to grow successfully. High yield varieties usually have a higher water requirement than ordinary varieties. This can only be done through the irrigation scheme, multiple cropping and the application of fertilizer. Irrigation makes it possible to grow more than one crop in a year. Other importantant aspects attached to irrigation farming in Karaye are: crop quality and economic return. However, the quality of dry-season tomatoes was uncomparable with that of the wet season in terms of quality and added more flavor to food and appetite. It also provided high income to the farmers and no risk of damage from the rain.The quality and freshness of the irrigated goods in Karaye, such as tomatoes, pepper, potatoes, groundnuts and fodder, attracted traders to the area that came with many economic activities.

Although the system of farm operation in pre-colonial and colonial periods was almost the same to some extent with the post-colonial system of operation,there are few or little differences. Challawa Gorge Dam was constructed and placed under the authority of the Hadejia

Jama'are River Basin Development Authority (HJRBDA). It brought about further expansion and changes of irrigation as against pre-colonial and colonial time. There was farming efficiency in terms of new seed varieties and new farm mechanization replaced the old ones for example, the introduction of the tractor for land preparation, the spraying machine, modern weeds control, the threshing machine and the use of discriminative and non-discriminative herbicides. The traditional seeds were considered time wasting and of low quality in yields and grains when compared with the new variety of rice, potatoes, tomatoes, pepper and so on. A farmer could produce 20bags of rice per 2.5acres with the old variety while the new variety fetched 41bags per 2.5acres. However, there has been a great improvement in farming because farmers engage in all-year-round farming, which facilitates the increase their specialization. The size of the farm, which an average farmer cultivates in the pre-colonial period, was 0.5-1acre.but now cultivates 7.5- 10acres. This occurred as a result of a new method of irrigating the land. Example, in pre-colonial period farmers used the shadoof method while in this period (post colonial) they use a pumping machine, wash-bores, bore-holes, etc. to supply water to the land. Farming efficiency leads to the production of higher food crops, which resulted to population growth. In consequence, the rapid growth of the population resulted in enlarging markets that bring more revenue to the government, the labor force and the higher demand of other goods increased. There was the marginalization of small farmers who found it very difficult to make profit through farming small piece of land. Thus, they either sold it to the big farmers or hire them to cultivate and in turn became laborers.

The economic fortunes of workers, farmers and traders were increased. The capital base in farming in the period increased due to loans given to farmers to cultivate more acres and many people were encouraged to practice irrigation. Many farmers were able to purchase and have

access to luxurious materials that hitherto seemed beyond their reach: building newblock houses, owning electrical appliances, travelling round the world and access to education. Also, the economic status of women in their matrimonial houses increased because they prepared foodfor sale tofarmers, labourers and traders. In a broader perspective, the expansion of irrigation in Karaye resulted in the external trade that made Karaye known to outside communities. The quality products attracted male and female traders, especially from southern Nigeria, to buy goods from Karaye. Irrigation farming further changed the nature of the food supply and intake to the populace. More food crops were produced under the scheme, which drastically reduced the rapid increase in price of the crops in the dry and wet seasons. Dry season crops were fresh and qualitative when compared to wet season crops. However, there were adverse effects of irrigation farming to the community. For example, inmost of the vegetable markets or collection centers where the traders, farmers and laborers converged, there were provisions for entertainment and the influx of prostitutes in the area. Infact, the underage girls who visited such centers for the sale of food acquired bad social behavior, such as prostitution.

The socio-economic developments of irrigation farming attributed to the government and NGOs through KNARDA and KASCO were made to intervene by constructing boreholes, wash bores, water-pump, tube-wells at different spots, which facilitated a change over from traditional to modern irrigation practices. Other inputs enjoyed by the farmers were new improved seeds,fertilizer supply at subsidized rate as well as the construction of a feeder road of about 2.5 km length from Tumfafi village to Kofar Zango (zango gate) in Karaye tofacilitate the smooth movement of farmers and their produce from the farm to market centers. In addition, the involvement of non-governmental organizations, such as the Millenium Development Goals (MDGs) made the construction of irrigation channelspossible. Theseencouragedoptimist

farmersto engage in the practice, especially under KNARDA through the*Fadama* system of *Fadama* I and*Fadama*III. On the other hand, irrigation in Karaye has provided a breeding place for mosquitoes, which made malaria spread. Poor government participation, lack of sufficient capital, competition over land acquisition and flooding cause other problems. Other problems included trade in irrigated goods, which has price fluctuations and harzards. Notwithstanding these problems, irrigation farming has positively impacted on the socio-economic development of the Karaye community.

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S/N	NAME	AGE	OCCUPATION	PLACE OF INTERVIEW	DATE OF INTERVIEW
1.	Alkasim Abdullahi	50 years	Irrigation farmer	Tinkis village	08/06/2014
2.	Ubale Mai alkama	60 years	Farmer	Dambazau village	12/06/2-14
3.	Alfa Abdu	48 years	Vegetables trader	K/yammaKaraye	22/06/2014
4.	Aminu A. Mamman	38 years	Farmer/ trader	Turawa village Karaye	01/07/2014
5.	Lurwan Dabo	45 years	Farmer	Daura ward Karaye.	03/07/2014
6.	Bala Malami Karaya	55 years	Irrigation engineer	Kusalla damkaraye	05/07/2014
7.	Sa'idu Idris Karaye	49 years	Extension services	Torankawa quarters Karaye	07/07/2014 20/09/2014
8.	Garba Magaji	40 years	Farmer	Yarkasuwa quarters Karaye	20/8/2014
9.	Lawan Idris	51 years	Civil servant	Department of Forestry, Ministry of Environment, Kano State.	23/09/2014
10.	Yaro Wakili Turawa.	70 years	Traditional title holder.	Turawa village Karaye.	24/08/2014
11.	Hamisu Yusif	45 years	Land officer	H.J.R.B.D.A Karaye	09/09/2014
12.	Ibrahim Ali	40 years	Itinerant farmer	Sabuwar UnguwaKaraye	30/08/2014
13.	Kabiru Dandabo	48 years	Civil servant	Karaye L.G	01/09/2014

				Secretariat Kano State.	
14.	AuwaluGarba	47 years	Health attendant	Karaye Comprehensive Health Centre	02/09/2014
15.	Sani Umar (Mai doya)	40 years	Trader	Limanci quarters, Karaye	11/09/2014
16.	Abdul'azizZubairu	40 years	Farmer	Daura village,Karaye.	08/09/2014
17.	Ya'u Muhammad	70 years	Village head	Daura ward,Karaye.	03//09/2014
18.	Nura Wada	40 years	Health attendant	KarayeComprehensive Centre.	09/09/2014
19.	Ali Ya'u	52 years	Trader	'YarkasuwaKaraye.	08/09/2014
20.	Haladu Adamu Zoza.	52 years	Trader	Vegetables market Damagari.	10/09/2014
21.	Alh. Maman Turawa.	70 years	Farmer	Turawa village	22/09/2014
22.	BalaAbdulahiKaraye	50 years	Trader	Limanci quarters Karaye.	12/09/2014
23.	Suwaiba Ali	40 years	Vegetables trader	At her resident 'Yarkasuwa Karaye.	08/09/214
24.	Garba Basiru Ragezali	43 years	Vegetables trader	Ragezali quarters Limanci ward Karaye.	15/09/2014
25.	Ibrahim Driver	50 years	Transporter	Marmara quarters, Karaye.	20/09/2014
26.	Danfulani Umar Daura	50 years	Farmer	At his resident Daura ward Karaye.	15/10/2014
27.	Dalladi Garba Limanci	52 years	Trader	Limanci quarters karaye.	30/09/2014
28.	Zubairu Bello	52 years	Civil servant	Ministry Of Agriculture,Kano State.	05/11/2014
29.	Ya'uHaladu	65years	Farmer	Tinkis village Karaye.	15/10/2014
30.	Dalladi Ali Limanci	56 years	Trader	Limanci quarters Karaye.	15/10/12014
31.	Abdullahi Ibrahim Limaci	80 years	Farmer	Limanci quarters Karaye.	10/10/2014
32.	Sani Abullahi (Tsewala)	43 years	Trader	Unguwar fariKaraye.	20/10/2014
33.	Sadau Muhammed Nakura.	70 years	Farmer	'Yarkasuwa quarters Karaye.	25/10/2014
34.	Garba Sulaiman	45 years	Trader	KantuduLimanci ward karaye.	27/06/2014
35.	Wada Abubakar	65 years	Retired civil	Yarkasuwa quarters	08/11/2014

			servant	Karaye.	
36.	Ali Malami Karaye	45 years	Traders	Marmara quarters Karaye.	11/10/2014
37.	Abdullahi Ibrahim Karaye (KASCO)	45 years	Assistant Agric Superintendent.	Agric Department Karaye LGA.	27/11/2014
38.	Yahaya Hambali	45years,	Islamic Preacher,	Unguwar Fari, Karaye	19/11/2014
39.	Barakame abinci, Turawa Karaye.	55years	Food seller	Turawa Village, Karaye	10/12/2014
40.	Rakiya Musa	48years	Trader	Turawa Village	13/05/2014
41.	Furera Sani	48years	Trader	Daura village	16/06/2014
42.	Nasiru Adamu	45years	Extension Worker.	Baurawa Quarters Karaye	19/10/2014

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