

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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Czech University of Life Sciences Prague

**Faculty of Tropical
AgriSciences**

Rural Development and the Position of Agriculture in Nigeria

MASTER THESIS

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Thesis title

Rural Development and Position of the Agriculture in Nigeria

Objectives of thesis

The main (development) objective of the present master thesis is a study on the situation in rural areas of Western Nigeria. It means: identification of the position of agriculture in rural development and description of recent process of the development, analysis or examination of impacts of the regional agriculture on rural development and identification of linkages between the agriculture and rural development with their reflection in the social (and ethnical) structure of the Nigerian rural society.

Methodology

The methodology adopted in this thesis is proposed as a quantitative approach; we look at rural development through an 'integrated rural development' as defined by Mardsen (2003). This framework asserts that the rural development can not be limited to the only development in agriculture, it also involves creation and combination of diverse rural activities at the local level. The integration of all of these economic and social activities of the rural population as strengthened by some contributions or interventions of individual and companies from cities (food production - newly energy production and processing, tourism, crafts, etc) is the basis for an integrated rural development approach.

The methodology adopted in this study is based on both qualitative and quantitative survey by use of a specifically formulated questionnaire and a semi-structured interview with preliminary (and statistically chosen) contact people which will be conducted in some selected rural areas in Nigeria. It will be for reason of collection a rich data base for the following analyses. The data statistically processed will be collected from various sources and presented in the form of published journals and reviews.

Schedule for processing

Timeline for Thesis Writing:

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December—June 2012: Methodology & Literature review

July-October 2012: Administering of questionnaire and interviews implementation

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Keywords

Nigeria, rural development, infrastructural facilities, role of agriculture

Recommended information sources

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DECLARATION

I hereby declare that this thesis entitled “Rural development and the position of agriculture in Nigeria” is my own work and all the sources have been quoted and acknowledged by means of complete references under the supervision of Havrland Bohumil, Prof. I am solely responsible for any error in this work.

In Prague, 18th April, 2014

OOTEKHILE Cathy-Austin

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“Learning is a continuous process, the moment we stop learning we are dead”- **Cathy-Austin Otekhile**

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DEDICATION

To The Lord God Almighty –The blessed and only Potentate, The King of kings and Lord of lords. Who knew me and my assignment even before I was conceived. To HIM alone by all the praise and glory. Amen!

To My Darling husband and Children

Abstract

Agriculture still remains the primary source of livelihood for the rural population; it is crucial to the development of the rural areas. However there is a shift of paradigm from the traditional role of agriculture in providing food and raw materials for the industries to the Multifunctionality of agriculture; non tradable goods such as the conservation of the environment and the pollution of the environment are also produced.

This study analyzes the position of agriculture in rural development in Nigeria based on the survey conducted in the two rural communities in Lagos state; Aiyedoto and Iyana-Iba farm settlement of Ojo local government areas and Iragon Thogli farm settlement in Badagry Local government. Evidences from our findings revealed that agriculture has not only helped to improve the economic well being of rural dwellers but it has also helped in the conservation of the environment although air around Aiyedoto farm settlement and its surroundings is polluted as a result of the waste generated from the poultry farm.

Based on our findings we recommended the establishment of a compost plant and the biogas plant in order to channel the waste generated from the Aiyedoto farm settlement and the Iragon Thogli farm settlement for the generation of electricity.

Keywords: Agriculture, rural development, Multifunctionality, Infrastructures, Lagos state, Nigeria

Abstrakt

Zemědělství je stíll zůstává obživou venkovského obyvatelstva ; To je velmi důležité pro rozvoj venkovských oblastí . Howeveře je posun od tradiční role zemědělství při zajišťování potravin a surovin pro průmysl multifunkčnosti zemědělství ; neobchodovatelné věci jako je ochrana životního prostředí a znečištění jsou také vyráběny .

Tato studie analyzuje úlohu zemědělství v rozvoji venkova v Nigérii na základě průzkumu provedeného ve dvou venkovských komunit v Lagos státu ; Aiyedoto a Iyana - Iba farma osada Ojo místní vláda oblasti a Iragon Thogli farma v Badagry místní samosprávy . Důkazy z našich zjištění, že zemědělství je nejen přispět ke zlepšení hospodářského blahobytu venkovského obyvatelstva , ale také pomáhá chránit životní prostředí , i když jsou zemědělská usedlost Aiyedoto a jeho okolí znečištěné v důsledku vzniklého odpadu z drůbežích farem .

Na našich poznatků , doporučujeme vytvoření kompostu a bioplynu elektrárny efektivnější řízení farma Aiyedoto zemědělských osad Iragon Thogli pro výrobu elektřiny .

Klíčová slova : Zemědělství , rozvoj venkova , multifunkční , infrastruktury , Lagos State Nigérie

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List of Abbreviations

ADB	African Development Bank
ADP	Agricultural Development Project
CAP	Common Agricultural Policy
CADP	Commercial Agriculture development project
DFRRI	Directorate of Foods, Roads and Rural Infrastructure
EU	European Union
GDP	Gross Domestic Product
FAO	Food and Agriculture Organization
IDA	International Development Association
IFAD	International Fund for Agricultural Development
MDGs	Millennium Development Goals
NDE	National Directorate of Employment
OECD	Organization for Economic Co-operation and Development
OFN	Operation Feed the Nation
SAP	Structural Adjustment Programme
UK	United Kingdom
WTO	World Trade Organization
VAR	Vector Auto Regression analytical technique
BTC	Belgian Development Agency
Agric YES	Agriculture Youth Empowerment Scheme

Chapter 1

1. Introduction

Nigeria is situated in the West of Africa shares border with Republic of Benin in the West, Chad and Cameroon in the East, and Niger in the North. It covers a land area of 910,770 sq. km. The population of the country according to World Bank (2012) is 168,833,776. The climate is characterized by dry and wet seasons, 70 percent of the population in Nigeria is employed in agriculture and it is mostly carried out on subsistence level and about 80 percent of the land area is used for agriculture. The country is naturally and agriculturally endowed with natural and agricultural resources amongst which are crude oil, palm oil, groundnut, cocoa, bitumen and timber to mention but a few.

Despite its rich resources; the agricultural sector is not properly funded and have not received the necessary attention due to the oil boom of the 1970's which shifted the government attention away from the agricultural sector. Small holder and traditional farmers are still using crude farming implements for farming; they are constrained by credits, poor infrastructures, environmental degradation, lack of access to agricultural inputs and market. Agriculture has the largest significant contribution to the GDP of Nigeria; it contributed 41.93 percent to the GDP of the country in the third quarter of the 2013(National Bureau of Statistics, Nigeria). The agricultural output continues to experience increase in 2013 but the agricultural production output is still not a match with the rapid population growth.

Historically agriculture forms the bedrock of any economy in the world; it plays a significant role in providing food for the rural and urban populace, raw materials for the industries, help in shaping the landscape and contributes to the attainment of the MDGs. However this historical traditional paradigm is changing as many researchers are emphasizing the Multifunctionality of agriculture in rural development

Agriculture and rural development are inseparable; agriculture forms the major source of livelihood of the rural populace and 50 percent of the Nigeria population lives in rural areas (World Bank, 2012).

The dominant role of agriculture in the development of the rural areas is diminishing and that the expectation of the society about agriculture has changed; they do not only expect agriculture to provide food but they expect agriculture to help preserve the environment and shape the landscape, manage the water resource and control flood. (Huylbroeck *et al.*, 2007).

Agriculture alongside with forestry has played an important role in the economic development of the rural areas of OECD member countries; despite a decreasing share of agriculture in rural employment and low GDP, agriculture is still a major land user and plays a vital role in many environmental and other land related issues in rural areas such as the management of the water and conservation of the natural resources. A significant amount of farm household income come from non-agriculture sources which means for many farm households a strong and diversified rural economy is important for the survival of the farm. The contribution of agriculture to the rural economy, environment and the overall development of the rural areas cannot be overemphasized; it is a vital tool to eradicate poverty, gender inequality and infant child mortality (OECD, 2010).

This study will investigate and examine the position of agriculture in the development of the rural areas in Nigeria and analyzed the relationship between agriculture and rural development in Nigeria using econometrics technique. And will contribute to give recommendation to the improvement of the agriculture in the development of the rural areas.

1.1 Structure of the Study

This study is made up five chapters. The first chapter is the introductory part; the second chapter gives a review of related literature and the definition of basic concepts. The third chapter outlines the aims of the study; the fourth chapter discusses the material and methods used for the study. The fifth chapter presents the analysis and discussions of the results. And finally the last chapter underlines the conclusions and makes a vivid recommendation on how to improve the present situation.

1.2 Research Questions

What is the position of agriculture in rural development in Nigeria?

What is the relationship between agriculture and rural development?

Does agriculture impact the rural areas?

Does the development of the rural areas come from within or without the rural areas?

In what way can agriculture help to develop the rural areas?

1.3 Hypotheses

1. Agriculture is the main economic base for rural population in Nigeria.
2. Agricultural development is a determining factor for rural development in most Nigerian states
3. Rural areas are constrained by exodus of youths of rural population to cities in most Nigerian states
4. Agriculture exhibits the multifunctional nature in the rural areas

Chapter 2: Literature Review

This chapter is focused on the review of past and current literatures. The past rural development programmes initiatives of the Nigeria government was identified and discussed. And the different approaches to rural development were also enumerated.

2. Literature Review

According to the World Bank, agriculture and rural development remains a fundamental key for economic growth; agriculture can aid rural development in three key areas: increasing food security, poverty alleviation and protecting natural resources or environment (Roetter *et al.*, 2007). It is of vital importance to many societies because it is the sector with the most interactive connections with the environment; it has a strong impact on the natural environment and vice versa. They argued that agriculture plays three definite roles in the future of rural development strategies: A concrete base for transfiguring livelihoods, supplying high quality affordable food and a supplier of environmental services.

Agriculture plays an important role in providing food for the rural populace both in the short and in the long run in order for them to meet their daily dietary requirement. However limited access to food is often linked to underdevelopment, poverty, food insecurity, and malnutrition. However they argued against the general discussion which says improving rural economy is often associated with the continual introduction of new, non-agricultural enterprises and these new activities are always conceived as originating from non-rural areas. This is based on the assumption that agricultural sector is not capable of generating rural development. They emphasized that rural development can be build up by the innovation and the skills of the actors present in agricultural sectors; further illustrated the competitiveness of agriculture in rural development by saying that household farmers have access to resources and experiences necessary to change the old practices and create new practices.

The new practices developed can be learnt step by step within the system as this actually reduces risk on depending on external actors. And the capacity of farmers to network among themselves; all these rural development activities rooted in agriculture add up into relatively low transaction and transformation costs. The example of the Dutch dairy industry was cited;

introducing a new product in the market which would have cost Euro 25 million through the agency and networking of farmers the development of new regional products can be achieved much more economically. Definitely using these capacities of the agricultural sector can and will continue to be a bedrock for rural development. Farmers aimed at making their farms less dependent on market external inputs by developing productive activities using their own valued resources.

OECD, (2010) agricultural activities in the rural areas generates both positive and negative externalities; the positive externalities are employment of the rural population, maintaining of the countryside and the landscape, provision of carbon sink which helps to mitigate the effects of greenhouse gases, food security and conservation of the water and soil resources. These positive externalities invariably contribute to the quality of life of the rural communities, make the rural communities attractive to live and also affect the recreational value to the land. On the contrary, agricultural activities in the rural communities can produce negative externalities due to management practices such as the use of fertilizers which can cause water pollution, soil erosion, loss of biodiversity, environmental degradation and emission of greenhouse gases. These negative externalities can have negative impact on the quality of life of the rural people.

Ogundele (2010) mentioned different agricultural and tourism potentials within the rural areas and enumerated the impacts of these potentials on rural dwellers and recommended ways of preserving these potentials in order to achieve sustainable development. The result of their findings revealed that there is a direct relationship between agricultural and tourism potentials and rural development. In spite of environmental problems caused by agriculture and tourism in the rural areas; the positive relationship provides benefits to the rural dwellers in terms of job opportunities, income for households and other economic benefits to the people in the rural areas and if well managed can help reduce rural-urban drift (migration).

The role of women in agriculture and rural development in Nigeria cannot be over emphasized; although some factors which are socio-cultural and economic in nature contend against women's participation in agriculture but with the assistance of women's groups,

community based organization and civil organizations they were able to overcome and advance their cause (Ogunlela and Mukhtar, 2009).

The rural development policy involves actions or initiatives that are designed to improve the quality of life and the overall well being of the rural populace. They see it as broader than agricultural policy, but agricultural policy focuses on objectives which go beyond rural development such as food security and food safety. And they mentioned that OECD countries have different views concerning rural development policy. In some countries it is used interchangeably with regional policy, where rural development is focused on provision of infrastructures and public services. In other countries it is viewed as extending the contribution of agriculture to the areas of the local communities (OECD, 2010).

The linkage between commercial agriculture and rural development through the introduction of the Zimbabwe Farms project in Tsonga and its environment; the survey evaluation that was carried out through sampling of 240 farmers revealed that the neighbouring communities have benefited from the project positively. The results revealed that about 20 percent of the labour force required by the Zimbabwe farmers was obtained within the local communities and most people were employed as labourers, security guards and other unskilled labours. Similarly 3 percent of the local farmers were trained to improve local productions while 18.8 percent of the farmers observed increased productivity and subsequent increase of income as a result of the commercial activities of these new farmers. And also the rural infrastructures like roads, electricity and potable water supplies within the communities and its surroundings were improved jointly by the state government and the Zimbabwe farmers. Milk production, rice, poultry, soya beans and animal fields are produced for international markets (Olawepo, 2012).

The adoption of the concept of multifunctional land use by EU in order to provide additional support for agriculture; it is argued in the EU policy papers that agriculture does not only provide food and fibre but also help to sharpen the rural environment in terms of wildlife, natural habitats, landscape, water resources and open space. Trade liberalization by the WTO is seen as posing a threat to the Multifunctionality of agriculture and sustainability because it may further increase scale and intensification which may further hinder the other functions of the agricultural land use. Other countries like US which are in support of liberalization

counteracts the position by stressing that the high support prices are the driving forces for this development and that liberalization will result into more extensive production which are less polluting and damaging to the rural environment. They stressed the new role of agriculture within the framework of rural development; the new role is defined in terms of the multifunctional nature of agriculture and that agriculture is not only valued in terms of its contribution to the production of foods and raw materials, employment and revenue which are the original basic functions of agriculture . The outputs or functions of this multifunctional agriculture cannot be valued by the market; the market cannot value the pollution of the water resources and environment.

OECD, (2001) identifies the multifunctional nature of agriculture and recognizes the position of agriculture in the economic development of rural regions. They stressed that the Multifunctionality is not the “European invention” but rather multiple treaties and international conventions like the Rio Convention of 1992 makes explicit reference to the multifunctional nature of agriculture in order to specify its non market functions, the Rio Convention emphasized the role of agriculture for food security and natural resource convention objectives. According to OECD, three conditions need to be satisfied before accepting policies encouraging the production of non-commodity outputs:

- a positive relation between commodity and non-commodity output
- No possibility of internalizing the non-commodity in the market
- No non-farm activity can produce non-commodity output at a lower price.

When all these three conditions are satisfied it presupposes an agreement or coordination between environment, rural development and agricultural politics. The major problem highlighted is the problem of how to reward or remunerate farmers for producing non-commodity outputs. The economic valuation of these non commodity outputs is not a new problem, some economist have sought different ways to value these non commodity outputs. Two main approaches used:

- the value can be determined with a direct link with a marketable product (hedonic pricing)

-and constructing a hypothetical market to find out the willingness to pay or willingness to accept (contingent Valuation Methods). (Huylbroeck *et al.* 2003; OECD)

A new model of rural development is emerging both in practice and theory and despite that agriculture still plays a key role in the rural economy although this role is changing or might change in the future. Plural-activity of household farms forms part of the element of the rural development, the attractiveness of the countryside induces plural activity on a growing scale *viz a viz* the plural activity help to keep the countryside attractive; a substantial household farm income are derived from plural activity but in spite of this there is still continuity in agricultural activity in the coming decades. The case of the Irish farming has proved that combining farming with other profitable plural activities has become a widely accepted livelihood strategy for rural families which enables them to make the best use of diverse opportunities offered by agricultural and labour markets. Plural activity has become one of the new pillars supporting European farming (Jan Douwe Van der Ploeg *et al.*, 2002).

The European Union is encouraging the development of the rural areas, environmental protection and conservation of the rural landscape by giving attention to organic farming; it is seen as a way of ensuring sustainable development in the rural areas. EU has the strongest organic market demand in the world; to this extent in 2002 Hungary registered 54.497 ha of its agricultural land as organic land. A focus group analysis was carried out to determine the reason behind people buying or not buying organic foods. The integration of organic farming into the conventional food chains does not hinder the positive potential impact of organic farming on rural development. It is seen as a platform for addressing the recent environmental, animal welfare and food safety concern of CAP. Evidence from a case study recommended that organic farming can strengthen the rearrangement of on-farm activities which will invariably back up the rechanneling of resources towards wider activities leading to more involvement in the rural economy. The development of the rural areas can be achieved through alternative food chains and engagement in para-agricultural activities (Sarudi *et al.*, 2003; Darnhofer, 2005).

Agriculture must be able to add to the rural wealth, contribute to the development of a new agricultural sector that matches the needs of the wider society and reshape the rural resources

in such a way that it leads to the broader rural development benefits if it is multifunctional. The UK rural development policies are evaluated on the basis of these three conditions. It was revealed that in the UK a clear recognition of multifunctional agricultural traits occurred during the 1990's, when an economic crisis in the farming sector combined with traumatic effects the foot and mouth disease encouraged a shift from sectoral to a more regional and territorial perspective that reintegrates farming into rural development. In reality, the UK government has been unable to convert multifunctional agriculture into rural development. The shift of regionalization of rurality is triggered by the European Structural funds which are supported by LEADER; by the project based and partnership based approaches to rural problems. For a clearer understanding, they emphasized that more research is needed to uncover the existing and potential role of both governments and producers in progressing sustainable multifunctional rural development (Marsden and Sonnino, 2008).

The new role of agriculture in rural areas is reviewed by examining the definitions and evidences of multifunctional agriculture; these evidences revealed that agriculture do not only contribute to the rural wealth by producing tradable goods but also produce non-tradable goods directly by increasing the economic value of the rural tourism sector and indirectly through conservation of rural landscape or agro-ecological systems. They emphasized on how the new role of agriculture can be stimulated by harmonising the productive and non-productive functions of agriculture under a new institutional arrangements and a shift in policy (Huylenbroeck *et al.*, 2007).

Bakare, (2013) analyzed the relationship between sustainable agriculture and rural development in Nigeria using the vector auto regression analytical technique (VAR). The result revealed that the past values of the agricultural output could be used to predict the future behavior of rural development in Nigeria. Despite that agriculture plays a dominant role in the Nigerian economy, it is still unsustainable because of the reducing capacity of agriculture to supply adequate food at affordable prices for the populace. They suggested that policy makers should support agriculture in a sustainable manner by employing more sustainable agriculture and productive systems.

The major paradigm shifts in rural development that has occurred over the past-half century; the timeline depicting a number of theories, themes, and policy thrust that have dominant and supplementary in rural development thinking since 1950's was used. The long-term continual success of small-farm efficiency paradigm is underlined. For a new paradigm to be known and be accepted; it will be one which agriculture is given its place and work alongside with other rural and non-rural activities that are vital to the building of a strong rural livelihoods; not only seeing agriculture has the unique solution to poverty. It is under this premise that cross-sectoral and multi-occupational diversity of rural livelihoods may need to become the cornerstone of rural development policy in future (Ellis and Biggs, 2001). De Janvry and Sadoulet, (2009) further argues that due to globalization integrated value chains, rapid change of technology, institutional innovations and environmental constraints a new paradigm is needed to accommodate the multiple role of agriculture in the emerging text of inducing economic growth, poverty alleviation, narrowing income disparity, food security and providing environmental services.

Singh (2007) in a policy brief discusses the relationship between agricultural and rural development and the role played by them in reducing poverty in the Greater Mekong Sub-region countries. The link between agriculture, rural development and poverty reduction is vital since agriculture contributes over 40 percent to the gross domestic product (GDP) and provides employment for 75 percent of the population, and a greater percentage of the population lives in rural areas and depends on agriculture for livelihood, an increase in agricultural productivity would definitely bring a larger number of people out of poverty. A number of bottlenecks hindering the development of the agricultural sector like environmental degradation, declining arable land, underdeveloped marketing channels and infrastructure besides the policy and regulatory challenges. All these constraints make the potentials of agriculture not fully tapped in the region.

The rural areas in Nigeria have not experienced remarkable level of development in the past 52 years; this is made visible by the lack of basic infrastructural facilities and poor quality of life in the rural areas. The obstacles hindering the realization of rural development and the necessary measures to improve the development of this vital sector were examined. The

measures considered important for the realization of improvement in development of the rural areas include the need for government to pay serious attention to developing and ensuring effective implementation of rural development projects and programs. In addition, the rural areas political representatives need to be involved in setting up relevant rural development programs for their constituencies and following them up with adequate monitoring to ensure successful implementation by government (Ugwuanyi and Chukwuemeka, 2013).

However, ADB (2000) identified some exogenous and endogenous constraints hindering agriculture and rural development in Africa. The key exogenous constraints are: increasing demand caused by increasing growth rate in population which is estimated at 3 percent per annum and is putting strong pressures on the low input/output of agricultural production and a contributing factor to environmental degradation in the region, the poor state of basic infrastructures hinders the contribution of the rural labor force to productive enterprises, high external debt which poses burden on revenue generated from tax and export earnings, regular civil unrest in some countries pose a high risk discouragement to private or foreign investors and the exposure of rural communities to health hazards such as guinea worm, malaria, schistosomiasis, HIV/AIDS which reduces the productivity of local labor force.

The key endogenous constraints are:

- i. Heavy dependence on rain fed agriculture and harsh climatic condition like severe drought,
- ii. Poor resource management,
- iii. Low level of technology which usually causes high loss of farm harvest,
- iv. Poor linkage in commodity chain,
- v. Weak rural financial intermediation,
- vi. Complex land tenure system and inappropriate policy for agriculture investment and
- vii. High taxation on primary agricultural commodity exports.

2.1 Definition of Agriculture and Rural Development

Agriculture is the cultivation of the land, planting of crops and rearing of animals in order to provide food for the people, raw materials for the industries and other products which can be tradable or non-tradable. It includes fisheries, forestry and aquaculture.

Anriquez and Stamoulis, (2007) also defined rural development as the improvement of the rural area that benefits the rural people and where the improvement is sustained improvement in the people's quality of life(standard of living) or welfare. And they further quantified the definition by looking at the definition through the perceived development path from the 1960's till the 1970's. In the 1960's, rural development was seen as the structural change of economy from agriculture to industrialization but this lead to the decrease in the percentage share of agriculture to total employment and output in the proportion of rural population to total population. In the 1970's the focus and definition of rural development shifted to the provision of amenities to the rural poor; which is highly associated with the promotion of the standards of living as a condition for eradicating rural poverty.

The expansion of the definition of rural development over the years has led to explaining the concept of rural development along these three axes: social values, endogenous development and sustainable development. The social values are promoted by stimulating the involvement of all members of the community and equitable distribution of resources. The endogenous development is mainly concerned with the involvement of the local communities in the formulation of objectives; while sustainable development is respect for the local human resources in terms of expertise, soil, water and biodiversity and social structures and networks maintained for the future sustainability of the community.

Rural development can also be defined from the following perspectives; in terms of population size; is that the number of people who live in or within a settlement or agricultural activities practiced by the inhabitants and natural resources. Rural development is also defined as the development of regions such as villages and farm settlements excluding urban areas such as cities and towns. Most of the land area is expected to be used as agricultural land, forest or preserved or conserved in its natural state (Apostolides, 2006)

The rural areas are changing in respects to demography, diversification and the links between the rural areas and the national and global economies are been strengthened. They stressed the following key issues; if agriculture is still solely responsible for the development of the rural areas, the future of small holding farms, the potentials of non- farm rural economy, the challenges of new thinking on poverty, participation and governance. Some stylized facts about rural development was examined before, now and the future. They admitted that it is very difficult to generalize about the diversity of rural situations (Ashey and Maxwell, 2001).

Furthermore, rural development involves the creation of new products, services and new markets. It is also connected to the development of cost reduction (new) technologies. It is seen as the reconstruction of agriculture and the countryside and there adjustment to the European society and culture. Furthermore it entails increasing the value of the products from the agricultural sector by connecting it with new linkages to the markets (Jan Douwe, Van der Ploeg *et al.*, 2002).

2.2 Approaches to Rural Development

There are different approaches to rural development; the European model or approach to rural development is different to the Nigeria rural approach to rural development. In this section we will discuss the different approaches to rural development used in Nigeria.

2.2.1 Project-Oriented Approach to Rural Development

In order to develop the rural areas, some important projects which could be of benefit to the rural populace are been financed by external agencies like World Bank. In developing countries like Nigeria, quite a number of projects like electrification, irrigation, and construction of boreholes, feeder roads and construction of schools in the rural areas are financed by external agencies like World Bank and African Development Bank. And some other projects are focused on increasing agricultural productivity by distributing fertilizers, improved seedlings, agricultural extension and services. While other projects are aimed at providing sources of income for the landless rural populace like building of handcrafts centers

and training centers where they can be trained to be self-reliant or self employed, adult literacy programmes are also initiated.

2.2.2 Production-Oriented Approach to Rural Development

Different forms of co-operative societies are formed by farmers' in rural communities to assist themselves in terms of providing additional labor in cultivating the land, during peak harvest and providing financial assistance to members and also to get a good bargaining price for their produce.

2.2.3 Self –Help Approaches to Rural Development

The rural dwellers make efforts to bridge the gap between the living condition of the urban and the rural areas through self-help development activities; without having to depend on the government to supply their needs. The government majorly exploits natural resources from the rural areas to develop the urban areas neglecting the rural areas. This self-help approach to rural development and the communal way of life of the people has not only quickened the growth of the development in the rural areas but it has also helped to increase the benefits of development to the rural areas in Nigeria. However, in rural areas where the government is properly playing its role, self-help activities is a complement to the efforts of the government in rural development ([Akpomuvie, 2010](#)).

2.2.4 Top-Down Approach to Rural Development

The long years of military rule in Nigeria have made it impossible for the development of institutionalized participatory rural development; citizens were not given the opportunity to participate in development of the rural areas intended for their benefit because power revolves around individuals and groups within the military hierarchy. To this extent the citizens were not consulted on the rural development programme initiated by the government such as OFN, DFRRRI and SAP. This top-down approach is still very much in use in this current democratic dispensation, rural development programmes and policies are centrally planned by public officials and development agents and are handed over to the people who are passive

beneficiaries. This posed the greatest challenge in achieving sustainable participatory rural development (Nseabasi, 2012).

2.2.5 Integrated Rural Approach

An approach that prevailed in the 1960's through the 1980's, it delivers services to the rural poor in a top- down manner, integrating many public services required for poverty alleviation. It is carried out the role of an implementation agency usually the ministry of Agriculture, the presidential office or a parastatal outside the ministerial structure. It is mainly focused on agriculture. (De Janvry, 2004). The determining factors of rural development in Nigeria in the Nsukka region of Southeastern Nigeria and identified four factors which account for the total variance. The realization of a widely spread rural development will require an integrated rural development approach (Madu, 2007)

2.3 The place of Rural Infrastructures in Agriculture and Rural development

Rural infrastructural facilities are rural populace having access to safe drinkable water, education, good health care, good sanitation, communication, electricity, access to market and good road network which connects the urban areas to the rural areas. These basic infrastructural facilities are very vital to agriculture and rural development, without them agriculture, forestry and off-farm activities would not generate the required income for the development and sustainability of the rural areas and environment (IFAD, 2005).

Ogunleye and Jegede (2010) further stressed the importance of basic infrastructures in rural development; the results from their study revealed that good transportation system, increase in grants and revenue allocation to the rural areas, provision of basic infrastructural facilities, quality education, quality housing, employment opportunities and provision of micro credit are stimulus to rural development. The study suggested that the government should give more

attention to the economic and infrastructural development of rural areas since the rural areas are potential grounds for economic and socio-cultural development.

The rural-urban migration was majorly caused by lack of basic infrastructures in the rural areas; rural dwellers in search of better life migrate to urban centres where there is electricity, good health care and job opportunities. The table 1 below illustrates the fact that the rural population is declining by the year due to the migration of youths to urban centres for better life. In order to ensure rural and urban sustainable development; measures to reverse this trends are suggested. (Oyeleye, 2013).

Table 1. Rural population (% of Total population).

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Nigeria	54.93	54.25	53.60	52.95	52.30	51.65	51.00	50.38	49.77	NA

Source: World Bank Database, 2014

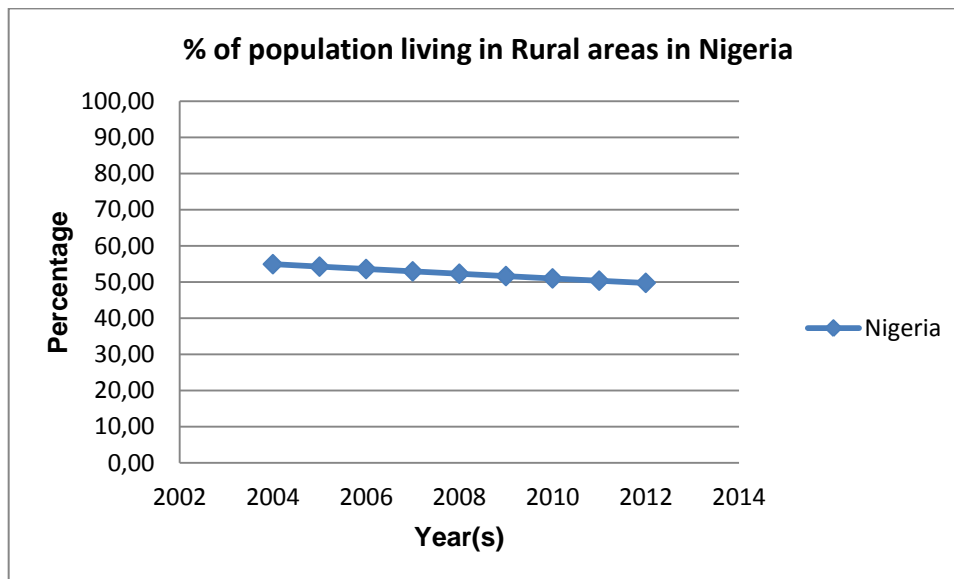


Figure 1. % of Nigeria population living in Rural Areas

Source: Own computation based on World Bank Database, 2014

2.4 The Initiatives of Nigerian Government to Develop the Rural Areas

In the past, the Nigeria government had initiated different programmes which are purposely aimed at developing the rural areas of the country. Some programmes or initiatives initiated by the Nigerian government which is aimed at developing the rural development; one of such initiatives is the establishment of the operation feed the nation.

2.4.1 Operation Feed the Nation (OFN)

Operation feed the nation was established in 1976 by the Military government in an attempt to increase food production in order to satisfy the food need of the nation (i.e. food security). Farmers were taught how to use modern implement for farming instead of crude implement. The government encouraged the farmers by supplying inputs and subsidies like agrochemicals, fertilizers, improved variety of seed/seedlings and day olds chicks. These inputs were provided at a very subsidized rate to individual farmers and freely to government establishments. (Iwuchukwu and Igbokwu, 2012).

2.4.2 Land Reform Measures (Land Use Decree)

The Nigerian government embarked on the first major land reform in 1978 by enacting the Land Use Decree of 1978. The Land Use Decree was meant to make land free from all obstruction of institutional constraints, to enable landless but enterprising farmers have access to productive land. The decree removed ownership of land from individuals and gave power of control to the state governors. However, in practice especially in the countryside, the customary tenure is still observed (Oyeranti and Olayiwola, 2005).

2.4.3 Directorate of Foods, Roads and Rural Infrastructure (DFRRI)

DFRRI was established in 1986, it was targeted towards providing the rural people with basic infrastructural needs such as food, potable water, good accessible roads and shelter. Between 1986 and 1993 over 278,526 km of roads was constructed and completed and over 5,000 rural communities were electrified. This provision of basic necessities stimulated the growth of

small scale agro-allied enterprises in rural areas. And a steady growth of food production was recorded between 1986 and 1993.

DFRRI was designed to make the rural areas more attractive to inhabit by providing basic rural Infrastructural facilities in order to cut down migration of the youths to urban areas. And also it was to change the rural ways of life and means of production in order to meet the challenges of increased agricultural and industrial production, and raise income of the rural people thereby reducing urban-rural disparities.

2.4.4 National Directorate of Employment

The national Directorate of Employment was set up in 1986; this is a skill acquisition programme and credit-granting scheme through entrepreneurship development. The philosophy of self –reliance was emphasized, the unemployed youths are trained to acquire a skill to enable them establish their own enterprises. The Directorate implements four core programmes namely, Vocational Skills, Development Programme (VSDP), Special Public Works (SPW), Small Scale Enterprises (SSE) and Rural Employment Promotion Programme (RPP).

2.4.5 Better Life Programme

The Better Life Programme was established in 1987, it was first introduced as a programme mainly for rural women by the former First Lady, Mrs. Maryam Babangida. The programme was targeted at complementing the existing Federal Government policy to develop the rural areas. The major objectives was to sensitize and mobilize rural women in achieving higher standard of living for their households, educating them about simple hygiene, child care, family planning, improving their literacy level and raising their consciousness about women’s right.

A summary of the programmes or initiatives by the Nigerian government from 1986 to 1997 set up to develop the rural areas is displayed in the table below:

Table 2. Rural Development Programmes in Nigeria from 1986 to Date

Programme	Year of Establishment	Target Group	Aims
Directorate of Food, Road and Rural Infrastructure	1986	Rural Areas	Feeder Roads, rural water supply and rural electrification
National Directorate of Employment	1986	Unemployed youth	Training and financial support to establish
Better Life Programme	1987	Rural Women	Self help, skill acquisition and health care
People Bank of Nigeria	1989	Underprivileged in rural and urban areas	Encouraging savings and providing credit facilities
Community Banks	1990	Rural residents and micro enterprises in urban areas	Savings and credit facilities
Family Support Programme	1994	Families in rural areas	Health care delivery, child welfare, youth development etc
Family Economic Advancement Programme	1997	Rural Areas	Credit facilities to support the establishment of cottage industries

Source: Adapted from Nwachukwu, I.N and Ezeh, C.I. 2007. Impact of Selected Rural Development Programmes on Poverty Alleviation in Ikwuano LGA, Abia State, Nigeria. Africa Journal of Food, Agriculture, Nutrition and Development with modification.

3. Objective

The major aim of this study is to analyze and evaluate the position of agriculture in the development of the rural areas in Nigeria with specific reference to a selected rural area in Lagos state; demonstrating by establishing a relationship between agriculture and rural development and that the development of the rural areas can come from within and does not necessarily need to come from the outside. However the specific objective the study aims to achieve are outlined below

3.1 Specific Objective

- ❖ To define agriculture and rural development
- ❖ To identify the role of agriculture in rural development
- ❖ To find out the limitations to the development of the rural areas.
- ❖ To analyze the relationship between agriculture and rural development
- ❖ To explain the position of agriculture in the development of the rural areas.
- ❖ To establish the linkages between agriculture and rural development

4. Materials and Methods

The methodology adopted in this study is based on both qualitative and quantitative approach; the literature review is based on secondary data gotten from online sources, publications and journals. In order to generate a rich data for analysis, a survey (questionnaire method) was carried out in two rural communities in Badagry local Government Area of Lagos State and Ojo local government, Nigeria where the farmers were interviewed in order to find out some important facts that will aid our research. And we also interviewed an official from the Lagos State Ministry of Agriculture. Data gathered from the survey was further analyzed using econometrics technique.

4.1 Description of the Study Area

The survey was conducted in Lagos State and was specifically carried out in two local government areas; Badagry Local Government Area and Ojo Local Government Area. Badagry occupies 443 km² and a density of 536.6 inhabitants per km²; is situated along the coastline of Lagos State and also one of the agricultural areas of Lagos state. It is located between Lagos Metropolis and the border of Benin. Fishing and agriculture forms the major source of livelihood of the people. Iragon Thogli farm settlement located in Badagry; is a settlement where farmers are engaged in livestock farming and agriculture. It is located between latitude 6⁰ 30' N and longitude 2⁰ 55' E and elevated 17 metres sea level. Aiyedoto and Iyana-Iba farm settlement are situated in Ojo Local Government; it shares boundary with Oriade local government Area at the East and on the West side Igbede through Ilemba Awori to Ajangbadi, to the North Apagirifi stream and the Atlantic Ocean on the South. It occupies 180 km² and the density is 5, 173.2 inhabitants per km², it is located between latitude 6⁰ 46' 70' N and longitude 3⁰ 18' 30' E. The farmers in these settlements are engaged in poultry and vegetable farming.

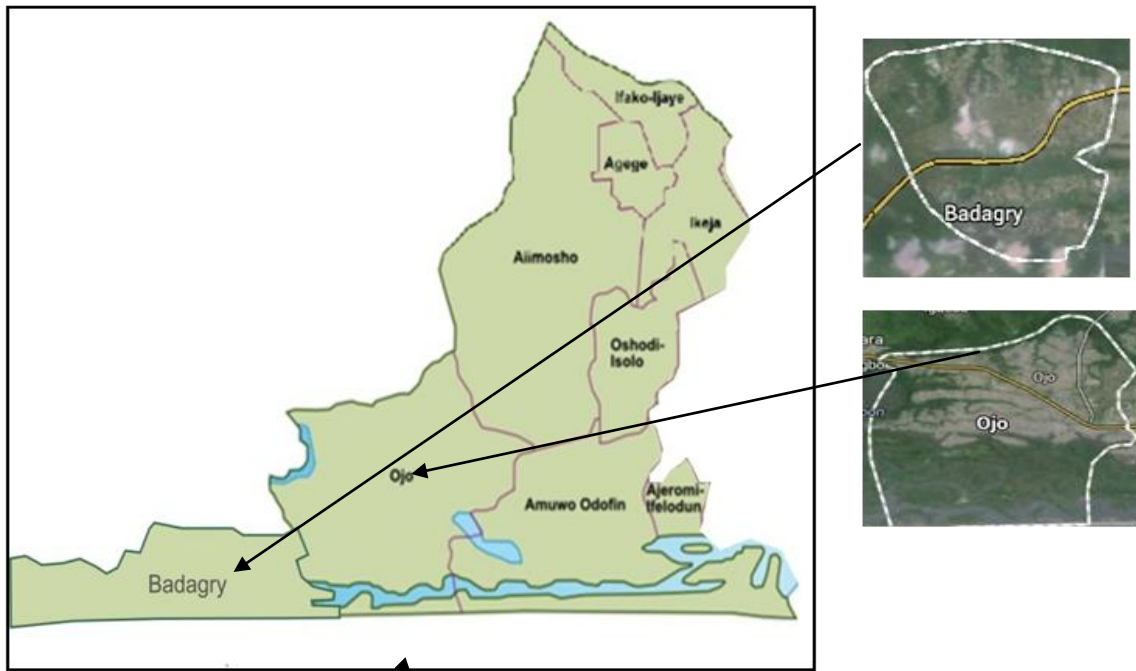


Figure 2. The map of Lagos state indicating the study Areas

4.2 Method of Data collection and Analysis

Primary data were collected through a well structured survey questionnaire from October to September 2014. A total of 75 farm households were used for the analysis from two different rural communities and two Local government areas within Lagos state. The data were collected from Iragon, Aiyedoto farm settlement and Iyana-Iba farm settlement. The field work was carried out within a period of 1 month.

Descriptive statistics and econometrics model is used to analyze the data collected, in order to draw meaningful conclusion about the position of agriculture in rural development; the gretl and the Microsoft Excel was utilized in this study. Qualitative data analysis methods were also been employed starting from data collection from individual respondents.

4.3 Sampling Method and Sampling size determination

The sampling method used in the study is random sampling method the farmers are randomly selected within the study area. The sampling method adopted in this study is based on simplified sampling technique provided by Yamane, 1967. To determine the sample size; 95% confidence level, degree of variability or standard deviation of .5 and $\pm 10\%$ precision level will be used.

$$n = \frac{N}{1 + (e)^2} \text{-----Equation 1}$$

Where n is the sample size, N is the population size and e is the level of precision or margin of error. Based on the formula above and the population size which is 500 a minimum of 83 responses is required for this study. This survey was carried out using 100 respondents but we were only able to interview 75 farmers in Aiyedoto and Iyana-Iba farm settlement and Iragon Thogli

Chapter 5: Results and Discussion

This chapter is centred on the results from the field survey conducted with the use of the questionnaire and analysis of the findings and the discussions of the results.

5. Results from Field Survey (with use of questionnaire)

5.1 General Characteristics of the Respondents

Our main aim here is to give a descriptive analysis of farmers' personal information and questions were asked concerning their sex, ages, family sizes, marital status, educational qualifications, households' income level from agricultural activities and from non-agricultural activities.

5.1.1 Socio-Economic Factors

Based on our findings and as reveals by figure, farmers from Iragon Thogli are involved in crops and livestock farming, farmers from Iyana-Iba farm settlement are vegetable farmers and farmers from Aiyedoto farm settlement are into poultry farming. They derive their source of livelihood from this occupation.

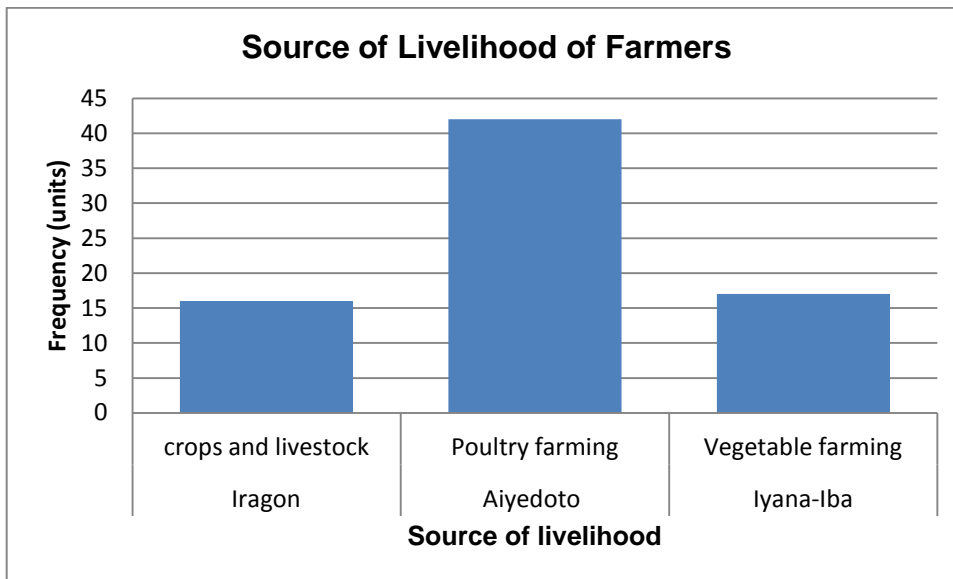


Figure 3. Source of Livelihood of Farmers

Source: Own survey result, 2014.

Gender

This is a dummy independent variable, indicating the sex of the households. A value of 1 is assigned for the female and 0 if male. And 80 percent of the respondents who are involved in agriculture in our study are male while 20 per cent are women.

Age

The age distribution of the farmers is shown in the Table 2 below; 43 percent of the respondents fall within the age bracket (below 30) and 19 percent falls within the age bracket of 30-39 and 15 percent falls within the age bracket of 40-49. The average age of the farmers is 30 years. There are more young farmers in Aiyedoto farm settlement than Iragon and Iyana-Iba farm settlements.

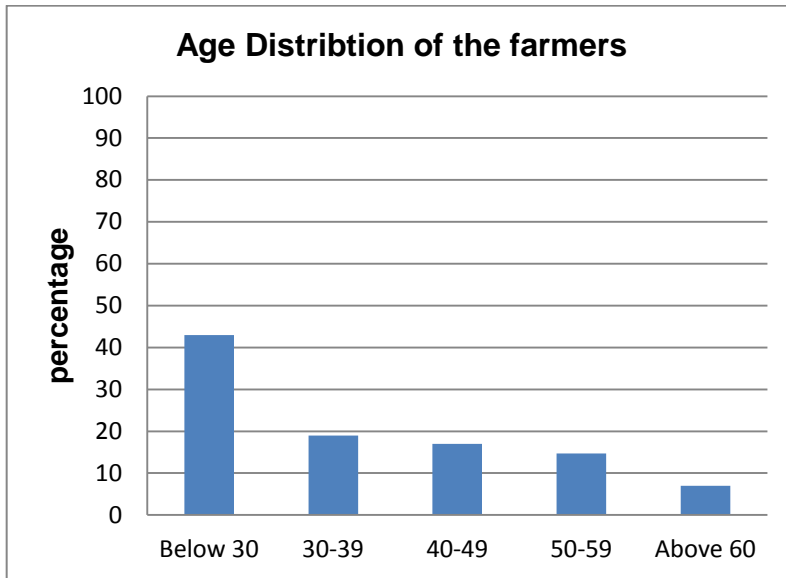


Figure 4. Age Distribution of Farmers.

Source: Own survey result, 2014

Marital Status: As shown in the figure below; 61 percent of the farmers are married and 37 percent are singles while 1 percent is a widow

Table 3. Marital Status of Farmers.

Marital Status	F	%
Single	28	37.3
Married	46	61.3
Divorced	-	-
Widow	1	1.3

Source: Own survey result, 2014

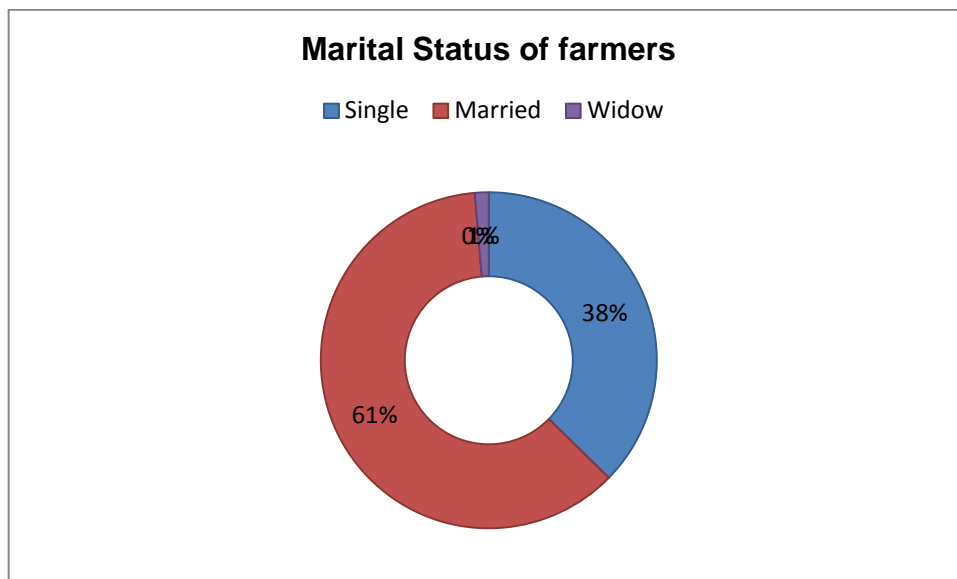


Figure 5. Marital Status of Farmers

Source: Own survey, 2014

Education: As indicated by table 4 and demonstrated by figure 5, It is only 8 percent of the farmers interviewed that have never been to school, 92 percent have basic education that is they can read and write and it reveals that the literacy level is high.

Table 4. Education Status of farmers

Educational Qualification	F	%
Never been to school	6	8
Primary school	19	25.3
Secondary	29	38.7
University	21	28
Total	75	100

Source: Own survey result, 2014

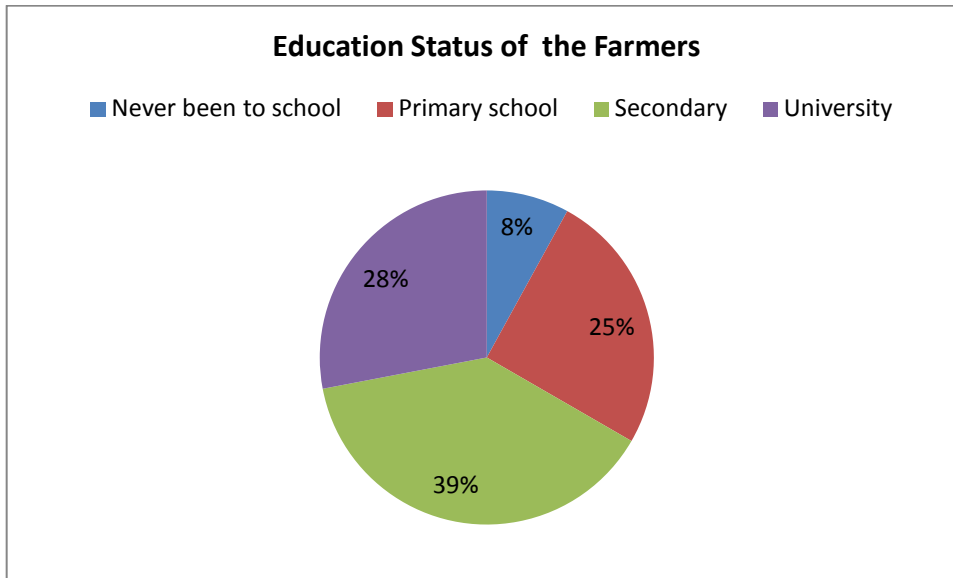


Figure 6. Education Status of Farmers.

Source: Own survey result, 2014

Household family size

Household size of farmers (table 5) was grouped into those less than 4, 5-9, 10-15 and above 15. The distribution shows that 66.7 percent have family sizes ranging from 5-9, 18.7 percent have family size less than 4, 12 percent have family size between 10-15 and 2.7 percent have family size above 15 members. It is illustrated by figure 6 below.

Table 5. Household family size of farmers.

Household size	F	%
Less than 4	14	18.7
5-9	50	66.7
10-15	9	12
Above 15	2	2.7
Total	75	100

Source: Own survey result, 2014

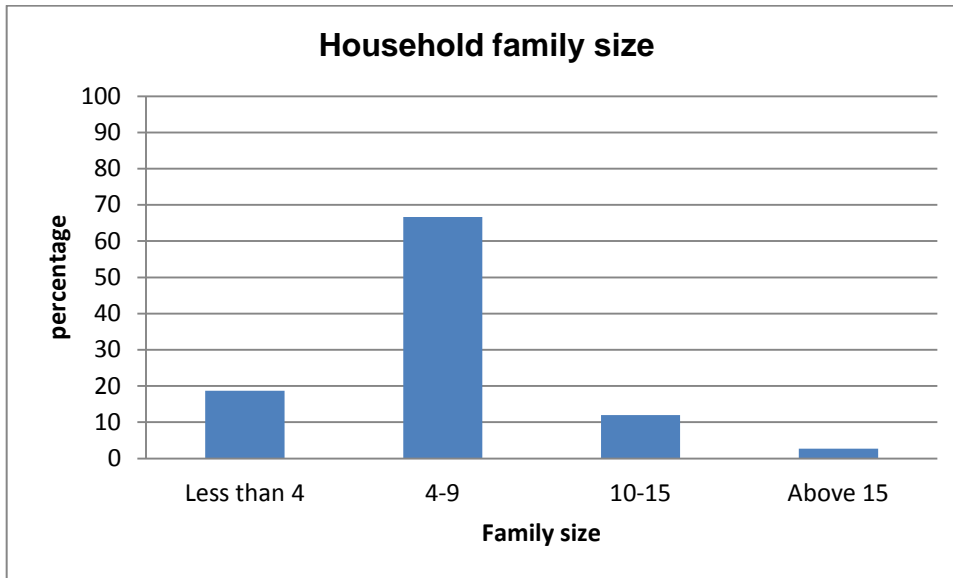


Figure 7. Household family size

Source: Own Survey, 2014.

Household Income: This refers to the total income from agricultural (table 6) and non-agricultural activities (Table 7) as the households usually work both in agriculture and non-agricultural sector. It is a continuous variable. Farmers who earn better income will have better health care, better standard of living and better opportunity to invest. The figure 8 and 10 below illustrates the Gini-coefficient of the farmers income from agriculture and non-agriculture respectively, which reveals unequal distribution of income among the farmers. The sample Gini-coefficient is 0.5 for income from agriculture and 0.8 for non-agriculture.

Table 6. Household Income from Agriculture (per month)

Income level	F	%
1-70	29	38.6
71-140	18	24
141-210	7	9.3
Above 210	21	28
Total	75	100

Source: Own survey result, 2014

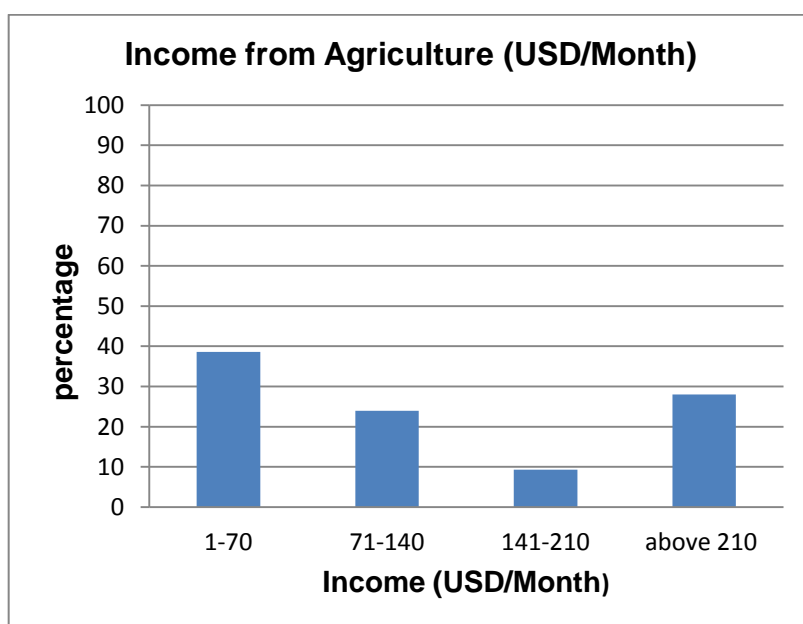


Figure 8. Household income from Agriculture

Source: Own Survey, 2014

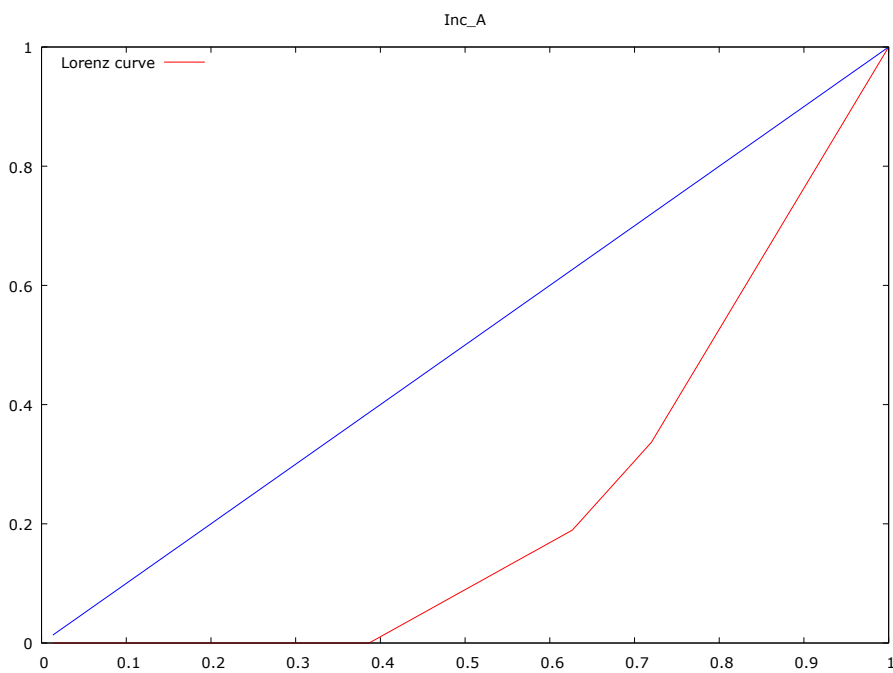


Figure 9. Lorenz curve of Household from Agriculture

Source: Own Survey, 2014.

Table 7. Household income from Non-agricultural activities (per month)

Income level	F	%
1-70	55	73.3
71-140	6	8
141-210	4	5.3
Above 210	10	13.3
Total	75	100

Source: Own survey result, 2014

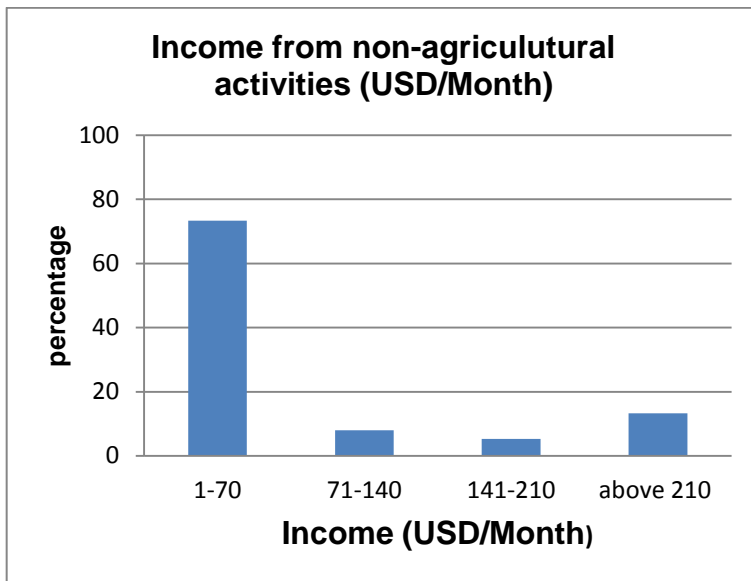


Figure 10. Household income from non-agriculture

Source: Own Survey, 2014

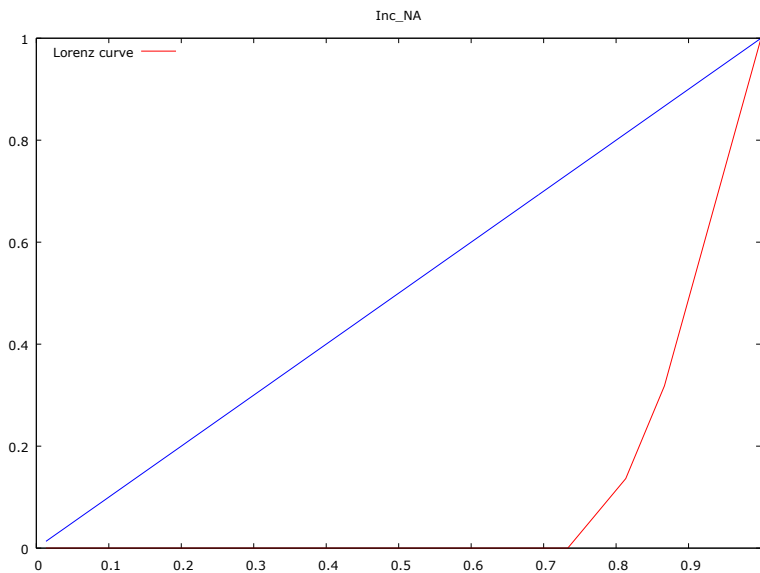


Figure 11. Lorenz curve of Household income from non-agriculture.

Source: Own Survey, 2014

5.1.2 Non-Agricultural Activities of the Farmers

Alternative activities engaged in by the farmers and which generates additional income for the household are outline as follows:

- I. Welding
- II. “Okada” (motor cycle) rider
- III. Carpentry
- IV. Government workers
- V. Retirees.



Figure 12. Experience of Farmers

Source: own survey, 2014

Experience of Farmers

The farmers in the Iragon Thogli farm settlement in Badagry local government have longer years of farming experience, over 15 years of farming experience. 71 percent of farmers from the Aiyedoto farm settlement are young farmers with 5 years of farming experience. And in Iyana-Iba farm settlement there farmers with over 15 years of farming experience.

5.1.3 Basic Rural infrastructures

75 percent of respondents are quite satisfied with the road network within the communities where the survey was conducted; the rural communities' dwellers have access to pipe borne water, the 45 percent of the borehole was dug by the government, 45 percent was dug by the community development association and while 10 percent of the borehole constructed was financed by the World Bank. There is electricity supply in Iragon Thogli and Aiyedoto rural communities but there is no electricity supply in Iyana-Iba farm settlement. 57.3 percent have access to health care and 42.3 percent do not have access to health care. 41.3 percent are satisfied with the health care, 42.7 percent are neutral, 4 percent are very satisfied, 1.3 percent is very dissatisfied and 10.7 percent are not satisfied with the health care services provided.

5.1.4 Access to Market

Accessibility to the market is a vital factor for farmers to obtain agricultural inputs and also to enable them sell their agricultural produce without moving for a long distance. In Iragon Thogli rural community in Badagry, the market is 4 kilometers from the farms; in Iyana-Iba farm settlement it only takes 1 kilometer to get to the market while in Aiyedoto farm settlement, the market is less than 1 kilometer away, therefore buyers go to the farms to buy and some farmers supply sellers or take their farm products to market to sell themselves.

5.1.5 The Role of Lagos State Government in Agriculture and Rural Development in Lagos State

Our study shows that 17 percent of farmers in Aiyedoto farm settlement are young entrepreneurs who are given start-ups to establish poultry farming by the Lagos state government on the platform of the new "Agric YES initiative".

Despite the fact that Lagos state is the smallest in land mass in Nigeria; in order to solve the problem of youths unemployment and food insecurity the Lagos state government recently initiated the "Agric YES initiative" which was set up to help raise entrepreneurial farmers in

the area of poultry, fish farming, bee-keeping and all-season vegetable farming as well as correct the problem of the old Farm Settlement Schemes in the state. The youths are not only trained but they are also empowered and encouraged to remain in agriculture by giving them 1-5 ha of land to start their agribusiness and also given them 1-5 million naira. (FAO, 2013).

5.1.6 Summary of Result of Descriptive Analysis

The table below summarizes the descriptive statistics of the explanatory variables; all the variables are significantly significant with the exception of Extension services and access to water

Table 8. T-test of Explanatory Variables

T-test of explanatory Variables and Mean	Column1	Column2	Column5
Variables	Iragon	Aiyedoto/Iyana-Iba	
	Mean	Mean	P-Value
SEX	0.0625	0.2373	0.021586 **
NA_INC	1.4375	0.3559	0.0001141***
Ag_Inc	2.4375	1.4068	0.000358***
HH	1.5	0.8305	0.00021712***
Marital_S	0.875	0.5593	0.0029023***
Dev_Assoc	0.6875	0.2542	0.0004915***
Agr_DA	0.8125	0.5763	0.04262189**
Ext_Services	0.625	0.4068	0.06158298 NS
Co_Op	0.75	0.2881	0.000286***
Access_Ainput	0.3125	0.1186	0.0309696**
Elec	1	0.28813	0.0000000***
Water	0.625	0.6778	0.34747988 NS
Age	3.0625	2.0508	0.00414000***
Hcare	0.8125	0.5087	0.014649840**

Significant at $P < 0.05$ *** $P > 0.05$ N.S

Source: Own Survey, 2014

Table 9. Iragon Farm settlement ANOVA.

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	108.25	13	8.326923	16.85449	3.63E-26	1.766999
Within Groups	103.75	210	0.494048			
Total	212	223				

Source: Own survey, 2014

Table 10. Aiyedoto and Iyana-Iba farm settlement ANOVA

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	206.1755	13	15.85966	33.45388	5.94E-67	1.732211
Within Groups	384.9492	812	0.474075			
Total	591.1247	825				

Source: Own survey, 2014

We employed t-test statistics and ANOVA because of its suitability in assessing the differences between the two farm settlements and also to analyze the impacts of the explanatory variables on the household income from agriculture and household income from non-agriculture. Our T-test in table 8 shows that all the explanatory variables have impact on the household income from agriculture with the exception of extension services and access to water. Our ANOVA test is based on the following assumptions:

$H_0: \mu_1 = \mu_2$; the mean of both samples is equal

H_1 : at least one of the mean is different

From our result; $F_{\text{cal.}} > F_{\text{crit.v}}$ and the P-Value < 0.0000 . The null hypothesis is rejected; which means all the mean of sample population are not equal. This reveals that there is difference in the mean and variances of the two samples used.

6 Discussion

The government support agricultural development in the rural communities in our study area by providing loans to farmers, fertilizers, tractors to assist farmers in clearing their farmlands, construction of boreholes to help supply water for livestock, poultry and crops and also provide cages at reduced cost. In the Aiyedoto rural settlement where most of them are engaged in poultry farming; there is a veterinary office owned and managed by the government to sell veterinary drugs, feed and fertilizers to farmers at reduced rate. 61.3 percent of the respondents do not belong to a co-operative while 38.7 percent belong to a farmers' co-operative. Farmers in Iragon Thogli rural area of Badagry Local government have longer years of experience in farming than farmers from Aiyedoto and Iyana-Iba farm settlement. 88 percent have more than 15 years farming experience while 71 percent of the farmers in Aiyedoto have less than six years farming experience and 59 percent in Iyana- Iba have less than 10 years farming experience. The services provided by the government agricultural agency in the study areas are outline as follows:

- ❖ Checking and Inspection
- ❖ Organizing of seminars
- ❖ Giving of advice
- ❖ Treating sick birds
- ❖ Prescribing of drugs

Our survey shows that agriculture forms the major source of livelihood of the farmers; 61.3 percent of the farmers are involved in commercial farming; the farmers in all the rural farm settlements depend and live mainly on the income generated from the farms. The non agricultural activities are addendum and are practiced as pastime to the income generated from agriculture. 20 percent of the farmers are retirees, men and women who have retired from civil service so they get some pension from the government. Therefore our hypothesis that agriculture forms the economic base of the rural areas is reaffirmed

From our findings the development of the rural areas like the electrification, construction of roads and boreholes are jointly provided by the government and the community development association and by the World Bank. Similarly to this the establishment and introduction of the

Zimbabwe Farms project in Tsonga, Kwara State impacted the community and the surrounding communities positively. To this extent 20 percent of the labour forces employed by the Zimbabwe farmers are the local people from the communities. 3 percent of the local farmers were trained to improve their production while 18.8 percent of the farmers experienced a rise of productivity. The improvement of the rural infrastructures like roads, electricity and potable water supplies were jointly financed by the State government and the Zimbabwe farmers (Olawepo, 2012).

Evidences from our study areas reveals the Multifunctionality of agriculture as discussed by (Huylbroeck *et al.* 2003; OECD; Huylbroeck *et al.* 2007), Agriculture and agricultural practises in the rural area can either impact the development of the rural community negatively or positively. The Aiyedoto farm settlement where we have a lot of poultry farmers has helped to improve the economic well being of the rural people in terms of employment and food security. On the contrary, the wastes generated from this poultry farms are not properly being managed. The air around the environment and surrounding environments are highly polluted. In the Iyana-Iba farm settlement agriculture has helped in the conservation of the environment and beautification of the countryside (landscape) as vividly illustrated by figure 8 below.



Figure 13. Landscape of Iyana-Iba farm settlement

Source: Own survey, 2014

Furthermore, the figure 12 below illustrates that agriculture is closely linked to the rural development; the agricultural practices and policy can either affect the rural people and the environment positively or negatively. The agricultural practice can cause environmental degradation impacting the land negatively. The right nutritional dietary provision is important for good health, a good agricultural practice is also vital for environmental sustainability. The place of education as an engine for advancing better agricultural practices and development is needed to boost agricultural production in the rural areas. Lastly a good road network is crucial for connecting the rural areas to the market where the agricultural products can be sold.

Agricultural land use may destroy the natural resource base, thereby reducing future production capacity and development options; agricultural activities may result in environmental degradation. The remedy to the problems associated with these negative impacts does not lie only in triggering changes in consumer diet and life style towards natural

resource- and material input-saving products, but it is in making sure that the agricultural sector takes necessary actions in finding ways to reduce the environmentally destructive impact of its activities (Roetter *et al.*, 2007) .

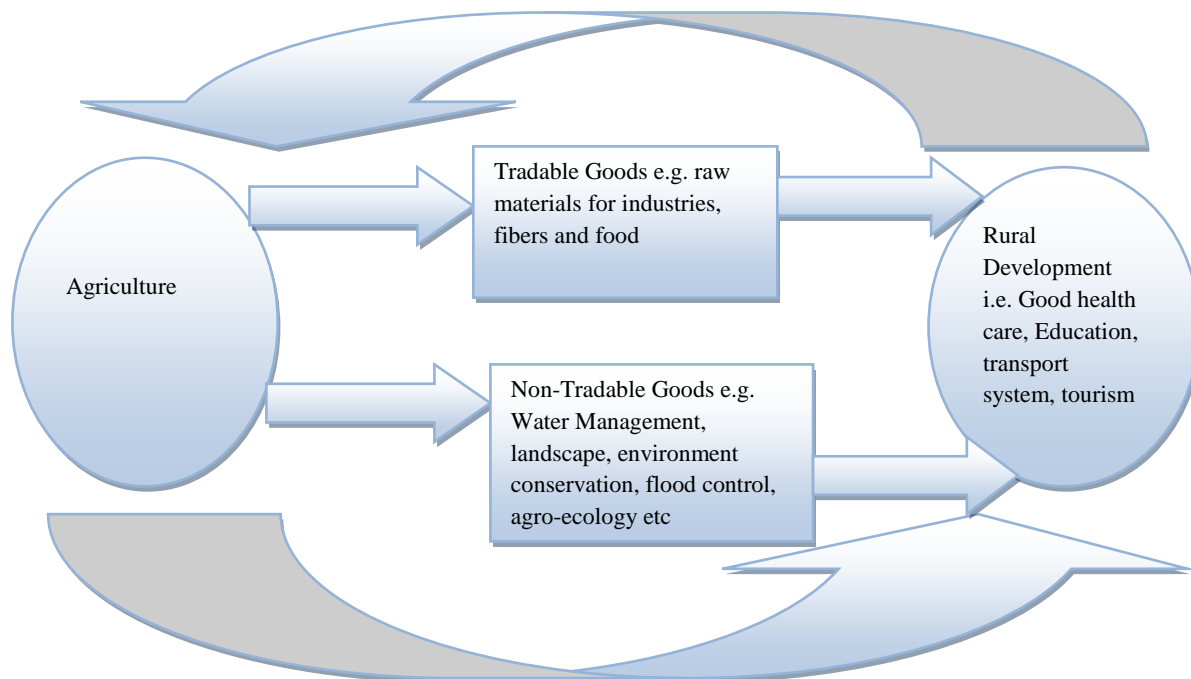


Figure 14. Linkages between Agriculture and Rural Development

Source: Field survey, 2014

Our study reveals that basic infrastructural facilities are important to agriculture and rural development as explained by (IFAD, 2005; Ogunleye and Jegede, 2010); there are basic infrastructural supply like electricity, water, primary health care centers and schools in Iragon Thogli and Aiyedoto farm settlement. Also there is good road network and market accessibility.

Agricultural development programmes forms the basis of rural development in Nigeria; evidences based on our interview with the government official from the Lagos state ministry of Agriculture reveals that the government in collaboration with external agencies World Bank implemented commercial Agriculture development project(CADP) in the amount of 3,660.14 USD with IDA contribution of 2,050.13 USD . And the National Fadama Development Project also assist farmers and other groups in the area of value chain in the production of

assets, rural infrastructures, capacity building and advisory services. And land was acquired in other parts of Nigeria by Lagos state government

In addition Ogunlela and Mukhtar, 2009 reported the role of women in agriculture and rural development in Nigeria; however our survey which was carried out in a different area of Nigeria and which is a small part shows that 80 percent of the farmers are men and 20 percent are women in our study area.

Economic interpretation of the Econometric model

The Y represents the Income of the Respondents generated from agricultural activities (Inc_A), and:

X_1 stands for the Age,

X_2 stands for Sex,

X_3 stands for Marital Status,

X_4 stands for Educational Qualification (EDUQ)

X_5 stands for Health Care (Hcare),

X_6 stands for Household size (HH),

X_7 stands for Satisfied with the Health care (SaH),

X_8 stands for access to water (W),

X_9 stands for access to Electricity (El),

X_{10} stands for good road network (Rnet),

X_{11} stands for access to agricultural inputs from the government (Ainput),

X_{12} stands for belong to a cooperative (Cop),

X_{13} stands for access to extension services (ExtS),

X_{14} stands for agricultural development agency (AgDev),

X_{15} stands for community development Association (CDevA)

The income level (Y) is the regressor while the variable(s) X_1 - X_6 are the regressands.

$$Y(i) = A_0 + B_1X_1 + C_2X_2 + \dots + N_{15}X_{15} + \varepsilon \text{-----Equation 2}$$

Where A_0 is the intercept and B_1 is the slope or coefficients of the parameters $X_1 - X_{15}$ in the model and ε is the error term. And A , B and $C \dots N_{15}$ coefficient of the linear equation will be calculated based on econometric model.

The result of the regression analysis as reveals in table 11 that the household income generated from agriculture is significantly influenced by education qualification of the farmers (X_4), access to pipe borne water (X_8), access to electricity (X_9) and agricultural development agency (X_{14}). Besides the intercept, the p-value of X_4 ($P=0.02774$), X_8 ($P=0.01417$), X_9 ($P= < 0.00001$) and X_{14} ($P= < 0.00001$). It reveals that these variables are statistically significant at 0.01 and 0.05 level of significance. The R-Square is 98 percent which reveals that 98 percent of the variation in the variables is explained by the linear equation.

If education (X_4) goes up by 1 unit, household income increases by 0.02774, if access to water (X_8) increases by 1 unit the household income from agricultural activities increases by 0.01417, if access to electricity (X_9) increases by 1 unit then household income from agricultural activities increases by less than 0.0001 and if (X_{14}) increase by 1 unit then the household income from agricultural activities increases by less than 0.00001.

Table 11. OLS Regression Analysis

Column1	Column2	Column3	Column4	Column5
Model 1: OLS, using observations 1-75				
Dependent variable: IncA				
	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>
Const	2.22609	0.320444	6.9469	<0.00001***
Age	0.14165	0.0754598	1.8772	0.06544*
Sex	0.0593024	0.114617	0.5174	0.60681
M	0.180448	0.0925242	1.9503	0.0559*
EduQ	0.18472	0.0818512	2.2568	0.02774**
HH	-0.0817635	0.0789938	-1.0351	0.30486
Hcare	-0.0402663	0.121299	-0.332	0.7411
SaH	-0.0973012	0.0740027	-1.3148	0.19365
Wa	-0.519145	0.205365	-2.5279	0.01417**
El	-0.632184	0.125263	-5.0468	<0.00001***
Rnet	-0.0178073	0.0574882	-0.3098	0.75784
Ainput	-0.0689723	0.205255	-0.336	0.73804
Cop	0.0112755	0.194351	0.058	0.95393
ExtS	-0.18038	0.104132	-1.7322	0.08846*
AgDev	-0.893763	0.127571	-7.006	<0.00001***
CDevA	0.136314	0.197879	0.6889	0.4936
Mean dependent var	1.266667		S.D. dependent var	1.244809
Sum squared resid	1.850921		S.E. of regression	0.17712
R-squared	0.983858		Adjusted R-squared	0.979754
F(15, 59)	239.7411		P-value(F)	5.07E-47
Log-likelihood	32.39728		Akaike criterion	-32.79457
Schwarz criterion	4.285245		Hannan-Quinn	-17.989

Source: Own Survey, 2014

7 Conclusion and Recommendations

This study has attempted to analyze the position of agriculture in rural development; the position of agriculture in rural development cannot be over emphasized; agriculture will be and continue to be one of the pillars of rural development and provide an economic base for the rural areas. Our literature and survey analysis revealed that the agriculture is the main economic pillar of rural population, it assures food security and necessary materials and finances on markets where farmers sell surplus of their products. There is a shift of paradigm in the role of agriculture; as agriculture exhibits a multifunctional nature, it does not only provide food for people but help to protect the environment, shape the landscape and preserve the natural resources.

Based on our findings, it is revealed that agriculture exhibits multifunctional nature; agriculture does not only produce tradable goods but also produce non- tradable goods. In addition, basic rural infrastructural facilities like electricity, water, good road network, schools and health care and information technology are vital tool in agriculture and rural development. They are drivers that help to propel the economic well being and living standard of the rural dwellers.

Our regression analysis reveals that the strongest factors which influence farmers' farm income are the educational qualification of the farmers, access to water, access to electricity and agricultural development agency. Agricultural development agency or project is a determining factor of rural development in Nigeria; our regression result reveals that it has a positive and strong influence on farm income of the rural communities and also the interview we had with the government from the Lagos State Ministry of Agriculture also reflected this position. The survey reveals that the average amount of waste produced by one farm is about 15 tonnes which varies from region to region being the highest in the Lagos State, the waste generated in Aiyedoto farm settlement constitutes environmental air pollution to the rural community and its surrounding.

The Agric YES initiative, an agricultural development project which was recently set up by the Lagos State government is a right step in the right direction; the unemployed youths

should not only be trained but should be empowered and encouraged to be self reliant and remain in the rural areas rather than seeking white collar jobs in urban centers.

Recommendations

Based on the above conclusions it can be recommended that the extension service agents pay more attention to the factor which has been identified as the strongest in relation to the farmers' income; to this extent extension service agents should also lay more emphasis on sustainable agricultural practices.

There is need for a more sustainable way of agriculture; agricultural practices should be carried out in an environmentally friendly way in order to protect the environment and preserve the natural resources and the countryside. The waste generated in Aiyedoto farm settlement which constitutes environmental air pollution to the rural community and its surrounding can be converted into biogas and compost to use to improve the soil. A biogas and compost plant should be established by the government and the government should continue to support and finance agriculture in Lagos state.

And lastly the state of the rural infrastructural facilities should be improved upon in the rural communities in Lagos state and Nigeria as a whole to make the rural areas in Nigeria attractive to the youths, rural dwellers and tourists. Also access of the farmers to these basic rural infrastructures is important for the economic well being of the rural farmers.

8 Limitations

We were only able to interview 75 farmers in Aiyedoto and Iyana- Iba farm settlement and Iragon Thogli due to lack of adequate financial capability. The farmers at Iyana-Iba are from the Northern part of Nigeria and they only understand and speak Hausa, so we had to employ the assistance of a translator.

There was also difficulty to get the attention of the farmers at the Iragon Thogli rural community in Badagry local government; some of the farmers had gone to the farm. Based on these limitations, we have to use limited responses we have from the farm settlement in Badagry; we have to combine the two farm settlement as one and generalize our results.

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Annex 1 Survey Questions

1. Age
 - Below 30 30-39
 - 40-49 50-59 60-69
2. Sex
 - Male Female
3. Marital status
 - Single Married Divorced
4. Educational qualification
 - Primary school leaving certificate
 - Secondary school leaving certificate
 - University certificate
 - Never been to school
5. Source of livelihood
6. Household(family) size
 - Less than 4 5-9 10-15 Above 15
7. Income from agricultural activities every month
 - 1- 10 000
 - 10 001-20 000
 - 20 001-30 000
 - Above 30 000
8. Non-agricultural income every month
 - 1-10 000
 - 10 001-20 000
 - 20 001-30 000
 - Above 30 000
9. How many years of farming experience do you have?
10. Do you have access to health care? Yes No
11. Is the health care service satisfactory?

Not satisfactory

Satisfactory

Very satisfactory

Neutral

12. Is there pipe borne water in the community? Yes No
13. Is there electricity? Yes No
14. Who dug the borehole?
The government
The World Bank
The association of farmers.
15. Are you satisfied with the road network in the community linking other places?
Not satisfied
Satisfied
Neutral
Very satisfied
16. What type of farming are you involved in?
17. Do you have access to agricultural loan, insecticides, fertilizer, tractor hiring?
Yes No
18. How do you process your farm output?
19. Do you belong to any co-operative union?
Yes No
20. Do you have access to government extension services?
Yes No
21. Is there any government agricultural development agency in your area?
Yes No
22. If yes what are their services?
23. Do you belong to any community development association?
Yes No
24. If yes what are their functions relating to agriculture/rural development.
25. In what way does the government support agricultural development in your area?
26. What is the distance to the market?

ANNEX 2 Iyana-Iba Farm Settlement



Source: Own Survey, 2014

ANNEX 3 OLS Regression Analysis

Column1	Column2	Column3	Column4	Column5
Model 1: OLS, using observations 1-75				
Dependent variable: InCA				
	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>
Const	2.22609	0.320444	6.9469	<0.00001***
Age	0.14165	0.0754598	1.8772	0.06544*
Sex	0.0593024	0.114617	0.5174	0.60681
M	0.180448	0.0925242	1.9503	0.0559*
EduQ	0.18472	0.0818512	2.2568	0.02774**
HH	-0.0817635	0.0789938	-1.0351	0.30486
Hcare	-0.0402663	0.121299	-0.332	0.7411
SaH	-0.0973012	0.0740027	-1.3148	0.19365
Wa	-0.519145	0.205365	-2.5279	0.01417**
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Rnet	-0.0178073	0.0574882	-0.3098	0.75784
Ainput	-0.0689723	0.205255	-0.336	0.73804

Cop	0.0112755	0.194351	0.058	0.95393
ExtS	-0.18038	0.104132	-1.7322	0.08846*
AgDev	-0.893763	0.127571	-7.006	<0.00001***
CDevA	0.136314	0.197879	0.6889	0.4936
Mean dependent var	1.266667		S.D. dependent var	1.244809
Sum squared resid	1.850921		S.E. of regression	0.17712
R-squared	0.983858		Adjusted R- squared	0.979754
F(15, 59)	239.7411		P-value(F)	5.07E-47
Log-likelihood	32.39728		Akaike criterion	-32.79457
Schwarz criterion	4.285245		Hannan- Quinn	-17.989

ANNEX 4 T-test of Explanatory Variables

T-test of explanatory Variables and Mean	Column1	Column2	Column5
Variables	Iragon	Aiyedoto/Iyana-Iba	
	Mean	Mean	P-Value
Gender	0.0625	0.2373	0.021586 **
NA_INC	1.4375	0.3559	0.0001141***
Ag_Inc	2.4375	1.4068	0.000358***
HH	1.5	0.8305	0.00021712***
Marital_S	0.875	0.5593	0.0029023***
Dev_Assoc	0.6875	0.2542	0.0004915***
Agr_DA	0.8125	0.5763	0.04262189**
Ext_Services	0.625	0.4068	0.06158298 NS
Co_Op	0.75	0.2881	0.000286***
Access_Ainput	0.3125	0.1186	0.0309696**
Elec	1	0.28813	0.0000000***
Water	0.625	0.6778	0.34747988 NS
Age	3.0625	2.0508	0.00414000***
Hcare	0.8125	0.5087	0.014649840**

Significant at $P < 0.05$ *** $P > 0.05$ N.S

Source: Own Survey, 2014

ANNEX 5 Iragon Farm settlement ANOVA.

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	108.25	13	8.326923	16.85449	3.63E-26	1.766999
Within Groups	103.75	210	0.494048			
Total	212	223				

Source: Own Survey, 2014

Aiyedoto and Iyana-Iba farm settlement ANOVA

ANOVA

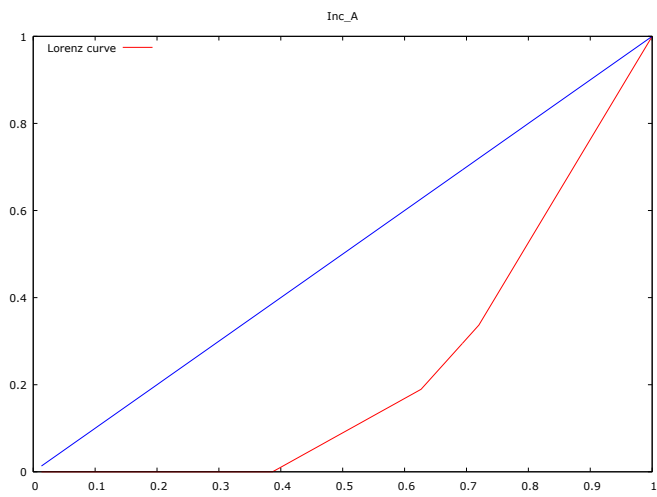
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	206.1755	13	15.85966	33.45388	5.94E-67	1.732211
Within Groups	384.9492	812	0.474075			
Total	591.1247	825				

Source: Own Survey, 2014.

ANNEX 6 Iyana-Iba Farm Settlement

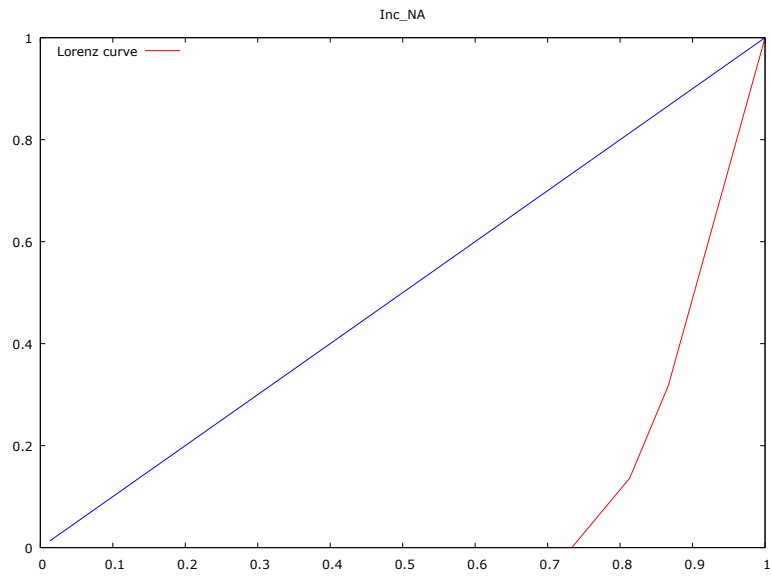


ANNEX 7 Lorenz Curve of Household income from Agriculture.



Lorenz Curve of Household income from Agriculture.

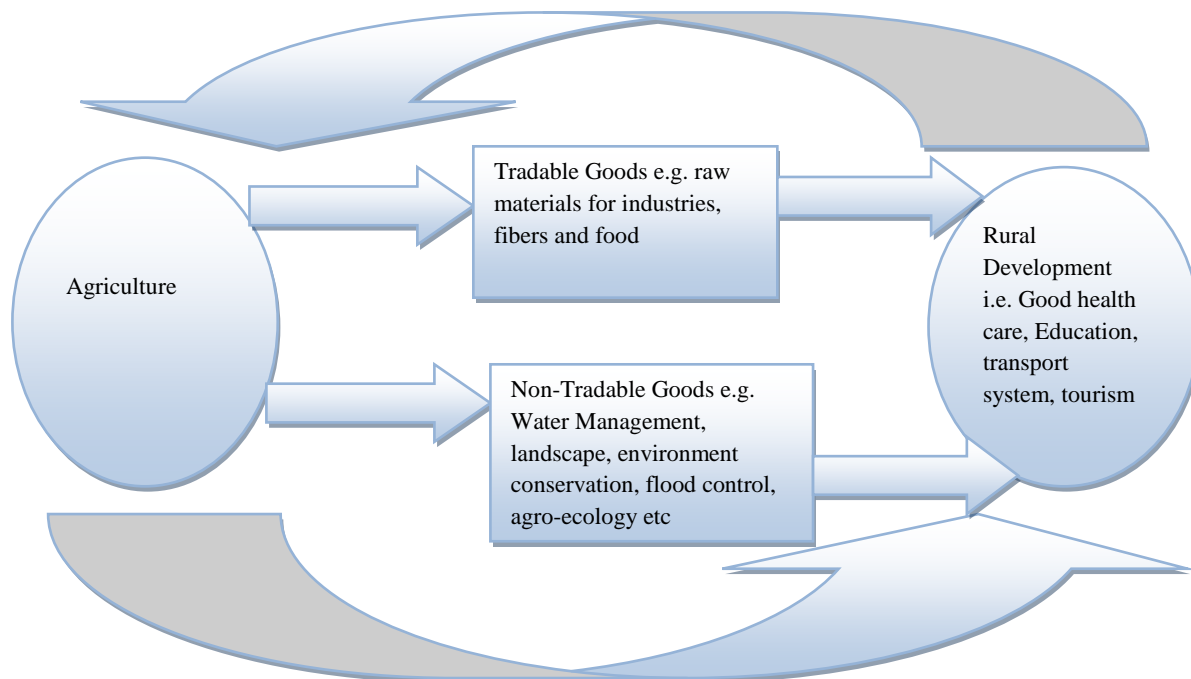
Source: Own Survey, 2014



Lorenz Curve of Household income from Non-Agriculture.

Source: Own Survey, 2014.

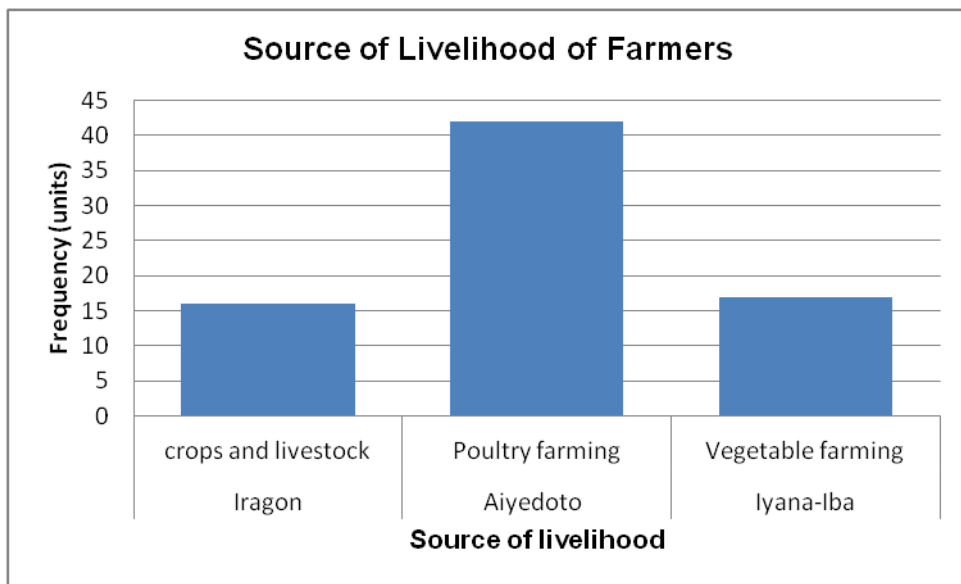
ANNEX 8 Linkages between Agriculture and Rural Development.



Linkages between Agriculture and Rural Development.

Source: Field survey, 2014

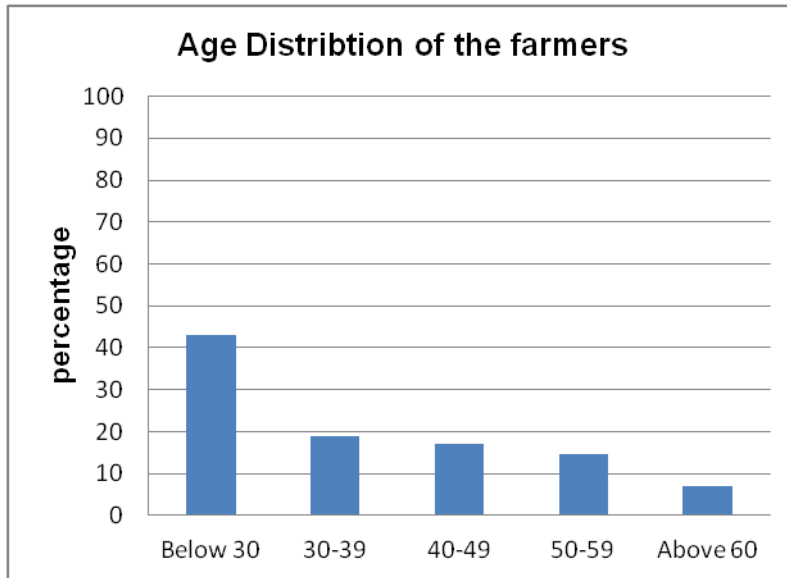
ANNEX 9 Source of Livelihood of Farmers



Source of Livelihood of Farmers

Source: Own survey, 2014

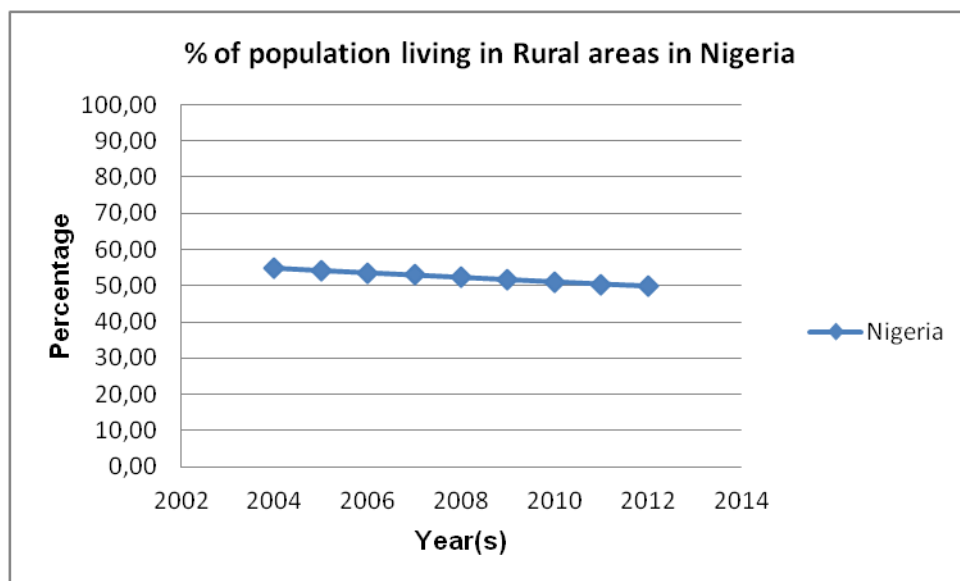
ANNEX 10 Age Distribution of the Farmers



Age Distribution of the Farmers

Source: Own survey, 2014

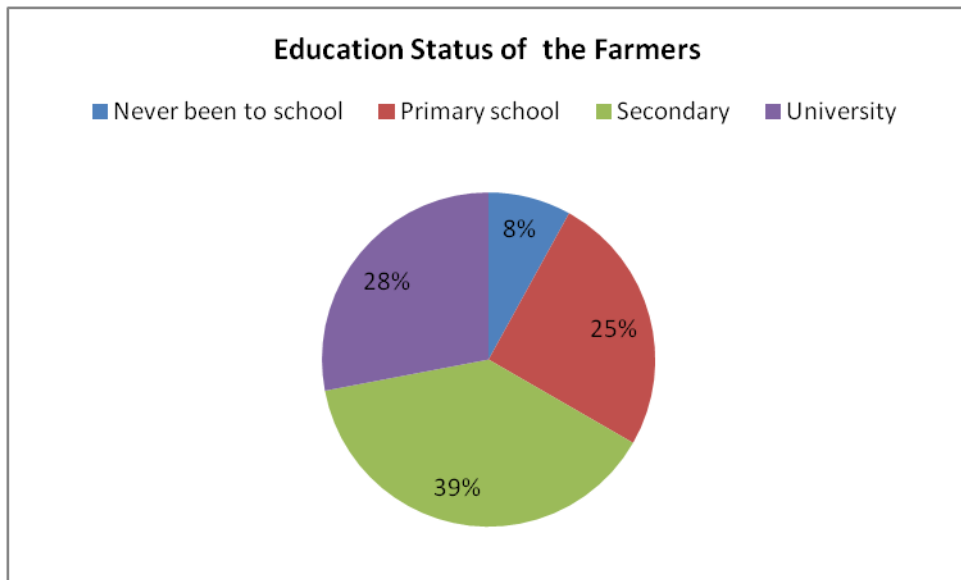
ANNEX 11 Population living in rural areas in Nigeria



% of population living in rural areas in Nigeria

Source: World Bank, 2014

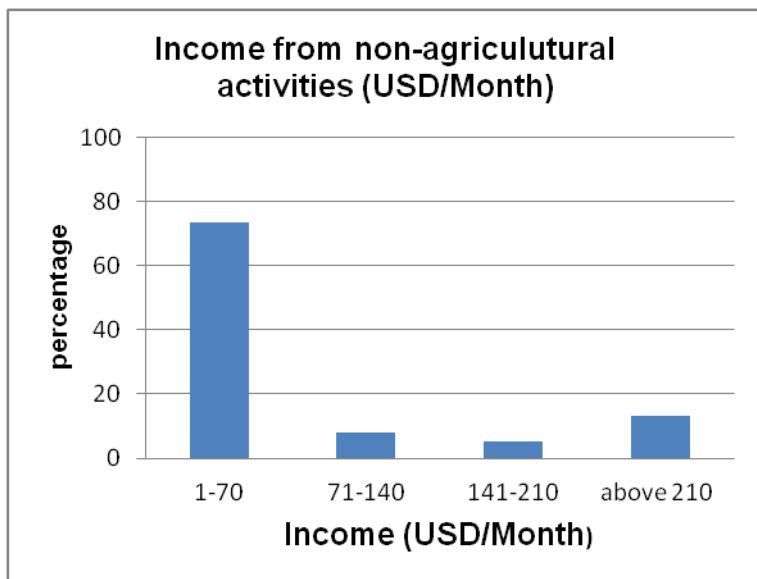
ANNEX 12 Education Status of the Farmers



Education Status of the Farmers

Source: Own survey, 2014

ANNEX 13 Income from non-agricultural activities



ANNEX 14 Income from Agriculture

