

**AGRICULTURAL PROJECTS AND RURAL DEVELOPMENT IN RWANDA: A CASE
STUDY OF URUGAGA IMBARAGA IN MUSANZE DISTRICT**

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DECLARATION

I, Munyanziza Joseph declare that this research report titled “Agricultural Projects and Rural Development in Rwanda: A Case Study of Urugaga Imbaraga in Musanze District” is my original piece of work except where due acknowledgment has been made. To the best of my knowledge, it has never been submitted to any institution for any academic award.

Sign..... Date.....

MUNYANZIZA JOSEPH

APPROVAL

This research report titled “Agricultural Projects and Rural Development in Rwanda: A Case Study of Urugaga Imbaraga in Musanze District” has been under my supervision and is now ready for submission.

Signed:.....Date:.....

MRS. JENIFFER TURYATEMBA TUMUSHABE (SUPERVISOR)

DEDICATION

I dedicate this work to my family, my dear wife and children.

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I thank God the Almighty for His divine provisions which have enabled me to study. I thank my supervisor, Mrs. Jeniffer Turyatamba Tumushabe, who tirelessly provided guidance from which this book derived its present content and shape. I also thank classmates and friends. For these, we kept discussing together and the discussion made it possible for me to understand more issues in research which issues partly shaped this book. I also wish to express my gratitude to all members of staff (teaching and non-teaching) of Kabale University for the support of all forms: academic, social support, guidance and advice.

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LIST OF ABBREVIATIONS

ADPs	:	Agricultural Development Projects
EICV5	:	The Fifth Integrated Household Living Condition Survey
EDPRS	:	Economic Development and Poverty Reduction Strategy
FAO	:	Food Agricultural Organization
FE	:	Frequency Expected
FO	:	Frequency Observed
IFAD	:	International Food and Agricultural Development
ILO	:	International Labour Organization
IPCC	:	Intergovernmental Panel on Climate Change
LDCs	:	Less/Low Developed Countries
LISAS	:	Low-input Sustainable Agricultural Systems
MDGs	:	Millennium Development Goals
NIRS	:	National Institute of Statistics of Rwanda
NST1	:	First National Strategy for Transformation
ROAP	:	Roles of Agricultural projects
RCER	:	Rochester - Center for Economic Research
ROA	:	Role of Agriculture
SEAPI	:	Socio-Economic Analysis and Policy Implications
SARD	:	Sustainable Agriculture and Rural Development
SDGs	:	Sustainable Development Goals
TMPDC	:	Trade and Macroeconomic Policies in Developing Countries

USA : United States America
UNDP : United Nations Development Programme
WTO : World Trade Organization

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ABSTRACT

The majority of communities in Rwanda are rural dwellers and agrarian by occupation. This study assesses the role of agricultural projects and rural development in Musanze district, Rwanda. The research was a survey that collected data from 214 respondents -- 139 being farmers, 35 selected from Urugaga Imbaraga project staff, 30 respondents being local leaders and 10 community development officers. Respondents were selected using purposive and random sampling methods. The researcher used both qualitative and quantitative data collection methods. The researcher used both primary and secondary data collection tools. Data was analysed by descriptive statistics. The study findings revealed that Agricultural Projects have significantly increased food production in the locality through increased provision of pesticides and improved seeds to farmers, establishment of new infrastructure and provision of fertilizers. Though Urugaga Imbaraga in collaboration with the Ministry of Agriculture has significantly improved farmers` use of agricultural inputs, there is need to empower farmers by reducing the cost of fertilizers, improved seeds and even pesticides based on acreage one owns. Due to lack of adequate production capacity and insufficient stocks in the country, Rwanda still depends upon imported inputs which are too costly for farmers. There is need to loosen conditions that dictate access to, control and use of financial facilities by farmers. Being the core of the country`s economic backbone, agriculture should be given special attention in this regard whereby special financial facilities should set aside for agricultural development and be made flexible so as to be available to individual farmers.

CHAPTER ONE

INTRODUCTION

1.0. Introduction

This chapter covers the background of the study, statement of the problem, purpose of the study, objectives, the study scope, research questions, and significance of the study, operational definition of terms, and the conceptual framework.

Rwanda recognises Agriculture as the backbone of the economy and hence being crucial for the country's growth and reduction of poverty. Rwanda has therefore improved its Agriculture through many Agricultural Development Projects like Urugaga Imbaraga Project, Rwanda Green Funds (FONERWA), Projet de Gestion des Espaces Ruraux du Buberuka (PGERB), Programme de Developement du Nord (DERN Programme), and Sabyinyo Community Livelihood Association (SACOLA). Agriculture accounts for 39 per cent of gross domestic product (GDP), 80 per cent of employment, 63 per cent of foreign exchange earnings, and 90 per cent of the country's food needs. The sector is challenged by land constraints due to population pressure, poor water management, small average land holdings, lack of public and private capacity, and limited commercialization constrained by poor access to output and financial markets. The country's average annual income of \$550 per capita reflects a rural poverty rate of 49 per cent, a figure that soars to 76 per cent for families whose main source of income is agriculture (FAO, 2017).

1.1. Background of the study

Urugaga Imbaraga Project is one of the largest private projects in Northern Province development organizations in Rwanda that was founded and established by Mr. Edward Gafaranga. The project started with 16 people in 2010 and now the members have increased to 474. This shows that it has done so much in curbing poverty through agriculture. Seventy-five per cent (75%) of the members are women, which implies that the project encourages women to engage in agriculture. The two overall objectives are poverty alleviation and female empowerment. Urugaga Imbaraga Project is considered as the Rwandan Sweet potato Super Foods project and was started in Rwanda in 2010 to support farmers growing orange-fleshed sweet potato and to promote products made from sweet potato such as bread and mandazi. It is part of the bigger Sweet potato Action for Security and Health in Africa (SASHA) led by the International Potato Centre (IPC) working in ten different countries including Uganda, Kenya, Tanzania, Somalia, Burundi, Ethiopia, and India among others. The project is implemented through local partners in Rwanda (Ntezimana, 2013).

Rwanda Agricultural Board (RAB) provides farmers with new clean sweet potato planting material and in partnership with CIP has introduced new orange-fleshed sweet potato varieties. Over the course of its evolution, Urugaga Imbaraga Project has established itself as a pioneer in recognizing and tackling the many different dimensions of poverty. Its approach is comprehensive—with financial services, capacity building and livelihood development as well as agriculture and food security, health, education and social justice enabling people to realize their potential (National Institute of Statistics Rwanda, 2016).

According to Julien Ntezimana (2013), Urugaga Imbaraga together with agricultural development projects like Rwanda Green Funds (FONERWA), Projet de Gestion des Espaces

Ruraux du Buberuka (PGERB), Programme de Developement du Nord (DERN Programme), and Sabyinyo Community Livelihood Association (SACOLA) help the surrounding population to initiate development activities for improving their livelihood by providing clean water, agricultural loans, and scholarships, livelihood like goats and sheep, agro inputs, among others, while at the same time limiting the threats to conserving Volcanoes National Park in general and maintain gorillas in particular.

Urugaga Imbaraga Project works with Catholic Relief Services (CRS) and Young Women's Christian Association (YWCA) to support and train farmers in growing and processing sweet potato. Urwibutso (SINA) Enterprises is the main processor working with the project. The firm provides a ready market for the sweet potato roots produced by the project farmer groups and its own contracted farmers. In a recent agriculture export promotion exhibition (2011), Urugaga Imbaraga emerged as the best exhibitor among the Rwandan agricultural cooperatives and projects which participated in the exhibition (International Institute for Sustainable Development (IISD), 2011).

According to Kathiresan (2012), around the world, countries have tried so much to put up some programmes to increase on the level of agricultural production. Countries like Japan, Korea, China, California etc. have programme to improve on agricultural productivity and food security. In several countries, agricultural development projects provides quality seeds and fertilizers to farmers and agricultural cooperatives and works with them in applying more suitable and productive farming practices, provides them with services such as better training in natural resource management, and better access to information, technologies, innovations and extension services.

In Africa, for instance, in West Africa (Mali) new varieties of tomatoes were introduced by the West African Agricultural Productivity Programme (WAAPP) which allowed Malian farmers to continue producing crops during the rainy season (World Bank, 2010). The programme also encouraged research and development, especially in higher yielding rice varieties (World Bank, 2010). The West Africa Agricultural Productivity Programme (WAAPP) also worked hard to bolster research and extension of agricultural technologies in Ghana, Mali, and Senegal, focusing on the top agricultural priorities of each country. As of September 2012, 253,881 individuals had benefited directly from the project, and 37 new technologies were released, improving 166,938 hectares of land (World Bank, 2010).

In East Africa, different countries like Uganda, Tanzania, and Kenya have introduced and implemented agricultural reforms/ programmes/ policies to increase on agricultural production (in both livestock and crop production) through increase productivity, and market-oriented farming to promote food security, agricultural exports and poverty reduction in the economy. Like in Uganda there are NAADS and IFCD organizations among others (Christiaensen, 2010). According to the Ministry of Finance and Economic Planning (MINECOFIN, 2013) in Rwanda, agriculture development products like Urugaga Imbaraga Project, can fundamentally contribute to overall growth and modernization of the economy. Analysts highlighted agriculture for its resource abundance and its ability to transfer surpluses to the more important industrial sector. By serving as the ‘handmaiden’ to the industrial sector, agriculture’s primary role in the transformation of developing economies was seen as subordinate in the central strategy of accelerating the pace of industrialization (Republic of Rwanda, 2013).

Over time, the agricultural development projects have played a big role in Rwanda, Africa and worldwide in providing market-mediated linkages and several core economic roles for the

transformation of rural developments through agriculture. This helps people to provide labour for an urbanized industrial work force; produces food for expanding populations with higher incomes; gets supplies savings for industrial investments; enlarges markets for industrial output; is a base for the formation of export earnings to pay for imported capital goods; and produces primary materials for agro processing industries (Abdulsamad, 2016).

Promar Consulting (2012), observes that no matter the efforts put in by agricultural development projects, they have not realized all their objectives and the agricultural sector still faces challenges like crop diseases, climatic change. Farmers also face challenges in accessing credit due to risk perception, small holding sizes of land, no value chain development, market connectivity, low farmer professionalization and market fluctuation. This inspired this research to identify and examine the roles of agricultural development projects in rural development in Rwanda, particularly in Ruhengeri Community with a case study of Urugaga Imbaraga Project.

1.2. Statement of the Problem

To achieve the vision of 2020, the Government of Rwanda implemented a Strategic Plan for Agricultural Transformation (SPAT I and SPART II, 2005-2008) to eradicate poverty through transforming the agricultural sector into a profitable, competitive, sustainable and dynamic one, within the framework of Economic Development and Poverty Reduction Strategy (EDPRS, 2000-

2012). This Strategic Plan for Agricultural Transformation has four interlinked objectives: increasing incomes and improving the quality of life of poor subsistence farmers through increased productivity and increased share of marketed production; improving household food security through the market rather than emphasizing self-sufficiency; providing gainful employment through the secondary benefits of SPAT I implementation such as agro-processing;

and promoting sustainable use and management of natural resources by developing a land use and management policy and promotion of environmentally friendly technologies (Rwanda Agriculture Board and SPAT II, 2016).

Despite the strategies adopted by various government and non-government organizations in Rwanda to address agriculture and rural underdevelopment problems, the story remains the same. There is still inequality and poverty particularly in the rural areas like Musanze. There are a lot of public complaints on the underdevelopment situations of many rural areas which constitute a threat to Rwanda's vision of becoming one of the twenty strongest economies by the year 2020 (Vision 2020). A lot of resources (financial) have been injected, but all in vain (Yakubu, 2009).

1.3. Purpose of the study

The study aimed at finding out the Agriculture projects and Rural Development in Rwanda, a case study of Urugaga Imbaraga in Musanze district.

1.4. Objectives of the study

The following objectives were used

1. To examine the role of agricultural projects in rural development in Ruhengeri Community, Musanze District, Rwanda;
2. To identify the challenges faced by farmers in Ruhengeri Community, Musanze District;
3. To analyse strategies put forward in curbing challenges facing agricultural development in Musanze district.

1.5. Research Questions

1. What is the role of agricultural projects in rural development in Ruhengeri Community, Musanze District, Rwanda?

2. What are the challenges faced by farmers in Ruhengeri Community Musanze District, Rwanda?
3. What are strategies put forward in curbing challenges facing agricultural development in Musanze district?

1.6. Scope of the study

1.6.1 Geographical scope

Geographically, the study was carried out in Ruhengeri community in Musanze district. The geographical location of Musanze District can be summarised as follows: it is bordered by Nyabihu and Gakenke districts in the south, Burera district in the east and north-east, and the Democratic Republic of Congo in the west and north-west.

1.6.2 Content scope

The content scope covered the role of agriculture development projects in rural development in Ruhengeri, Musanze district, Rwanda.

1.6.3 Time scope

The study was conducted to cover a period of four (4) years. When examining the role of agriculture in development, the researcher considered a period of four years ranging from 2010 to 2013.

1.7. Significance of the study

By revealing the role of agricultural development project in rural development, the study was of help to government, farmers, policy makers and future researchers as explained below.

1.7.1. The Government:

Like most of the LDCs, Rwanda is characterized by slow economic growth, underdevelopment, poverty and high levels of unemployment. Over 80% of the population is employed in

agriculture on very small plots due to limited land for agriculture in the country. In order for Rwanda to meet its policy objectives as outlined in the national roadmap and the National Development Plan, amongst others, it needs to progress swiftly with the development of agriculture and farmers in the rural setting. Agriculture forms the core of the country's economy to the tune of about 80% of rural employment. Therefore, the macroeconomic policy objectives aimed at developing agriculture will help the country to achieve its national development agenda because this will address issues affecting more than 80% of the country's population.

1.7.2. Farmers:

The study could be of great importance to farmers because in addition to examining the role of agriculture in the socioeconomic transformation of the rural developments in Ruhengeri community, the study identified ways of promoting agriculture's economic contribution to alleviating poverty.

1.7.3. Policy makers:

The study could help policy makers at all levels when enacting policies related to the development of agriculture in Rwanda and the region. Policing for over 80% of the country's population requires a prior study by the concerned and interested research units.

1.7.4. Future researchers:

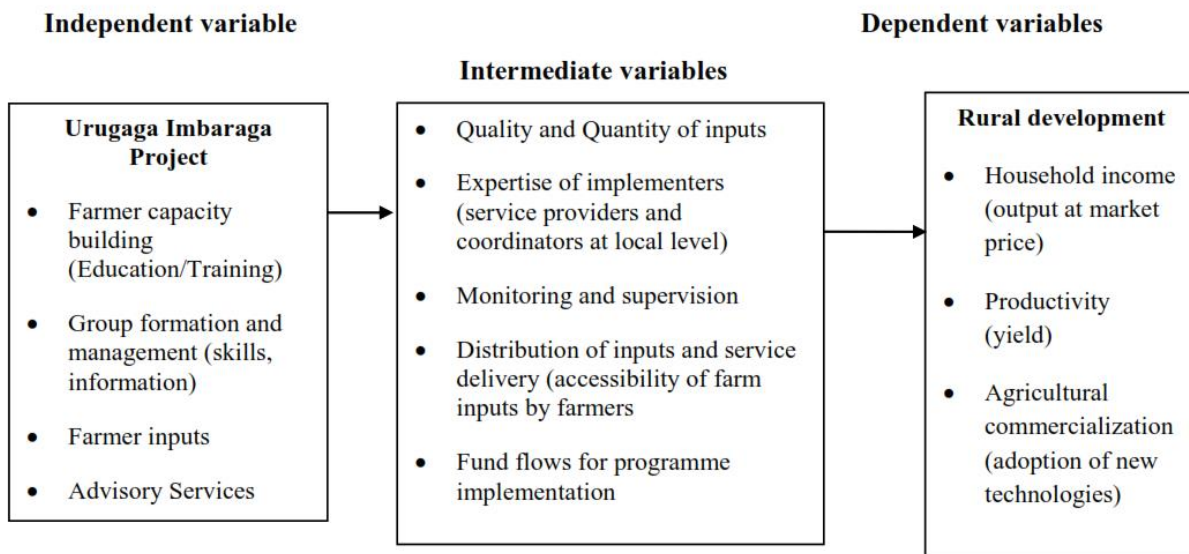
It is rendered imperative to the future readers who are interested in obtaining information related to this topic of study. Also, after making the recommendations, the researcher has suggested areas for further research which future researchers might pick on and conduct a study on them. Future researchers could also use the findings of this study for reference.

1.8. The Conceptual Framework

This is a diagrammatic illustration of the independent, dependent and intermediate variables. According to the framework, Urugaga Imbaraga Project as the independent variable enabled the researcher to establish farmer capacity building/education, group formation, farmers' inputs and advisory services lead to dependent variables. Intermediate variables such as quality and quantity of inputs, expertise of implementers (service providers and coordinators at local level), monitoring and supervision, distribution of inputs and service delivery (accessibility of farm inputs by farmers, fund flows for programme implementation, attitude of farmers towards the programme which compete with the independent variables of the study to explain changes in the dependent variables.

It is a set of ideas that helped the researcher to properly identify the problem, formulation and find suitable literature. The conceptual framework enabled the researcher understand and establish more about the role of agricultural development projects in rural development.

Figure 1. The Conceptual Framework



Source: Researcher, 2019

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

Under this chapter, the researcher analyses what other scholars and researchers have talked and written about the same or related subjects. Literature is cited from textbooks, written records, publications, and journals. It was structured in line with the study objectives as follows:

2.1. Literature Overview

2.1.1. The Concept of Development

Development in human society is a many-sided process. At the level of the individual, it implies increased skill and capacity, greater freedom, creativity, self-discipline, responsibility and material well-being. Here development means the quantitative growth that is accompanied with qualitative change in people's livelihoods (World Bank, 2013).

2.1.2. Agricultural Development

Agriculture is the production of food and goods through farming. Agriculture was the key development that led to the rise of human civilization, with the husbandry of domesticated animals and plants (i.e. crops) creating food surpluses that enabled the development of more densely populated and stratified societies. It encompasses a wide variety of specialties and techniques, including ways to expand the lands suitable for plant raising, by digging water-channels and other forms of irrigation (FAO, 2017).

According to the National Institute of Statistics of Rwanda (NISR, 2016), cultivation of crops on arable land and the pastoral herding of livestock on rangeland remain at the foundation of agriculture. In the past century, there has been increasing concern to identify and quantify various forms of agriculture. In the developed world, the range usually extends between sustainable agriculture (e.g. perm-culture or organic agriculture) and intensive farming (e.g. industrial agriculture). As far the contribution of ADPs is concerned, agriculture development includes the change in production and productivity of farming activities in rural areas.

2.2. The Role of Agricultural Projects in Rural Development

The importance and weight attached to a given role varies between and within countries, depending on their particular situation and national priorities. These various functions and benefits are valued differently by different people and different groups. Local, national and international interests in agriculture's economic roles also differ greatly across landscapes. Moreover, the roles that agriculture plays in local, national, and global development change over time but the central thesis is to alleviate poverty.

Agricultural commodities are used as inputs into food processing in the industrial countries. In Argentina, Brazil, Korea Republic and the USA, more than 60 per cent of total agricultural

output is used as an input into further economic activity. Contrast this with India, where more than two-thirds is consumed directly (IFAD, 2016).

Even the most populated countries have had great success. In both China and Indonesia, for example, rapid agricultural growth substantially reduced rural poverty, improved food security in both rural and urban sectors, and provided a significant demand side stimulus for non-agricultural goods and services. No country has been able to sustain the process of rapid economic growth without solving its problems of macro food security (World Bank, 2013).

Mufudza (2015), argued that well-being (and in essence social vulnerability) is often more readily measured in terms of tangible aspects such as income and consumption, savings, food security, nutritional and health status. Intangible measures of well-being, such as perceptions of self-esteem and empowerment, hope for the future; and leisure and recreation are mostly neglected when trying to understand social vulnerability. Intangible measures of rural development assist in understanding social vulnerability; it is the tangible measures which directly reduce vulnerability. These include an understanding of household indicators such as age, income, gender, employment, other assets, disabilities, debt or savings and health insurance. Examples of an Australian government report on Quantifying Social Vulnerability include social participation, cooperation, community support, network size, emotional support, common action, bonding, bridging, linking or isolation.

According to Baloyi (2010), in his research on Agricultural Economics, Extension and Rural Development in Limpopo Province, South Africa, agriculture tends to provide a much wider range of substitutability among factors of production, especially labour and capital, than is the case in much of industry. This social welfare role often acts as the most important buffer

between ‘poverty’ and full blown chronic under-nutrition. Thus this buffer role of agriculture keeps income distribution within reasonable bounds to help ensure that some of the poor do not fall below the nutrition threshold.

In Africa, Food security can improve health and body development, alleviate poverty, and generate economic growth. This is further noted by Christiaensen et al. (2010) who believed that the reduction of poverty, especially in dry-land developing countries, will improve economic growth by increasing the production of the agricultural sector. Agriculture is the best alternative to reduce poverty, because in dry-land developing countries, agricultural sectors provide most of the employment for the household in rural areas so that they can receive their income to reduce poverty and improve their economic growth.

The manner in which development strategies achieve growth, however, and the number of people who participate in and benefit from it are as important as the growth itself. In contrast, chronic malnutrition kills, blinds, and otherwise debilitates, reducing physical capacity, lowering productivity, stunting growth, and inhibiting learning. In the world’s poorest regions and countries, one-third of deaths among children are due to malnutrition (Poverty and Equity 2012). Improving access to food and nutrition increases learning capacity and school performance and leads to longer school attendance, fewer school and work days lost to sickness, higher earnings, longer work lives and a more productive work force.

Markets frequently do not reflect the social value of education, research and training. Agriculture contributes indirectly to education and education is a classic example where the benefits of increased education to society are higher than the benefits of that education to an individual. In the case of women, the social returns to investment in education are higher still. Investing in human capital remains one of the most important keys to reduce poverty and bring about

sustainable economic growth. Few measures contribute more to economic development and poverty alleviation than investing in women (World Bank, 2013).

Development in agriculture leads to increased incomes of women since the majority actors are women. This is also coupled with increased levels of education for women. Women's education also typically pays off in wage increases, with a consequential rise in household incomes. According to a recent ILO report, each additional year of schooling has been shown to raise a woman's earnings by about 15 per cent compared with 11 per cent for a man. Female education also has major social returns, contributing to improved household health and welfare, lower infant and child mortality, and slower population growth (Saquina, 2015).

In Tanzania, Burundi, Sudan among others, agriculture remains more productive than industry so the real price of food declines, contributing to: increased savings; increased incomes; economic stability; and overall total factor productivity. Historically, agricultural productivity growth has been even faster than productivity growth in manufacturing. Farm productivity growth in the agricultural- exporting rich countries has been comparatively very rapid. In the United States, for example, total factor productivity growth since the late 1940s has been nearly four times as fast in farming as in the private non-farm sectors (USAID, 2015) and similar performances have been found in Australia and Canada. As well, new technologies are capable of making food safer and raising its quality, and of reducing any harm to the environment caused by farming. These properties are valued more and more as people's income grow and as the natural environment comes under stress (USAID, 2015).

Past evidence suggests that periods of high agricultural growth rates are associated with falling rural poverty. Strong agricultural growth leads to: lower food prices (for urban consumers and rural net- food buyers); increased income- generating opportunities for food producers and

jobs for rural workers (thus reducing rural-urban migration, with positive consequences for real urban wage rates); and positive intersectoral spill-over effects including migration, trade and enhanced productivity (Makoni et al., 2014).

Accordingly in Kenya, evidence suggests that the dairy co-operatives approach played a significant role in fostering dairy development, primarily by providing a stable market environment and delivering services to farmers. However, dairy co-operative development was heavily dependent on good co-operative management, honest and effective investment of resources and accountability to the interests of the farmer members (Abdulsamad, 2016).

According to the World Bank review in Rwanda (2013), higher agricultural and rural growth rates are likely to have a ‘strong, immediate, and favorable impact’ on poverty. The review notes that agricultural growth rates exceeding 3 per cent a year produce a decline in the World Bank’s poverty index grouping by more than 1 per cent. In no case did poverty decline when agricultural growth was less than 1 per cent (World Bank, 2013).

According to Julien Ntezimana (2013), over time in Rwanda, agriculture has given up the processing, storing, merchandising, transporting, and financing practices, giving way to a more complex, specialized and integrated process. A long, circular chain evolves. Input providers, farm suppliers, assemblers, processors, wholesalers, brokers, importers, exporters, retailers, merchants, distributors, and consumers join the food and agricultural economic links. Additional activities continually service these businesses, including research, transportation, packaging, storage, futures markets, advertising and promotion. All these agribusiness activities are totally dependent on primary production. Primary production grows and evolves reflecting agribusiness, and agribusiness grows and evolves reflecting primary production (FAO, 2017).

According to the research by World Bank in Rwanda, Productive and income-generating activities utilize local available resources and generally aim to benefit the entire community. The activities mend the standard of living of a community through availability of income to cater for necessary expenditures such as health, food and education. These activities tend to reduce poverty, add to the feeling of well-being and economic independence in rural communities. Improved well-being (and the reduction of social vulnerability) is as a result achieved by the management of diverse assets including physical, human, financial, natural, intellectual and social (World Bank, 2013).

Small and micro-enterprises are often the key players in rural development, due to the fact that they provide social structure and can address the difficulties which rural communities face. Chikazunga (2012), noted that community members form groups, initially to provide a solution to unemployment or to supplement their current income. As a result of this action, income-generating projects like agriculture are formed with added benefits such as coherence, network forming, social integration, emotional support, but also social participation. These indirect benefits are very important in locally initiated projects not recognized by donors and Government agencies when they impose projects on communities.

In addition, agriculture operates as important social welfare infrastructure in remote locations, creating development opportunities and producing basic necessities for isolated communities. Agriculture provides basic subsistence occupations for millions and permits people to supply themselves with the three fundamental human needs: food, clothing and shelter. National accounting measures, too, often fail to reflect the true value of this production and capital creation within agriculture because much of it does not enter the market as monetized values. Consequently, agriculture is often downgraded and under-recognized (Chikazunga, 2012).

Countries failing to make progress in agricultural growth experience stagnating rural sectors, sluggish overall economic growth with declining per capita incomes, and falling investment in rural services and agricultural infrastructure (FAO, 2017). In addition, while rural growth has important impacts on urban poverty reduction, urban growth has much less impact on urban poverty reduction (Kunene, 2012).

According to Centers for Disease Control and Prevention (CDCP, 2013), improving access to food increases learning capacity and school performance and leads to longer school attendance, fewer school (and work days) lost to sickness, higher earnings, longer work lives and a more productive work force. These are essential to economic growth. And economic growth is essential for increasing incomes and reducing poverty.

2.3. Challenges faced by Farmers in Development to Overcome Poverty

The major problems of agricultural projects and rural development in Nigeria are summarized as, inadequate levels of agriculture productivity particular in food crop; high levels of absolute and rural poverty; and poor level of infrastructure facilities (Shiru, 2008). The fundamental problems facing agricultural mechanization in Nigeria include adoption of mechanization strategies which are often proffered by government and international agencies that do not pay sufficient attention to the interests of the local farmers and to the processes of technological change.

The evidence from the Intergovernmental Panel on Climate Change (IPCC, 2013) is now overwhelmingly convincing that climate change is real, that it will become worse, and that the poorest and most vulnerable people will be affected first and most. One of the sectors most sensitive to global warming is agriculture. Under a “business as usual scenario”, agricultural productivity in general could decline between 10 to 25 per cent by 2080. For some countries, the decline in yield in rain-fed agriculture could be as much as 50 per cent. Such trends clearly

threaten the achievement of the Millennium Development Goals (MDGs) (UN, 2012). Rural households engaged as subsistence and smallholder farmers in developing countries are most vulnerable to the impacts of climate change on agriculture. Understanding the impacts in different locations and the potential responses to cope with them is still at a very early stage, even amongst researchers and governments. Nevertheless, there are some indications of the ways in which climate change will affect small-holder farmers (Markanday, 2015).

According to IFAD (2015), there are increased pests and diseases which lead to decrease in crop production, increase in diseases and mortality of livestock, and/or forced sales of livestock at disadvantageous prices; increased livelihood insecurity, resulting in asset sale, indebtedness, out-migration and dependency on food aid; and downward spiral in human development indicators, such as health and education. Such impacts will further aggravate the stresses already associated with subsistence production, such as isolated location, small farm size, informal land tenure, low levels of technology and narrow employment options, in addition to unpredictable and uneven exposure to world markets that render smallholder farmers particularly risk-prone to poverty (UN, 2012).

The International Monetary Funds (IMF) (2018), reported that if farmers think they have a tough time producing enough rice, wheat and other grain crops, global warming is going to present a whole new world of challenges in the race to produce more food, scientists say. In a warmer world beset by greater extremes of droughts and floods, farmers will have to change crop management practices, grow tougher plant varieties and be prepared for constant change in the way they operate, scientists say. "There certainly are going to be lots of challenges in the future (IMF, 2018).

The Nigerian agricultural sector is predominantly dominated by resource-poor farmers who still practice traditional or subsistence agriculture in which the simplest traditional tools are being used, output and productivity are low, capital investment is minimal while land and labour constitute principal factors, thus culminating in the “law of diminishing returns” – high labour and input applications but low returns. In order to reverse this trend, agriculture in Nigeria needs to be practiced and managed on a sustainable basis (Titilola, 2008).

Another challenge is to attract new customers and maintain steady attendance throughout the season. They work with limited budgets for advertising and promotions, so they look for creative ways to reach out to the community and network. In sub-Saharan Africa according to Badiane (2014), up to 80 per cent of farmers are women. Women in Africa do not have much control over land which is the major asset in the farm production process and this is a great challenge because production will be temporary until the owner of the land engages in the production process.

According to the Brantford Expositor, high price of farm equipment: i.e. seed, fertilizer, fuel, etc. and their input costs are problems to farmers. Increasing government regulation is also making farming more difficult. An increasing lack of familiarity of the general populace with the practices of modern farming can lead to misunderstanding and the introduction of misguided legislation such as California's 2008 proposition (Marion, 2011).

According to Radelet (2010), soaring energy prices and the role that fossil fuels play in global warming provides a compelling rationale for looking more closely at bio fuels. Multipurpose crops that can grow on marginal lands and whose components can be used for bio fuels, animal feed and human consumption, could become a new source of income for small farmers.

International agricultural commodity prices are rising because of a combination of factors: an increased demand for food due to rapid growth in emerging countries like Rwanda, India and China; unprecedented and rapid migration from rural to urban areas; recent poor harvests in some countries that may be a result of climate change; and the conversion of land use from food crops to bio fuel crops. These will have enormous consequences for poor rural people, particularly for women, who often are responsible for providing food for the family. But rising commodity prices could improve the incomes of smallholder farmers if more remunerative prices are realized at the farm gate and if supporting policies and investments are put in place to ensure they can respond to the demand (High Level Panel of Experts, 2016).

Urbanization is a driver of rural development; a process that is embedded in structural development and leads to increases in agricultural productivity as well as to the diversification of production patterns and livelihoods, by developing off-farm and non-farm employment (IFAD, 2016). Rural developments in many countries are driven by agricultural productivity growth, leading to a shift of resources and people from agriculture towards industry and services (FAO, 2017). A vast literature confirms that in most rural areas, livelihoods diversification is the norm, rather than the exception. The literature also suggests that rural households participating in non-farm activities have higher income (Davis et al., 2017) and that inclusive rural development requires the development of the non-farm economy.

Increases in prices of agricultural commodities are often perceived to be detrimental to poor rural people and the consumer. However, higher prices benefit farmers but this is not so even in most cases. Artificially keeping these prices low mainly benefits urban consumers, some of whom can afford to pay higher prices, but prefer not to, often at the expense of the rural producers. Adding value to manual labour, whether for farmers or urban workers, is the appropriate approach to

increasing the income of the poor. The impact of price increases due to bio fuels has been exaggerated. Higher prices offer farmers a significant opportunity to increase their incomes and need not be viewed as necessarily negative (Freidman et al., 2014).

One cannot discuss the issue of land without looking at water issues as well. There have been problems in quantifying the amount of water required for crops. Despite what it is often said about growing crops on dry and marginal lands, irrigation in low-rainfall ecologies is required for optimal yields. Low input gives low output. In addition, water salinity is a problem in many regions. Investing in irrigation, particularly in Rwanda, remains a crucial issue as it was 30 years ago. Not all bio-energy crops have the same level of water demand. For example, new sweet sorghum and tropical sugar beets can produce high sugar outputs with far less water than can sugar cane (IFAD, 2016).

2.4. Measures taken by agricultural projects in rural development

Farm household income diversification framework differentiates between activities in terms of resources (factors of production: land, labour or capital), location (on-farm or off-farm) and output (agricultural or non-agricultural / non-farm). Many factors influence the diversification of farm households into non-farm activities, including government intervention. Providing the services needed to foster business in rural areas also helps creating an environment conducive to diversification (IFAD, 2016).

Farmers should consider the size and type of farm operations in determining engagement in agriculture diversification endeavours. In general, off-farm diversification activities are undertaken largely by smaller farmers, for whom they are more financially important. The location of the farm, especially distance to urban areas, also plays an important role in determining the extent of diversification activities (Marion, 2011).

Major adjustments are needed in agricultural, environmental and macroeconomic policy, at both national and international levels, in developed as well as developing countries, to create the conditions for sustainable agriculture and rural development (SARD). The major objective of SARD is to increase food production in a sustainable way and enhance food security. This will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection (USAID, 2015).

According to World Resources Institute (2016), there is need to maintain and improve the capacity of the higher potential agricultural lands to support an expanding population. However, conserving and rehabilitating the natural resources on lower potential lands in order to maintain sustainable man/land ratios is also necessary. The main tools of SARD are policy and agrarian reform, participation, income diversification, land conservation and improved management of inputs. The success of SARD will depend largely on the support and participation of rural people, national governments, the private sector and international cooperation, including technical and scientific cooperation.

Baloyi (2010), in his study on agriculture, extension and rural development in South Africa showed that considerable changes would be required in smallholders' farming operations if the economic benefits of increased incomes were to be fully realized. These changes entail producing good-quality, high-value crops on a large scale and accessing high-value markets. This will only happen if smallholder farmers have access to comprehensive and holistic agricultural support services from agricultural projects.

According to Friedman et al. (2014), a consortium approach should be adopted; consortium approach is a relationship or an association of at least two people, organizations, associations or governments with the target of partaking in a typical movement or pooling their resources for accomplishing a shared objective. A good consortium improves efficiency and reduces transaction costs, through joint planning, monitoring, and mutual accountability.

Farmers should integrate sustainable development considerations with agricultural policy analysis and planning in all countries, particularly in developing countries. Recommendations should contribute directly to the development of realistic and operational medium- to long-term plans and programmes, and thus to concrete actions. Support to and monitoring of implementation should follow (Abdulsadmad, 2016).

There is need for a coherent national policy framework for sustainable agriculture and rural development (SARD) and this should not be limited and instead should be widespread to the developing countries. This transition from planned to market-oriented systems needs such a framework to incorporate environmental considerations into economic activities, including agriculture. All countries need to assess comprehensively the impacts of such policies on food and agriculture sector performance, food security, rural welfare and international trading relations as a means for identifying appropriate offsetting measures (Davis et al., 2017).

According to PAGE (Partnership for Action on Green Economy) 2016, agricultural projects need to take sound policy decisions pertaining to international trade and capital flows also necessitate action to overcome: lack of awareness of the environmental costs incurred by sectoral and macroeconomic policies and hence their threat to sustainability; insufficient skills and experience in incorporating issues of sustainability into policies and programmes; and inadequacy of tools of analysis and monitoring.

One of the strategies that should be made by agricultural projects is to consider demographic trends, soil type and population movements and identify critical areas for agricultural production. This helps farmers to know what they can produce and get better yields. On this basis, relevant bodies should formulate, introduce and monitor policies, laws and regulations and incentives leading to sustainable agricultural and rural development and improved food security (OECD, 2012).

According to the FAO (2017), partnership of different agricultural projects can lead to improved harvesting, storage, processing, distribution and marketing of products at the local, national and regional levels in order to formulate and implement integrated agricultural projects that include other natural resource activities, such as management of rangelands, forests, and wildlife. This will promote social and economic research and policies that encourage sustainable agriculture development, particularly in fragile ecosystems and densely populated areas.

According to the UN (2012), identification of storage and distribution problems affecting food availability in order to overcome these problems and cooperate with producers and distributors to implement improved practices and systems is crucial in the development of agricultural projects.

Agricultural projects should implement integrated and sustainable agricultural development and food security strategies at the sub-regional level that use regional production and trade potentials, including organizations for regional economic integration, to promote food security (Pinca, 2016). Encourage, in the context of achieving sustainable agricultural development and consistent with relevant internationally agreed principles on trade and environment, a more open and non-discriminatory trading system and the avoidance of unjustifiable trade barriers which

together with other policies will facilitate the further integration of agricultural and environmental policies so as to make them mutually supportive (Pinca, 2016).

Strengthen and establish national, regional and international systems and networks to increase the understanding of the interaction between agriculture projects and farmers. Agricultural projects should identify ecologically sound technologies and facilitate the exchange of information on data sources, policies, and techniques and tools of analysis (Marion, 2011). Governments at the appropriate level and with the support of the relevant international and regional organizations should assist farming households and communities to apply technologies related to improved food production and security, including storage, monitoring of production and distribution (World Bank, 2015).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0. Introduction

This chapter provides the operational framework within which data were collected and analysed. It specifies the employed research design, the study population, area of study, sample size and sample characteristics, tools and techniques which were used for data collection, and how research variables were measured. It also includes the procedure of the study, data processing and analysis.

3.1. Research Design

The research design was a survey research which used both quantitative and qualitative approaches. Qualitative approach was used to explore deeply into experiences and case scenarios because of its in-depth nature of investigation, and quantitative approach was mainly applied to data analysis.

3.2. Study population

The study population included 139 farmers (48 male and 91 female), 15 Urugaga staff members, 30 local leadership, that is to say LCs and 30 community development officers, which totalled to 214 respondents. Farmers were considered because they knew better how Urugaga Imbaraga has helped them, challenges they face and solutions to the problems faced. Urugaga staff members, local leaders and community development officers were chosen because they implement agricultural policies and other policies like poverty alleviation, among others.

3.3. Sampling

Sampling is the process of selecting elements from a population in such a way that the sample elements selected represent the entire population from which the sample has been selected (Amin, 2005). It is a process of extracting a proportion of the population from which generalization to the entire population can be made. The sample size was 214 respondents from Ruhengeri community composed of farmers collaborating with the Urugaga Imbaraga Project, Urugaga Imbaraga Staff, some members of the local leadership, and some community development officers in the area. The sample was according to Table 3.1 below.

Table 3.1: Sample selection table

Sample/Respondents` category	Total Population	Sample size
Farmers	474	139
Urugaga staff members	50	35
Local leadership (eg, LCs)	80	30
Community development officers	10	10
Total	614	214

Source: Primary data 2019

3.3.1. Determination of the sample size

The sample was determined according to the table by Amin (2010) (Appendix 2).

3.3.2. Sampling selection

This study employed random and purposeful sampling technique in the selection of study participants. Farmers, local leaders were selected by random sampling while Urugaga Imbaraga Staff and Community Development Officers were purposively selected. This helped to target only the respondents of interest.

3.4. Data collection

The following methods were used:-

3.4.1. Primary data collection

This composed of data that was got from different respondents using the questionnaires, interviews guides and observation.

3.4.1.1. The Questionnaire

Primary data was collected using the questionnaire. A questionnaire (Appendix 1) is a form consisting of interrelated questions prepared by the researcher about the research problem under investigation, based on the objectives of the study (Amin, 2010). This composed of structured self-administered questionnaires with standardized, short, simple, and relevant questions that were presented to the target respondents. This method was selected for the advantages of wide coverage and saves the researcher time and money. It was well planned and focused. People are more truthful while responding to the questionnaires regarding controversial issues in particular due to the fact that their responses are anonymous.

3.4.1.2. The Interview

These were guided by the interview guide (Appendix 2). An interview is an oral questionnaire where the researcher gathers data through direct verbal interaction with respondents (Amin, 2010). The researcher asked a standard set of questions and recorded responses as they come. A set of written questions (interview guide) was presented to the selected respondents, and they gave their responses. This enabled the researcher to establish good relationship with the respondents and therefore gain their cooperation. These interviews yielded highest response rates in survey research.

3.4.2. Secondary data method

Secondary data was extracted from the existing records especially from the offices, magazines, textbooks and reports where appropriate information about the role of agriculture projects in rural development was kept. Internet and journals were also used for cross-reference purposes.

3.5. Quality of the data collection instruments

3.5.1. Validity

Face validity and content validity were used to ensure appropriateness of the questionnaire. Face validity refers to where from the face-value of the questionnaire the researcher can judge and tell that the questions set in the questionnaire are candid enough to generate data that is sufficient for the study. Content validity is where the questionnaire is related to other questionnaires earlier used for related studies.

3.5.2. Reliability

In establishing the reliability of the instruments, the researcher used the alternate forms reliability. This is the type of reliability which aims at establishing whether all the respondents easily understand the instruments equally. In ascertaining this, the researcher carried out a pilot study of the instruments among fellow students from the class and among farmers in the neighbouring district of Burera. Both districts are at the same border and share several similarities in terms of challenges and opportunities. After this pilot study, the researcher improved on the questions which proved to bear some ambiguities to the respondents before their actual administration to the field. This was done this way according to the recommendations by (Amin, 2010).

3.6. Ethical Consideration

An introductory letter for seeking permission to proceed for data collection was obtained from the university and this was the basis for the informed consent of respondents. Respondents were assured of utmost confidentiality of the data given, because these data were and could only be treated for purposes of academic and nothing else. Respondents were assured of no harm of any form, freedom to enter and exit or to not respond. The researcher respected human dignity and confidentiality and followed the guidelines which guide the communities in the study area.

3.7. Data Analysis and analysis

The researcher used both qualitative and quantitative analysis using frequency tables and descriptive statistics for easy understanding and interpretation of the finding. This was important to ensure statistical and summary of the data collected.

3.8. Limitations of the study

The study was done in English, yet most of the people from the study area did not know English. This compelled the researcher to translate the questionnaire from English to Kinyarwanda which the majority understood. After collecting the data, they were again translated into English for comprehension and analysis. This was a great limitation because these processes became hectic as the researcher guarded against changes from the original meaning of collected data. The research study was self-sponsored and so funds were borne by the researcher entirely. This was a limitation because the study became very costly to the researcher since there was no sponsorship in it.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0. Introduction

This chapter presents the analysis and interpretation of the results of the study. The analysis and interpretation were guided by the objectives of the study and the research questions. The study was based on three research objectives and the results on each objective are presented and interpreted one by one. The first part of this chapter shows the respondents' background information.

4.1. Presentation of respondents' background information

4.1.1. Respondents' categories

The study results indicate that respondents were farmers, Urugaga staff members, local leaders, and community development officers. Reference to this is made in Table 3.1 in chapter three.

Table 3.1 was transformed into a graph and indicated as Figure 4.1 below.

Table 4.1: Number of respondents' categories as expressed in percentage

Category	Respondents categories	Number	Percentage
Agricultural group	Farmer	139	65
	Community Development officer	8	3.7
	Local leader	30	14
	Urugaga staff members	35	16.3
	Male	96	44.8
	Female	118	55.2
Martials	Single	16	7
	Married	114	53
	Divorced	21	10

status	Widowed	63	30
Education	University	50	18
	Secondary	39	27
	Primary	57	24
	Non Formal education	68	31

Source: Field Work, 2019

From the table above, 65% of the respondents were farmers, 16.3% were Urugaga staff members, 14% were local leaders and 3.7% were community development officers. From the sample size, 55.2% were females and 44.8% were males.

From the Table above, married couples were ranked highly with 53%, followed by widows with 30%, Separated/divorced were ranked with 10% and 7% for singles. This implies that married couples were involved in the project.

For Education Background, the majority of the respondents (31%) had no formal education, 27% had secondary level, 24% were primary leavers and 18% had finished university, that is to say, had diploma and Bachelor's degree. This implies that people with high levels of education do not like agricultural farming since they want white collar jobs.

It was revealed by the respondents that 38.3% and above were 41 years and above, 25.2% were in the age bracket 36-40 years, 16.8, were in the range of 31-35 years, 11.2% were in the range of 26-30 years and 8.5% were between 20 and 25 years. This implied that those highly involved in the project were old people, and youth were few since they saw agriculture as a field for old people.

It was shown from the table above that 42% had a high population size between 7-8 people, 24% had a family size of 5-6 people, 16% had a family size of 3-4 people, 7% are in the family range

of 1-2 people, 6% had a very high family size of 11 people and above and 5% had a family size of 9-10 people. It was noted that bigger families were much more associated with slower and low levels of development as most of the agricultural output is for home consumption and very little for sale for further family development.

4.1.2. Gender distribution of respondents

Table 4.2: Gender Distribution of Respondents

Category of respondents	Males		Females		Total	
	Number of respondents	Percentage	Number of respondents	Percentage	Number of respondent	Percentage
Farmers	48	22.4	91	42.5	139	65
Urugaga staff members	19	8.9	16	7.4	35	16.3
Local leadership (such as LCs)	21	9.8	9	4.2	30	14
Community development officers	5	2.3	5	2.3	10	4.7
Total	93	43.5	121	56.5	214	100

Source: Fieldwork 2019

As Table 4.2 shows, out of the 214 respondents, 93 were males and 121 females. 65% of the respondents were farmers, 22.4% males and 42.5% females, 16.3% of the respondents were Urugaga staff members of which 8.9% were males and 7.4% females, 14% of the respondents were local leaders 9.8% being males and 4.2% females and 4.7% were community development officers of which both male and female had the same percentage of 2.3. Ground-based information indicated that women (56.5%) were more involved in agriculture than men (43.5%)

because men were more in industry-based commodity trade while leaving agriculture behind for women claiming that the returns from agriculture were low and took a long time to materialize.

Table 4.3: Lengths of time respondents had in Urugaga Imbaraga Project

Age bracket	Frequency	Percentage
Less than 1yr	52	24
1-2 years	78	37
3-4 years	84	39
Total	214	100

Source: Primary data 2019

From the table above, it was revealed that 24% of the respondents had less than one year experience, 37% of the respondents had between 1-2 years of experience and 39% of the respondents had 3-4 years of experience with Urugaga Imbaraga Project. This implies that at the beginning, the members were generally few but the number has now increased to over 400 members. This increment has been due to the fact that as people developed through the project, such developments enticed others to also join the project according to respondents.

4.2. Importance of Urugaga Imbaraga Project

Table 4.4: Importance of Urugaga Imbaraga Project

Responses	Frequency	Percentage
Yes	214	100
No	0	0
Total	214	100

Source: Fieldwork 2019

From the table above, it was shown that all respondents benefited from Urugaga Imbaraga Project. Urugaga Imbaraga helped its members to access different services which helped them to

improve their standard of living: this implied that the project was of importance to its members/farmer.

4.3. Benefits of Urugaga Imbaraga project

Table 4.5: Benefits of Urugaga Imbaraga project

Responses	Frequency	Percentage
Helps decision making	201	93.9
Creates access to market for goods	212	99.1
Helps to Negotiate with government	170	79.4
Members get socially organized	202	94.4
Helps to add value to agriculture products	196	91.6
Helps in improving standards of living	212	99.1
Agriculture in put	208	97.2
Infrastructure such as buildings	201	93.9
Empower people especially women	200	93.5
Human capacity building	189	88.3
promotes ethics in accountability	205	95.8
Strengthen family ties	202	94.4
Scholarships	210	98.1
Research and development	201	93.9

Source: Fieldwork 2019

From the table above, findings shows that Urugaga Imbaraga Project helped members to be socially organized and strengthen family ties as identified by 99.1% which is highest percentage and the lowest percentage shown by 79.4%. This implies that through cooperatives where members were grouped together, they did things more and supported each other, then they reached their goal easily and faster. On other hand, they said being in group made their voice stronger rather than if they worked as individuals.

The study findings revealed that 99.1% of the responses showed that the project helped members in accessing market for their products hence improving their standards of living through selling agricultural products. The CEO of the project noted that when members harvested, they measured the harvest, left it at their offices and then the officials found ready market for their products. Sometimes the officials got market even when they had not yet harvested. In addition to this, the LCII Festus said: “..... *that before to get market for his produce was struggle but after being a member of Urugaga Imbaraga Project the market is available because they are known in the region where are working and have a good quality of their produce (Source: Interview, 22 Sept,2019).*”

Getting agricultural inputs from agricultural harvest was ranked by 97.2% responses. One of the farmers by name of Gahutu noted that the project taught them how to preserve agricultural inputs instead of buying every digging season. This helped them in saving the money which they used to spend on such agricultural inputs.

It was noted by 94.4% of the respondents that members got socially organized and strengthened family ties. One of the farmers by name of Diane said, “*I and my husband were not in good terms earlier since we could harvest and he sells everything without my concern but now due to Urugaga Imbaraga Project, we sit and discuss on what to do.*”

It was shown from the study findings by 93.9% of the responses that the project helped in research and development and decision making: “.....*When I joined Urugaga Imbaraga Project, I benefited training about modern agriculture and inter visit program among farmers and this helped me in social value of education and research and training*” said by Phocas the Chairperson Gacaca cell (Interview, 22, May, 2019).

It was revealed by 93.5% responses that the projects helped in empowering people more especially women. One farmer by names of Alain said that: “.....*Increase in income allow us for promotion of an investment culture, building good homes, and investing more in agriculture and others activities (Interview, 22 September, 2019)*”.

This is in line with Saquina (2015), who says that development in agriculture leads to increased incomes of women since the majority actors are women. This is also coupled with increased levels of education for women. Women’s education also typically pays off in wage increases, with a consequential rise in household incomes.

It was observed by 92.5% that the basic requirements for a family were considered to be adequate food, safe water for drinking, suitable shelter and clothing as well as basic household equipment, working together as group laid farmers to the rural development and poverty reduction. Adeline the farmer said: “.....*Since a joined Urugaga Imbaraga Project my life have been improved where my income increased and my per income capita also increased, therefore there is ever chronic malnutrition kills in my house (Interview 22, September, 2019)*”

The study findings revealed by 91.6% responses that Urugaga Imbaraga project helped to add value to agriculture products that function and benefits were valued differently by different people and different groups. Also local, national and international interests in agriculture’s economic roles also differed greatly across landscape. One of the farmers, Charles, said: “.....*Over time, agriculture gives up the processing, storing, merchandising, transporting, and financing practices, giving way to a more complex, specialized and integrated process(Interview 23, September, 2019).*”

In this line, (FAO, 2017 said that additional activities continually service these businesses, including research, transportation, packaging, storage, futures markets, advertising and promotion. All these agribusiness activities are totally dependent on primary production.

It was said by 98.1% that many students and pupils had gotten scholarships. Increase in food security led to longer school attendance, less school and work day lost to sickness, higher earnings, longer work lives and more productive work force. Therefore, under this, there was human capacity building. According to World Bank (2013), Agriculture contributes indirectly to education and education is a classic example where the benefits of increased education to society are higher than the benefits of that education to an individual. In the case of women, the social returns to investment in education are higher still. Investing in human capital remains one of the most important keys to reduce poverty and bring about sustainable economic growth. Few measures contribute more to economic development and poverty alleviation than investing in women.

It was raised by 79.4% of the responses that the project helped in negotiating with the government in reducing taxes on agricultural products. Also sometimes the government offered funds, animals for rearing like cows, goats, sheep, poultry and pigs, and agricultural inputs. Since members were grouped together and showed their productivity to the government, it was easier to negotiate with government for favours which would help them to achieve their objectives. A local leader, Peter, said: “.....As a form of government support, the government builds transport systems and networks to help farmers to link to market areas (Interview, 23, September, 2019).”

4.4. Benefits of Urugaga Imbaraga Project

Table 4.6: Benefits of Urugaga Imbaraga Project

Response	Frequency	Percentage
Education	208	97.2
Food Security	208	97.2
Livestock	185	86.4
Housing/Building	198	92.5
Mutual help	170	79.4
Prevalence of health Insurance	212	99.1
Savings	196	91.6

Source: Primary data 2019

From the table above, it was noted that 99.1% of the respondents said that they gained health insurance and lower frequency was 79.4% who were agreed on mutual help. This implied that the project was beneficial because farmers got access to market for their products, food for their families as well as earning a living which improved their standards of living. Farmers grouped in Urugaga Imbaraga Project had stopped the chronic illness such as malnutrition and being in group helped them to solve quickly the challenges they were facing.

4.5. Challenges facing members of Urugaga Imbaraga Project

Table 4.7: Challenges facing members of Urugaga Imbaraga Project

Challenge	Frequency	Percentage
Lack of offices	164	76.6
Lack of enough training	164	76.6
Insufficient capital	187	87.4
Competition from other farmers	145	67.8
Natural Calamities	211	98.6
Unfavourable agriculture laws	206	96.3
Pests and diseases	198	92.5
Lack of diversity	154	72.0
Lack of agro input supplies	206	96.3

Price fluctuation	209	97.7
Too much debts	209	97.7
No support from other agencies	170	79.4

Source: Primary data 2019

From the study findings, it was noted that 98.6% of the responses said that they faced a problem of natural calamities and 67.8% revealed that they faced a problem of competition from other farmers in the community and countrywide. This implied that natural calamities like too much rain which led to landslides, mass wasting, soil erosion, among others, and too much sunshine which led to pests and diseases were the major challenges. These factors were uncontrollable by human capacity and therefore led to low yields hence poor outputs.

Natural calamities were ranked highly by 98.6% of the respondents. *“Farmers face a problem of natural calamities like too much rain or drought which leads to low yields and when we get low yield we little food for security and get little money which cannot satisfy our family needs”*. This was in line with IPCC (2008). Episodes of heavy rainfall and drought were likely to become more frequent and severe. Under such circumstances, the prospects of achieving the Millennium Development Goals might be seriously compromised.

It was said by 97.7% of the respondents that farmers faced a challenge of price fluctuations and too much debt. *“Sometime but not always, farmers face price fluctuation in the market both in Rwanda and outside Rwanda. When the demand for agricultural products is high and supply is low, prices increase but when the demand is low and supply is high, then prices are low. Hence farmers always experience this when they harvest products which other farmers are producing such products remain in the house for some long time, thereby limiting people’s incomes or they simply sell at low prices”*, the CEO of the projects narrated. In addition to the above, one farmer

by name of Arron noted that, *“To get agricultural inputs and agro inputs like fertilizers, we get loans from either SACCOs, banks, individual or both and paying them when the prices are low it becomes difficult for us to pay back debts. Sometimes we sell products to pay debts and our children get malnourished due to lack of food.”*

Unfavourable government laws and lack of agro inputs supplies had the same percentage of 96.3% of responses. *“Unfavourable government laws like too much tax put on agricultural products, government restrictions on which crops to grow is also a challenge to us because sometimes we grow crops which do not grow well because of poor soils.”* Gasana (Chairperson of farmers) said:

“.....because of lack of enough working capital and start-up capital, farmers tried to borrow some money from SACCOs and Community credit societies in order to still in their position but this become heavy burden to them(Interview 23, September, 2019).”

This is in line with Marion (2011) who showed that high price of farm equipment and their input costs: i.e. seed, fertilizer, fuel, etc. is a problem to farmers. Increasing government regulation is also making farming more difficult. An increasing lack of familiarity of the general populace with the practices of modern farming can lead to misunderstanding and the introduction of misguided legislation such as California's 2008 proposition.

It was said by 92.5% that pests and diseases affect their crops. Adrine, a farmer noted that *“sometimes when we lack money for buying pesticides and insecticides, our crops get affected by pests and disease yet leading to low yields and when we get low yields, we get little money which cannot afford our basic needs”*.

It was noted by 87.4% that farmers faced the problem of lack of enough capital to buy agriculture inputs and agro inputs like fertilizers, pesticides and insecticides. Lack of enough capital was further noted by Robert a member of SACCO and member of Urugaga Imbaraga Project that “this becomes a challenge for us because we get loans from SACCOs, Banks, Individual and other micro finances and paying back money plus interest is hard. Some of us have lost land and other properties because of such loans. Some other farmers fear getting loans hence grow few crops on a small scale”.

The study findings revealed that farmers lack enough training and lack of offices also become challenges to them as noted by 76.6%. One farmer by names of Owen revealed that Urugaga Imbaraga Project has one head office in Kigali and a farmer taking complaints needs money for transport sometimes when he/she does not have. *“In addition to the above, also employees from the project do not see how the farmers are doing, what they need and how they can solve the challenges they face. More so, due to lack of office, farmers lack enough training on the new adopted methods of farming, new crops of growing, harvesting and preservation measures among others. But we are yet to open branches in all districts”*, the CEO narrates.

During research, 79.4% noted that they lack of support from other non-governmental organisations. One of the respondents by name of Aline, a member of Urugaga Imbaraga Project, noted that *“....we lack support from other NGOs more especially in mobilizing us, supplying us with seeds, agro-input supplies, scholarships among others (Interview, 23, September, 2019)”*.

Additionally, Stephen (2000) notes that farmers suffer from major handicaps in fulfilling their potential, including lack of financial resources, lack of incentive to innovate, lack of policies to help them, and pressure on resources leading to degradation and short-term time horizons. He

recommended that more research be conducted on the needs of the poor and small farmers and that such research needs to link the research organizations and small farmers' groups.

As far as lack diversity is concerned, it was said by 72% that sometimes, farmers in most seasons, specialize in one line of production, mainly potatoes. Interviewees, Philemon and Pamella, said:

“.....This lack of diversity limits us to compete with others farmers who grow different crops in and out (Interview, 23, September, 2019)” “.....those women are tried to specialize in activities that do not require much land for their activities such activities include in-house and compound rated agriculture and cow rearing on a zero grazing basis (Interview, 23, September, 2019).

According to IFAD (2016), Farm household income diversification framework differentiates between activities in terms of resources (factors of production: land, labour or capital), location (on-farm or off-farm) and output (agricultural or non-agricultural / non-farm).

It was noted by 67.8% of the respondents that there is competition from other farmers in the community where there are unorganized farmers who sell their produce at very low price because these they do not pay taxes. Gatera Salomon said: *“.....We as an organized family entity, we pay taxes to the government and when we are pricing our commodities, we include in that taxes component, none organized farmers for whom it is difficult for the government taxes authorities to reach for tax payments, they sell at low prices because they do not pay taxes and this is a problem to farmers of organized projects (Interview, 23, September, 2019)”.*

4.6. Interventions taken by Urugaga Imbaraga Project in curbing challenges facing farmers

Table 4.8: Interventions taken by Urugaga Imbaraga Project in curbing challenges facing farmers

Responses	Frequency	Percent
Encourage young generation in agriculture activities	200	93.5
Enough support from other NGOs	165	77.1
Put in place mechanism to increase access to finance for farmers	170	79.4
Strengthen the commercialization of crop value chains	181	84.6
To increase the land area covered by terraces and ensure their optimal Use	101	47.2
To enhance farmers access to improved seeds	186	86.9
To promote new models of irrigation scheme management	190	88.8
Using technology and produce one item in one region	158	73.8
Work with the private sector to increase the surface of consolidated and promote agriculture mechanization	109	50.9

Source: Field data 2019

From the study findings, 93.5% revealed that NGOs should encourage young generations in agricultural activities other than wasting time in drugs, bars and no productive things, and 47.2% said that NGOs should help them to increase the land area covered by terraces and ensure their optimal use. This implies there is much youth unemployment which is voluntarily. To curb this, they need to be engaged in agriculture. The positive impact in encouraging young people in agriculture activities is that when young people are thought a lot then they are involved in sustainable country development for a long term, and for using terraces, either radical or progressive will help in conserving water and protect soil not to be destroyed by heavy rains which leads to landslides.

It was observed by 93.5% that worldwide young people continue to increase and have negative view in agricultural activities, which leads to massive poverty in our country. Therefore, there is

a need of encouraging the young generation in agriculture activities. An interviewee, Matthew, said: “.....*Agriculture activities are for the old people and even if we graduate from courses relating to the agriculture we don't get jobs*” as noted by Nicholas. The government should intervene in facilitation of young people and others who want to invest in agriculture and facilitate the way of getting funds oriented in agribusiness in order to encourage them (Interview, 24, September,2019)

It was noted by 88.8% that farmers face many problems relating to the climate change and it is so difficult to prevent them, then the new models of irrigation scheme management should be promoted. “*As farmers we need more support in new techniques that could help us to struggle with unpredictable season like drought season,*” said by one of the farmer named Anderson. In this line as said by IFAD (2016), One cannot discuss the issue of land without looking at water issues as well. There have been problems in quantifying the amount of water required for crops.

Despite what it is often said about growing crops on dry and marginal lands, irrigation in low-rainfall ecologies is required for optimal yields. Low input gives low output. In addition, water salinity is a problem in many regions. Investing in irrigation, particularly in Africa, remains a crucial issue as it was 30 years ago. Not all bio-energy crops have the same level of water demand. For example, new sweet sorghum and tropical sugar beets can produce high sugar outputs with far less water than can sugar cane.

It was observed by 86.9% of respondents that farmers lack some time improved seeds and when they get it, it comes in little quantities. This leads to weak production and means that donors should be helped to enhance farmers` access to improve seeds. Gasana and Rymond said: “.....*We need facilitation on access to improved seeds on consolidated sites and fertilizers*

application which will help us to increase our production in quality and quantity(Interview, 24, September,2019..... local seeds production scaled up significantly on priority crops will reduce reliance on imports (Interview, 24, September,2019)

This line with Marion (2011), the high price of farm equipment and their input costs: i.e. seed, fertilizer, fuel, etc. is a problem to farmers. An increasing lack of familiarity of the general populace with the practices of modern farming can lead to misunderstanding and the introduction of misguided legislation such as California's 2008 proposition.

It was said by 84.6% that there is a need to put up commercialize agricultural products so that farmers can get high prices out of their products and feel great if producing more and more agricultural products. Farmers' products need to be exported to other countries where there is need. Hennerly said: “... *When there is strengthen in commercialization of crops and animal resources values chains by increasing private sector engagement, promoting market oriented agro business and capturing greater in country surplus and value added (Interview, 24, September, 2019)*”

The study findings revealed by 79.4% of the respondents revealed that Urugaga Imbaraga Project should put in mechanisms to increase access to finance for farmers which can help farmers buy agriculture inputs and agro inputs. Marriam revealed that there is a need of a comprehensive agricultural ecosystem financing programme including lease financing and insurance with focus on priority value chain establishment. This is in line with Radelet (2010) who emphasized that small-scale farmers not only face climate change problem but also suffer from major handicaps in fulfilling their potential, including lack of financial resources, lack of incentive to innovate,

lack of policies to help them, and pressure on resources leading to degradation and short-term time horizons.

It was noted by 77.1% that Urugaga Imbaraga project should get enough support from other agencies in partnering with them as well as farmers. Meanwhile, working with private sector NGOs should help farmers to reduce shocks and stresses of losing production. Keneth, a farmer, said: “...*as farmers we need support from others NGOs like SACOLA, DERN among others in order to build post-harvest handling and storage facilities across the country and to add value to agricultural produce processing (Interview, 24, September,2019)*”.

It was shown by 73.8% that it is necessary to use more technology and produce one item in one region in order to increase production. Civil Society Organisations (CSOs) should help in this strategy in order to maximize stress caused by this challenge. Salomon points out that: “.....*More farmers until now they still deal with subsistence and mixed agriculture which handicap their production in quantity and quality and give them weak production. There is a need of live from traditional agriculture towards modern agriculture in order to maximize output in production (Interview, 24, September, 2019)*”.

During research, it was said by 50.9% that there is a need of working with the private sector to increase the surface of consolidated and irrigated land and promote agriculture mechanization. Chris said: “.....*that there is a need of prioritization to be scaled up of marshland small-scale technologies for irrigation, which are cost effective (Interview, 24, September,2019)*. As well a local leader Jane added on that: “.....*this that the percentages of mechanized farm operations need to be increased and the same time of the consolidated land (Interview, 24, September, 2019)*”.

Land covered by terraces need to be increased to ensure optimal use of land in order to cope with climate change is being lost in global efforts to promote larger-scale and more modern agriculture as noted by 47.2%. Therefore, NGOs should play a big role in helping farmers to increase the land area covered by terraces and ensure their optimal use. Frankline said this, “.....in order to promote and increase our production we need first to increase land area covered by terraces and ensure their optimal use (Interview, 24, September, 2019.”

This in line with Kalmi (2013), who noted that the knowledge of small-scale farmers in coping with climate change is being lost in global efforts to promote larger-scale and more modern agriculture. At the same time, small-scale farmers do need to be trained in new techniques; particularly those that can help mitigate the effects of climate change. For example, if farmers can be given tools to address seasonal variability (drought and dust storm early warning systems, and the like) they would be better able to cope with climate change. But efforts to do this are being swallowed in global efforts to promote larger-scale and more modern agriculture.

4.7. Governments’ intervention in curbing challenges faced by members in Urugaga Imbaraga Project

Table 4.9: Governments’ intervention in curbing challenges faced by members in Urugaga Imbaraga Project

Responses	Frequency	Percentage
Appropriate laws on trade and agriculture	132	61.7
Reduce taxes and loan policies management towards farmers	163	76.2
Using technology and produce one item in one region	158	73.8
Calling for other NGOs support	201	93.9
Promoting new methods of farming and irrigation	196	91.6
Providing farmers with improved seeds	190	88.8

Source: Field data 2019

From the above Table, 93.9% of respondents said that the government should intervene in calling for other NGOs' support, and 61.7% revealed that the government should help members to enact an appropriate law on trade and agriculture. Government should make policies and laws and regulations regarding land use and trade of agricultural products, for example: reduce taxes or exonerate on import of agro-inputs at the same time in exporting their produce, this will help the farmers to increase their production in quality and quantity and change their living styles.

It was noted by 93.9% of the respondents that the government should intervene in calling for other NGOs' support so that these NGOs can help farmers more especially in providing agro-inputs, market for their products and other associated benefits. One of the farmers by names of Adrine said: *".....I am from Kinigi and this parish is around Mt. Muhabura Volcano mountain, we face a challenge or poor roads when transporting our products and also we sell our products at low prices since we lack access to direct market hence becoming a challenge to us but if the government intervenes in bringing more NGOs, we can be helped to curb such challenges (Interview, 24, September, 2019)"*.

It was revealed by 91.6% that the government should help to promote new methods of farming and irrigation. The government should sensitize the public on new methods of farming and adopt irrigation schemes more especially in sunny seasons. Peter, a farmer said: *".....we face a challenge of growing crops on dry and marginal lands which ask us the need of water in surplus (Interview, 24, September, 2019)"*

It was observed by 88.8% of the respondents that farmers are facing the challenge of lack of improved seeds and this harms their output in quantity and quality. Then enough government

support was needed in providing farmers with improved seeds. One of the farmers by names of Benon said that: “....sometime we lack enough improved seeds in certain season and when we get them it not copied with region” (Interview, 24 September, 2019)”.

This is in line with Fogarty (2012), who reported that if farmers think they have a tough time producing enough rice, wheat and other grain crops, global warming is going to present a whole new world of challenges in the race to produce more food, scientists say. In a warmer world beset by greater extremes of droughts and floods, farmers will have to change crop management practices, grow tougher plant varieties and be prepared for constant change in the way they operate, scientists say. "There certainly are going to be lots of challenges in the future”.

It was noted by 76.2% that farmers face the challenge of taxes imposed on agricultural products and also taxes on loans given for agricultural activities. The government should help in reducing taxes and loan policy management towards farmers in curbing this challenge faced by farmers. A farmer known as Musobo and Chairperson of Alpha group said: “....As farmers we observed that in other areas such as industry activities, transportation activities and services activities they get loans from commercial and development banks, but for us it become a big problem, if the farmers are offered these loans with ease approach will help them to increase their productivity and contribute in poverty alleviation (Interview, 24, September,2019)”

It was observed by 73.8% of respondents that farmers need more sensitization about modern agriculture and still now many farmers using traditional agriculture and mixed agriculture. Here the government should support with using technology and produce one item in one region. One respondent Karim said: “.... new technologies are capable of making food safer and raising its

quality, and of reducing any harm to the environment caused by farming” (Interview, 26, September,2019)”.

This is in line with International Food Policy Research Institute (IFPRI, 2015), In Rwanda, rural areas encompass remote areas distant from the city and deprived of sufficient economic infrastructures. In rural areas, the livelihoods simply relied on agriculture with little prevalence of non-farm activities. With this study, rural developments will be analysed in different options such as how new agricultural technologies contribute to improving food security, how people access on income, how basic needs of a rural households are met and how social factors are taken into account towards a sustainable positive impact.

It was revealed by 61.7% that the greater the degree of community control over the resources on which it relies, the greater will be the incentive for economic and human resource development. Therefore, the government should help members to understand the appropriate law on trade and agriculture. Michael, a member of Urugaga Imbaraga Project said: “...*the policy instruments to reconcile long-run and short-run requirements must be set by government and the focus should be on fostering self -reliance and cooperation, providing information and supporting user-based projects (Interview,26, September, 2019”.*

4.8. Possible measures implemented by farmers/members in curbing challenges faced

Table 4.10: Possible measures implemented by farmers/members in curbing challenges faced

Responses	Frequency	Percentage
Form credit and saving cooperations	185	86.4
Adapt to new methods of farming	200	93.5
Select representatives	170	79.4

Source: Primary data 2019

From the study findings, 93.5% with the highest respondents they agreed that they should adapt to new methods of farming, and 79.4% of respondents said that they should together select representatives. Farmers should be trained on modern agriculture, adopt new methods of farming where they start using crop rotation, improved seeds and fertilizers and make terraces in order to improve productivity and for selecting representatives, farmers learnt importance of having a good leader and understood fruits from good governance like no corruption, misconduct and no segregation among others.

From the study findings, 93.5% of the respondents revealed that members/farmers should adapt to new methods of farming in order to increase produce and prevent soil erosion which leads to loss of crops. These methods of farming include crop rotation, terracing, mulching, and use of fertilizers among others. Salomon a farmer from Gakenke, added that farmers have to use terraces and crop rotation so that we stop the problem of soil erosion which in most cases leads to loss of crops.

It was observed by 86.4% of the respondents that members should form credit and savings cooperation's in order to solve the problem of much debts or lack of enough capital. Aimable a staff of Urugaga Imbaraga Project noted that: *".....cooperation's can help them get agriculture loans on low percentage like 2% or 5% in order for farmers to have capital for buying agricultural products and agro – inputs(Interview, 26,September,2019)"*.

This is in line with Mellor (2001) who noted that Agricultural cooperatives play an important role in supporting men and women small agricultural producers and marginalized groups by creating sustainable rural employment world-wide

During research, 79.4% noted that farmers should appoint or select representatives. Appropriate candidate in democracy and those who are competent in skills and good behaviours are those who elected so that they can be like a bridge uniting the Urugaga Imbaraga Project officers and farmers. Aline, one of the members said, “We face many problems but if we had representatives, they could help us informing Urugaga Imbararag project officers, Community development officers and government officers of our need of help and way of helping us”.

CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0. Introduction

The purpose of this chapter is to make conclusions and recommendations for the study.

5.1. Conclusions

Improving rural developments and development through agricultural projects and organizations among the people is a worthy strategy for self-empowerment but it is not without its political, social and cultural challenges. An important balance must thus be reached with regard to the formation of agricultural projects, their objectives, individual and organizational capacity building, government support and promotion, and organizational autonomy if the full contribution and benefits accrued to agricultural projects are to be realized in the light of rural population participation. Though Urugaga Imbaraga in collaboration with the Ministry of Agriculture has significantly improved farmers' use of agricultural inputs, there is need to empower farmers by reducing the cost of fertilizers, improved seeds and even pesticides based on the acreage one owns.

Farmers should also be sensitized on the use of cow dung as farm-yard manure to complement artificial fertilizers. Due to lack of adequate production capacity and insufficient stocks in the country, Rwanda still depends upon imported inputs which are too costly for farmers. For example, in 2008, 18,200 tons of fertilizers were imported at cost of \$19 million. There is need also to have a clear policy on farmers' incentives and to improve on extension services to improve the skills of farmers especially at the District level. The One Family One Cow GIRINKA programme policy is a limiting factor to natural means of producing manure because only few cows can be kept by law.

5.2. Recommendations

On a general note, it is important to appreciate the efforts of agricultural development projects because they have helped to achieve various objectives within the agricultural setting. However, from the findings of this study, it is equally necessary to propose recommendations that have been deemed relevant if the role of agricultural development projects in rural development in Rwanda, particularly Musanze district, is to be realized to full potential.

In order for farmers' capacity and willingness to contribute effectively to the country's development, their willingness should be supported by the government through capacity building such as training in several aspects in addition to those outlined in this report.

There is need to loosen conditions that dictate access to, control and use of financial facilities by farmers. Being the core of the country's economic backbone, agriculture should be given special attention in this regard whereby special financial facilities should set aside for agricultural development and be made flexibly available to individual farmers.

As a key to fast-tracking economic development especially in the area of technology for industrialized agriculture development, the country should ensure digital literacy programme with the objective of achieving the target of increasing productivity and income from agricultural activities in coming years. This should be supplemented by incentives to develop local contents and facilitate citizens including people who are grouped in agricultural development projects to access digital devices that will enable them use online services. This should strengthen the commercialization of crops' resource value chains by promoting market information system, e-soko in Rwanda should be strengthened with the aim of expanding this service to provide ICT solution to a broader set of challenges faced in the agricultural sector.

Many projects fail to take off because they suffer from weak management, governance and lack of capacity. Profitable projects invariably function as demand-driven and market-oriented businesses which invest in quality management and business development because they are profit-motivated. There is need to inculcate technology in production to ease access to information from the global community in order to overcome local bottlenecks using a global comparative analysis.

Though Urugaga Imbaraga in collaboration with the Ministry of Agriculture has significantly improved farmers' use of agricultural inputs, there is need to empower farmers by reducing the cost of fertilizers, improved seeds and even pesticides based on the acreage one owns. Farmers should also be sensitized on the use of cow dung as farm-yard manure to complement fertilizers.

There is need for improvement of and coordination between research and implementing institutions (the policy body) so that recommendations arising from findings from this and similar studies are put in practice.

Shifting from subsistence farming to a commercial approach appears difficult for many local farmers partially due to lack of business skills and entrepreneurial mindset, but it is the best way through which farmers can benefit both from quality and economies of scale. It is therefore imperative for the government to come up with incentives and mechanisms of motivation to farmers, which should include strengthening and certification of various development agricultural-based projects and cooperative societies. Internally, some of these incentives would be on the one hand to adopt an adequate and intelligent price regulation. This means that the government can help put in place strong mechanisms to motivate farmers through price stabilization by buying and stocking agricultural products in periods of harvest and resell them

when the demand is high. On the other hand, access to credit lines should be facilitated to farmers and government should pay a given percentage of the charged interest as a sign of encouragement to farmers.

There is evidence of high potential for value addition in the sector, but investment in agro-processing is still weak, difficult, costly and risky. This was observed to be as a result of lack of access to credit, poor rural infrastructure, weak land title deeds and uncertain continued production for sustained agro-processing industries. If these issues can be addressed, many of the challenges below and above these links can be overcome.

The country should be integrated in membership of regional integration in order to accelerate open collaboration with regional and international cooperation in order to increase value addition and competitiveness to maximize benefits from trade partnerships, promoting Intra Africa and Global trade through continued advocacy to eliminate Non-Tariff Barriers (NTB); and further mobilization of resources to implement joint infrastructure flagship projects to facilitate trade.

Besides the inadequate quality of produce and lack of good agricultural practices, there are other barriers making exportation difficult to the majority of Rwandan farmers. Such barriers include transport cost and lack of marketing expertise. Currently, much of export routes to Mombasa and Dar es Salaam are outside the jurisdiction of Rwanda while on the side of marketing, the export certification process is difficult. Food needs in the country are also high, leaving the surplus for export very little. With the emergence of East African Community, the government should negotiate with Kenya and Tanzania who have sea ports to make operations at their ports less tedious for the benefit of local sector entrepreneurs.

It seems that everywhere worldwide, young people see agricultural activities as old and retired generation activities and often, even those who had studied courses relating to the agriculture sector, are involved in ICT and other leisure activities. Therefore, this implies that the government should sensitize and involve young people to invest in agriculture and facilitate the way of getting loans oriented to agribusiness to youth cooperatives in order to encourage them in this career.

Putting in consideration environment and climate change, the country should make significant progress in environment and climate change mainstreaming as reported in State of Environment Reports (SEORs, 2009 and 2015). The environment is protected by relevant environmental laws and regulations that are captured under the Environmental Organic Law of 2005, as revised to date, and climate change has been addressed and informed by cross-sectoral strategies, including the Green Growth and Climate Resilient Strategy (GGCRS) and the Nationally Determined Contributions (NDCs) for climate change mitigation and adaptation. Furthermore, the country should emphasise to put on strengthening monitoring and evaluation high-impact areas selected include implementation of environmental and social impact assessments, biodiversity and ecosystem management, pollution and waste management.

The country should put in consideration laws concerning disaster management, where they should register in disaster management including the development of institutional, policy and legal frameworks and infrastructure for improving preparedness response and mitigation. To sustain progress and strengthen capacities for weather forecasting and early warning systems to increase reliability and accuracy of information for informed decision-making; improving coordination and engagement of all state holders to enhance information sharing, timely response and joint delivery of interventions, and continuing implementation of disaster management plans

and tools including district disaster management plans and other contingency plans should be undertaken.

Many people in the country are internal migrants (12.3% of the resident population) and this migration has increased over time. The highest percentage of 33% of people who migrated went to the main city and others migrated to the cities supporting the main city. The percentage of males that migrated is more than that of females. The population aged 20-29 years has the highest percentage of migrants (EICV5). Therefore, the government should decentralize the administrative power, and put economic incentives in the rural regions to prevent excessive migration to urban areas and sensitize the young generation to put up their efforts in creativity and innovation. The youth should also be supported financially so that they channel their plans and projects through commercial banks in order to develop their personal income and have willingness to contribute to the country's development and lead to poverty reduction.

During the research, the analysis showed that families with big size are associated with lower and slower level of development and often these migrations come from among these families. The problem of working hours undermines the development of the country in the sense that the more effort you put in the more productivity you harvest. Therefore, the government, private sector and civil society should encourage people to maximize their efforts in working time. This is especially so considering the large size of families with young people preferring to migrate in the urban cities, while others are squeezed in small settlements and cities using drugs and concentrated in betting houses which harm the development of the country and lead to massive poverty.

Currently, Rwandan agriculture depends wholly on the weather pattern and there is limited investment aimed at reducing Rwandan agriculture's vulnerability to weather shocks. It is still evident that with lack of Irrigation schemes and weak capacity on meteorological programmes, the sector may not manage to challenge the weather-related shocks. Feasibility Studies on Irrigation should be conducted to assess its possibility and prospects and approach donors for possible assistance. The Meteorological Department in the country should be strengthened to make it more reliable.

5.3. Recommendations for further studies

In future, a study may be conducted based on the following topic(s):

- a) The effect of science and technology on land productivity and market sourcing for agricultural products.
- b) Can science and technology recover the 'lost' land through poor farming methods?
- c) Investment as a strategy for promoting agricultural development for poverty reduction.

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APPENDICES

Appendix I: Questionnaires for farmers

Dear Sir/Madam

I am currently a Master’s student at Kabale University, Uganda. I am doing a Master of Arts in Development Studies, and I am carrying out a research on the role of agricultural development projects in rural developments in Ruhengeri, Musanze District – Rwanda. You have been selected to participate in this study by filling this questionnaire. Answers provided will be treated with utmost confidentiality and for purposes of academic only. Thank you for your co-operation.

Please, feel free to contact me if there is any uncertainty regarding any questions or issues. You can contact me on the details below:

Kind regards

.....

Munyanziza Joseph

SECTION A: Background Information

In this Section, you are requested to tick the alternative that is most appropriate to you.

A1: Name (optional)

A2: Age in years (1).20–25 (2).26–30 (3).31–40 (4) 41 and above

A3. Gender: (1) Female (2) Male

A4: Marital status: (1) Single (2) Married (3) Otherwise

A5: Name of your agricultural group if you belong to any.....

A6: Mention if you hold any position in your agricultural group.....

A7: Indicate level of education if any

(1) Ph.D (2) Masters (3) Degree (4) Diploma (5) Certificate

(6) Other (specify).....

A8: For how long have you been in agricultural group?years

SECTION B: Benefits of Urugaga Imbaraga Project

B1: As a member of Urugaga Imbaraga Project, has the project benefited you in any way. Yes
No

B2: If Yes, Please explain how Urugaga Imbaraga project has benefited.

- i.
- ii.
- iii.

B3: What have you acquired since you became a member of Urugaga Imbaraga Project?

- i.
- ii.
- iii.

SECTION C: Challenges facing members in Urugaga Imbaraga Project

C1: As members of Urugaga Imbaraga Project, do you face some challenges? Yes.... No...

C2: If yes, what are some of the challenges do you face

- i.

- ii.
- iii.

C3: Mention any things or items which you have lost purely as a result of being a member of Urugaga Imbaraga project

- i.
- ii.
- iii.

SECTION D: Strategies to challenges facing members of Urugaga Imbaraga Project

D1: In which ways does the project and other NGOs/CSOs/Donors help you to overcome some of these challenges?

- i.
- ii.
- iii.

D2: How does the government help you to overcome some of these challenges?

- i.
- ii.
- iii.

D3: As members/farmers, what do you do to overcome some of these challenges?

- i.
- ii.
- iii.

Thank you very much!

Appendix II: Questionnaires for Urugaga Imbaraga Staff, Local leaders and Community Development officers

Dear Sir/Madam

I am currently a Masters student at Kabale University, Uganda. I am doing a master of arts in development studies, and I am carrying out a research on the role of agricultural development projects in rural developments in Ruhengeri, Musanze District – Rwanda. You have been selected to participate in this study by filling this questionnaire. Answers provided will be treated with utmost confidentiality and for purposes of academic only. Thank you for your co-operation.

Please, feel free to contact me if there is any uncertainty regarding any questions or issues. You can contact me on the details below:

Kind regards

.....

Munyanziza Joseph

SECTION A: Background Information

In this Section, you are requested to tick the alternative that is most appropriate to you.

- A1: Name (optional)
- A2: Age in years (1).20–25 (2).26–30 (3).31–40 (4) 41 and above
- A3. Gender: (1) Female (2) Male
- A4: Marital status: (1) Single (2) Married (3) Otherwise
- A5: Occupation.....
- A6: Indicate level of education if any
(1) Ph.D (2) Masters (3) Degree (4) Diploma (5) Certificate

(6) Other (specify).....

A8: Working Experience

Below 1 year 1-2 years 2-3years 3-5 years Above 5years

SECTION B: Benefits of Urugaga Imbaraga Project

B1: Do you think Urugaga Imbaraga Projects benefits its members and the community at large?

Yes No

B2: If Yes, How have its members benefited from its services?

- i.
- ii.
- iii.

B3: What are the benefits of Urugaga Imbaraga Project to the community?

- i.
- ii.
- iii.

SECTION C: Challenges facing members in Urugaga Imbaraga Project

C1: As a leader, Community Development Officer or staff at Urugaga Imbaraga Project, do you think members/farmers face some challenges?

Yes No

C2: If yes, what are some of the challenges farmers or members of Urugaga Imbaraga Project face

- i.
- ii.

iii.

SECTION D: Strategies to challenges facing members of Urugaga Imbaraga Project

D1: In which ways does Urugaga Imbaraga Project and other NGOs/CSOs/Donors help you to overcome some of these challenges farmers face?

i.

ii.

iii.

D2: How does the government help you to overcome some of the challenges farmers/members of Urugaga Imbaraga Project face?

i.

ii.

iii.

D3: As Urugaga Imbaraga Project staff, what do you do to overcome some of these challenges facing farmers?

i.

ii.

iii.

D4: As a local leader or Community Development Officer, what do you do to overcome some of these challenges facing farmers?

Thank you very much!

Appendix III: Interview guide for respondents

- 1) Researcher introduces self.
- 2) Items such as education, household items, housing etc acquired purely as a result of being a member of Urugaga Imbaraga agricultural project between 2000 and 2010.
- 3) Items lost purely as a result of being a member of Urugaga Imbaraga agricultural project between 2000 and 2010.
- 4) Challenges faced in development as members of Urugaga Imbaraga agricultural project between 2000 and 2010.
- 5) Ways in which some of these challenges can be or are being solved.
- 6) How agriculture can be promoted in this area.
- 7) The role each of the following can play in order to fight poverty through agriculture:
 - The government
 - Civil Society Organisations (CSO) such as the Church
 - Farmers
 - Donors
 - Local and International NGOs

Thank you very much

Appendix IV: Table for determining sample size from a given population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

HASHIM, Yusuf Alhaji (2010), Determining sufficiency of sample size in management survey research activities: