IMPROVING SMALLHOLDER FARMERS INCOME THROUGH IMPROVEMENT OF CASSAVA PRODUCTION IN KIBONDE VILLAGE NGOMA DISTRICT

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN COMMUNITY ECONOMIC DEVELOPMENT OF THE OPEN UNIVERSITY OF TANZANIA

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for the acceptance by the Open University of Tanzania a dissertation entitled, **Improving Smallholder Farmers Income Through Improvement of Cassava Production in Kibonde Village Ngoma District"** in partial fulfilment of the requirements for the degree of Master of Community Economic Development of the Open University of Tanzania.

…….

Prof. Deus D. Ngaruko

(Supervisor)

…….

Date

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DECLARATION

I **Bitati, Nansingizwa Sousane,** do hereby declare that this CED project report is my own original work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

……

Signature

……

Date

DEDICATION

This work is dedicated to my children Frank Mutware, Laure Christelle Kamikazi, Guelord Ntwari for the love and tolerance they showed to me all the time I was on studying, they really missed my care and support.

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ABSTRACT

A dissertation on promoting cassava production in Ngoma for income poverty at Kibonde village is a result of the Community Needs Assessments (CNA) conducted in Kibonde village in Ngoma district. Prior to project intervention, the CNA exercise was conducted which came up with the community needs and problems. The main problem unveiled with CNA exercise which faces majority community members in Kibonde village was the prevalence of poverty. Among other activities IMBANAMUHIGO community members do engage in crop production which contribute to their household income for poverty reduction. However, smallholder farmers have been facing the problem of their cassava crops to be rotten due to unreliable market. Under this study there were four objectives which set to facilitate solving the problem, these were: Sensitization of 250 IMBANAMUHIGO community members on cassava processing project by January 2015; Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops and processing by March 2015; Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015; To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015. Following the implementation of the project, 200 out of 250 farmers were sensitized on cassava production and processing while 40 were equipped with the knowledge and skills on how to managed cultivation and processing the cassava and access to reliable market. The harvesting of cassava tubers has not yet implemented. Other activities have not been executed due to different factors including; delay access cassava and extensive weather conditions took place between February and April which lead to destruction of many seeds. However, the project will be evaluated after harvesting of cassava tubers.

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LIST OF ABBREVIATIONS

CAADP	Comprehensive African Agricultural Development Program
CBO	Community Based Organization
CDAC	Chinese Development Assistance
CED	Community Economic Development
CFA	Chartered Financial Analyst
CIP	Crop Intensification Programme
CAN	Community Need Assessment
	Conditions Survey)
EDPRS	Economic Development and Poverty Reduction Strategy
EEC	European Economic Community
EICV	Enquête Intégrale sur les Conditions de Vie des ménages (Integrated
	Households Living Conditions Survey)
FAO	Food Agriculture Organization
FM	Frequency Medium
GDP	Gross Domestic Product
GNP	Gross National Product
HCN	Hydrogen Cyanide
LAC	Latin America and the Caribbean
MCED	Masters in Community Economic Development
MFIs	Micro-Financial Institutions
MINAGRI	Ministry of Agriculture
NAP	National Agriculture Policy

NEPAD	New Partnership for Africa Development
NGO	Non Government Organization
NISR	National Institute Statistics of Rwanda
PASAB	Projet d'Appui a la Securite ALimentaire Au Bugesera
PRA	Participatory Rural Appraisal
PSTA	Strategic Plan for the Transformation of Agriculture
RAB	Rwanda Agriculture Board
RADA	Rwanda Agriculture Development Authority
RHODA	Rwanda Horticulture Development Authority
ROSCAS	Rotating and Savings Organizations
SACCO	Saving and Credit Cooperative
SEO	Sector Executive Officer
SWOC	Strength Weakness Opportunities Challenges
USAID	United States Agency for International Development

CHAPTER ONE

PARTICIPATORY NEEDS ASSESSMENT

1.1 Introduction

This chapter presents the findings of the Participatory Needs Assessment conducted in October 2014 in Kibonde Village, Sake Sector, Ngoma District, Eastern province. Extended Rural Participatory Appraisal was used to ensure community and other stakeholders' participation in identifying resources and real needs of the community. It further explains how the community need the project and accepted. The assessment was carried by using participatory methodologies such as Focused Group Discussions, Interview and Observations. Research tools used are Questions, Discussion Guide, and Interview guide (Turner, 2010).

The assessment was concentrated in three main sectors namely community, economic and health. The findings of community needs assessment created a base for identification of problems facing Kibonde Village Community. This information is very important in setting grounds for a successful CED project planning, implementation, management and sustainability. Community needs prioritization was conducted through Pair wise ranking. Six priority needs were noted and farming cassava were ranks first where Rental shops ranks seconds while farming and business were ranks thirds respectively (DiCicco-Bloom & Crabtree, 2006).

1.2 Community Profile

Kibonde is one of the four (4) villages in Sake Sector, Ngoma District Eastern province in Rwanda. Other village found in Sake Sector are Nkanga, Rukoma and

Gafunzo Villages. Kibonde is located 74km from Kibungo Township which are along the Kayonza to Kirehe Rusumo road Border. The Village has the area of 913Ha. It borders with Zaza and Gashanda sectors to the North and Jarama Sector to the South, Gafunzo Village to the West, and while to the East it borders with Nkanga Village, Mutenderi and Kazo Sectors. Kibonde village has a total number of 161 households with a total population of 949 people out of which 479 are male and 470 are female. According to 2010 EICV3 Census, Ngoma District population estimated to be 323,000 (Rwanda Ministry Of Health (MOH) [Rwanda], 2009).

1.2.2 Social Economic Activities

Kibonde village especially smallholders farmers most of them are employed on agriculture thus making it the major economic activity Cassava, potatoes, maize and rice are the main food and cash crops other engaged on Fishing and petty business. Produce from these crops are normally used within the village although a small amount is sold out to the nearby village or outside the village. Most of people in Kibonde Village keep indigenous chicken cow and goat. Due to persisting high levels of low income among the families, most of those poor and uneducated are engaged in informal sector operating small businesses such as: food vendors, petty business (Pulleman, Jongmans, Marinissen, & Bouma, 2003). Another economic activity being practiced in the area petrol, a good number of filling stations along the main road which pass through the market can be seen, Bar, Lodges, groceries market, small shops, hair cut saloon and cake, bread making can be seen at Kibonde village. The farming system is predominantly subsistence. Farming techniques are very traditional where farmers use the hand hoes (Fischer, Hartel, & Kuemmerle,

2012). The fast growing population has put pressure on arable land and subsequently decreasing the land productivity due to declining soil fertility (Morton, 2007).

1.2.3 Social Economic Infrastructure

There is one Dispensary in Sake Sector which mean Kibonde village has no dispensary they have to use one dispensary in one sector. The Dispensary has only one Assistant Medical Officer and two Nurses, experiences a number of problems including, lack of nurses as there are only 2 nurses and critical lack of drugs, referral cases are forwarded to Kibungo Medical Health Centre. The village has one primary school which caters for the two hamlets and unfortunately, there is no Secondary School in the Village instead they share one secondary in all sector. Secondary services are found at the nearest Village Rukoma Sake in the north of Kibonde Village where there is Rukoma Sake Secondary school.

1.3.4 Social Services

Mobile phone services are well-organized to cover the whole area of the Village. MTN Rwanda-cell, Tigo and Airtel are the most telecommunication used in village. However there are no public cell phone and Postal services in the village. There are no Banking services in the village; the services are available at Ngoma district Headquarter. However the community established rotating and savings organisations (ROSCAS) or Solidarity Group Lending. Members of the groups contribute every week and after three month start borrowing, and after a year they re-establish by dividing interest and capital, at this time it’s where new members join and others withdraw their membership. There is one centre for Umurenge SACCO which serves community. Umurenge SACCO is the only quickest means of transferring and

receiving money that brought a significant and increase of the total assets of the sector (EICV3, 2010).

1.3 Community Needs Assessment

The community Needs Assessment was conducted by the researcher in collaboration with Caritas Rwanda members, Kibonde Village Chairperson, Sector Executive Officer (SEO), and five hamlet leaders, village community and four influential people. The assessment was concentrated in three main sectors namely community, economic and health targeting at identifying community opportunities, problems, and causes of the problems (Programs, 2010). It focused at designing and implementing a project that will address solutions to the identified problems (Geiger, 2002).

1.3.1 Community Needs Assessment Objectives

The title of overall and specific objectives must be included.

1.3.1.1 The Overall Objective

The overall objective of Community Needs Assessment was to gather information from the community so as to identify needs, opportunities, and obstacles which was used to improve smallholders' farmers in Ngoma District particularly in Kibonde Village.

1.3.1.2 Specific Objectives

Specific objectives of community needs assessment are as follows

(i) To determine demographic characteristics of the smallholder farmers in kibonde village by May 2015.

(ii) To identify the major sources of livelihood as well as economic activity of the smallholder farmers by May 2015.

(iii) To identify possible interventions/projects for the identified community needs by June 2015.

(iv) To examine improvement of reliable market for livelihood opportunities, obstacles and impact of the project.

1.3.2 Research Questions

The assessment was guided by the following questions

(i) What is the location and demographic characteristic of the IMBANAMUHIGO community?

(ii) What are major activities productions undertaken by the smallholder farmers residents?

(iii) What are the possible interventions to identify community needs?

(iv) What are the sources of smallholders' farmers' income and obstacles in the Village?

(v) What is the impact of the project in relation to better life?

(vi) What should be done to address the identified problems?

(vii) What challenges do you think you may encounter in implementing the proposed project?

(viii) Does the community have reliable resources and opportunities for implementing the project?

1.3.3 Research Methodology

1.3.3.1 Research Design

Descriptive survey was applied in conducting the study, which involved both qualitative and quantitative methods for data collection together with Participatory Rural Appraisal Research methods. Qualitative approach was used because they give an opportunity analysis of collected data since different data analysis techniques can be such open coding and content analysis can be used interchangeably during data analysis (Basit, 2003). Quantitative approach involves collection of quantifiable data which are normally inters of numbers, tables, and charts and figures to mention a few. In this case, quantitative research approach is the approach which is used to collect quantified data (H.-F. Hsieh & Shannon, 2005).

1.3.3.2 Sampling Techniques

Kibonde village has a total number of 161 households with a total population of 949 people. The sample was drawn from the population and 30 households, 2 Village officials, 2 influential people, and 1 member of Caritas Rwanda were sampled and interviewed during fifteen days where the total sample size of smallholder farmers was 58. Since it was not possible to cover the whole population in the village, sampling is inevitable. Random sampling (Probability) and Non probability sampling were applied. In Random sampling, systematic or interval Sampling were applied (H. F. Hsieh & Shannon, 2005). The researcher interviewed one household after every ten houses. In non probability sampling Purposive sampling was applied to get village community Officials, influential people, Caritas Rwanda member as well as other Village (S. Elo et al., 2014).

1.3.3.3 Data Collection Methods

Structured questionnaire, Interviews, Observation and Documentary review research method were expected to be used to collect data; but instrument used were research structured questionnaire, observation and documentary review schedules.

1.3.3.3.1 Structured Questionnaire

Structured questionnaire is method of collecting information through giving questions and its answers to be choose your appropriate answer for a right research. The researcher used unstructured questions to find broad information which do not have specific answers such as what are the problems do community faces specifically to three sector of community, economic and health (Satu Elo & Kyngäs, 2008). Structured question were used to solicit information which need specific answers (Braun & Clarke, 2006).

1.3.3.3.2 Observation Guide

Observation is a research method which was used to acquire first hand, live, sensory accounts of phenomena as they occur in a real world setting Non participants observation method was used during the assessment, in this case, the researcher was not included into respondents' activities was moving around observing their day to day activities which may increase their income, Village environment as well as opportunities available in the Village.

1.3.3.3.3 Documentary Review

Documentary review is a process of reading various extract found in offices or places dealing with or associated with the issue related to what the researcher is investigated

(Nash, 2014). Documents identified and reviewed are EICV3 District Profile East-Ngoma District Socio-Economic Profile, District Investment Profile, Environmental Profile, Village Plan and District Agricultural Development Plan.

1.3.3.4 Data Analysis Methods

Data analysis is an important step towards data presentation and analysis. In this case types of data that is qualitative and quantitative data were analyzed. For qualitative data, data were collected and transcribed. Quantitative data were tabulated by using SPSS Programme as descriptive statistics that comprise percentages and frequencies.

1.4 Community Needs Assessment Findings

1.4.1 Findings on Demographics Characteristics of the Smallholder Farmers

1.4.1.1 Gender of the Smallholder Farmers

Table 1: Gender of the Smallholder Farmers

Respondents	Frequency	Percent	Valid Percent
Male	30	51.7	51.7
Female	28	48.3	48.3
Total	**58**	**100.0**	**100.0**

Due to the specific objective of demographic characteristic of the smallholder farmers to cultivate cassava in order to produce cassava tubers, the results of the sex respondents it displayed on the table above where gender respondents where male constitute 51.7% and female 48.3%, the number of male is higher than female because most of head of livelihood are male. This reflects that more males

questioned, and this is gender imbalance. However it also expresses that views where obtained from difference sex to avoid biasness.

1.4.1.2 Age of the Smallholder Farmers

Table 2: Age of the Smallholder Farmers

Respondents	Frequency	Percent	Valid Percent
18-30	9	15.5	15.5
31-40	22	37.9	37.9
41-50	23	39.7	39.7
51-60	4	6.9	6.9
Total	**58**	**100.0**	**100.0**

Due to the specific objective of demographic characteristic of the smallholder farmers to cultivate cassava in order to produce cassava tubers, the results of the age respondents it displayed on the table above where most of the respondents are in range of 41 – 50 years old which represent 39.7%, while range of 31 – 40 years old represent 37.9%; range of 18 – 30 years old represent 15.5% and lastly range of 51 – 60 years old represent 6.9% all results are according to the frequency statistic display.

1.4.1.3 Education level

Table 3: Education level of the smallholder farmers

Responses	Frequency	Percent	Valid Percent
Primary	21	36.2	36.2
Secondary	27	46.6	46.6
Technical/ vocational	10	17.2	17.2
Total	**58**	**100.0**	**100.0**

Findings from the survey table above shows that 36.2% had attained Primary school education followed by those who attained secondary school education level was 46.6%. Findings show that 17.2% Attained technical education/ vocational skills. The information above was gathered so as to understand capacity of the community lived at Kibonde village, if they can manage to run project after sensitization and training, and after this is a good percentage of the community where smallholder farmer will be helpful for their cassava planting after being trained on how to plant cassava in order to become a good cassava farmers.

1.4.1.4 Source of Livelihood of the Smallholder Farmers

Table 4: Major Source of Livelihood (Occupation)

Responses	Frequency	Percent	Valid Percent
Farming and business	14	24.1	24.1
Farming of cassava	15	25.9	25.9
Livestock keeping	11	19.0	19.0
Business	7	12.1	12.1
Employed by government	2	3.4	3.4
Construction worker	6	10.3	10.3
Other	3	5.2	5.2
Total	**58**	**100.0**	**100.0**

The researcher was finding the major source of livelihood as seen on the table above. The Table 4 indicate that 25.9 % of respondents interviewed revealed that in order of their daily life occupation in Kibonde Village they should improve agriculture production which is farming of cassava, followed by 24.1% whom their daily occupation are farming and business, and livestock keeping was 19.0%; business was

mentioned by 12.1%, construction worker by 10.3%, while other occupation took 5.2%. The findings above reflects that income poverty is the major problem of the community in Kibonde Village, which causes community, cannot afford to buy enough food, through increased income majority can afford to buy enough food and even accessing better health services.

1.4.1.5 Finding on Monthly Income

Table 5: Average Monthly Income

Responses	Frequency	Percent	Valid Percent
Less than 40,000 Rwf	18	31.0	31.0
Between 40,001 Rwf and 80,000Rwf	28	48.3	48.3
Between 80,001 Rwf and 120,000 Rwf	11	19.0	19.0
Between 120,001 Rwf and 160,000 Rwf	1	1.7	1.7
Total	**58**	**100.0**	**100.0**

It was revealed that 48.3% earning an income of between 40,001 – 80,000 Rwf, followed by those earning between 80,001 – 120,000 Rwf which is about 19%, and also those earning less than 40,000 Rwf is about 31%; This is an indication that there is lack of viable income generating opportunities.

Through this assessment community and other change agent will be in a position to identify viable activities which will increase income to the smallholder farmers to become a good cassava farmers in order to produce cassava tubers.

1.3.2 Economic Activities

1.3.2.1 Economic Activity of the Smallholder Farmers

Table 6: Economic Activity the Smallholder Farmers

Responses	Frequency	Percent	Valid Percent
Farming and business	13	22.4	22.4
Farming of cassava	10	17.2	17.2
Business only	1	1.7	1.7
Growing mushroom	7	12.1	12.1
Market vendor	7	12.1	12.1
Rental shops	5	8.6	8.6
Hand cloths selling	9	15.5	15.5
Construction worker	3	5.2	5.2
Poultry keeping	3	5.2	5.2
Total	**58**	**100.0**	**100.0**

The findings above revealed that 22.4% percent of IMBANAMUHIGO community engaged in farming and business, which means farming and business, is the major source of income in Kibonde Village. Those engaged in hand cloths selling are 15.5%. Those who engaged in farming of cassava are 17.2 and market vendor is 12.1% as were as growing mushroom while those engaged in construction worker and poultry keeping are 5.2%. That means in order to raise majority income in Kibonde, efforts should base on farming and business.

1.4.2.2 Intervention/Project for the Identified Needs

Table 7: Intervention/Project for the Identified Needs

Responses	Frequency	Percent	Valid Percent
Farming and business	7	12.1	12.1
Farming of cassava	12	20.7	20.7
Livestock keeping	8	13.8	13.8
Business	6	10.3	10.3
Employed by government	3	5.2	5.2
Construction worker	3	5.2	5.2
Growing mushroom	7	12.1	12.1
Market vendor	3	5.2	5.2
Rental shops	8	13.8	13.8
Other	1	1.7	1.7
Total	**58**	**100.0**	**100.0**

Finding on different interventions needs on the table above were questioned in order to know which of the needs from the IMBANAMUHIGO community could be put in action. As it is displayed 20.7% revealed that farming of cassava is a first priority need, 13.8% is the second need for livestock keeping and rental shops, 12.1% are for growing mushroom together with farming and business, while business take 10.3%, and lastly 5.2% are for market vendor, construction worker and employed by government.

1.4.3 Findings on Cassava Production if it can have an Impact on Smallholder Farmers

Availability of land is another factor that needs to be compared to urban communities around, Kibonde area that has access to land. Labour, too, being much

more available in the Villages than in the towns. Community mobilization is another factor; it is far easier to mobilize community in the Villages than in towns. The specific objective of impact on smallholder farmers to cultivate cassava in order to produce cassava tubers, the results of the respondents impact on smallholder farmers on impact which are increasing of individual income, decrease of dependence and creation of employment are displayed to the table 9, table 10 and table 11 below respectively.

1.4.3.1 Impact of Increasing of Individual Income

Table 8: Increasing of Individual Income

Responses	Frequency	Percent	Valid Percent
First class	19	32.8	32.8
Second class	26	44.8	44.8
Third class	13	22.4	22.4
Total	**58**	**100.0**	**100.0**

The Table above indicates that most of the respondents 44.8% considered cassava growing and marketing could have impact on community economic empowerment on second class. Combining that with the votes of those who thought cassava growing could second class impact on individual income, the ratio rises to a whopping 32.8%. The reasons include available opportunities when compared to relatively manageable challenges given some expertise and some technical support.

1.3.3.2 Impact on decrease of dependence

Table 9: Decrease of dependence

Responses	Frequency	Percent	Valid Percent
First class	7	12.1	12.1
Second class	30	51.7	51.7
Third class	21	36.2	36.2
Total	**58**	**100.0**	**100.0**

As Table8, indicates respondents revealed that the growing and marketing of cassava is economically viable as it is most likely to increase individual income that will allow them meet human basic needs and automatically decrease dependence on government and donor support. Due to the specific objective of impact on decrease of dependence for the smallholder farmers to cultivate cassava in order to produce cassava tubers, the results of decrease of dependence it shows that 51.7% of the smallholder farmers are on the second class means decrease of dependence has no place for their own development.

1.4.3.3 Impact on Creation of Employment

Table 10: Creation of Employment

Responses	Frequency	Percent	Valid Percent
First class	27	46.6	46.6
Second class	28	48.3	48.3
Third class	3	5.2	5.2
Total	**58**	**100.0**	**100.0**

As Table indicates, respondents revealed that the growing and marketing of cassava is economically viable as it is most likely to increase the team-income; and this will in effect allow group to absorb more labour in the community. This automatically would offer job opportunities to more persons in the area. Group members listed wealth indicators and based on their perceptions, categorized farmers as category 1 (most wealthy), 2 (moderately wealthy) and 3 (least wealthy). The group placed itself in the second category and targeted to move in to the first category after the implementation of the project. Members of the group indicated that cassava was not

grown as a commercial crop and whatever plants that existed in a few farms were voluntary or seedlings that were obtained from forests from bird-dispersed seeds, and there were no yield records.

1.4.4 Challenge of Cassava Production in Kibonde Village

Table 11: Challenge in Implementation of Cassava Production

Responses	Frequency	Percent	Valid Percent
Inaccessibility of market during rain	7	12.1	12.1
Lack of market	14	24.1	24.1
Low price	11	19.0	19.0
Inadequate capital	19	32.8	32.8
Lack of technical skills	7	12.1	12.1
Total	**58**	**100.0**	**100.0**

The Table II shows that about 32.8% of respondents declared that inadequate capital is one of the obstacles to development of cassava production in Kibonde Village, while 19% argue that, the low price; cause small income development that contributing to not being encourage to produce cassava. From the table above 24.1% percent of respondents pinpointed that lack of market that is one of the factors which cause community to produce cassava in low quantity.

The factors mentioned above should be taken in to consideration by the community themselves in collaboration with other stakeholders so as to improve cassava production in Kibonde. The respondents also reveal that lack of technical skills is one of most challenge for cassava production in Kibonde village once it score 12.1% in the Table 11.

1.5 Community Needs Prioritization

Community Needs Assessment was conducted involved structured questionnaire needs were mentioned and prioritized in order to come up with one most pressing need which required to be addressed through a project which had to be designed by community of Kibonde and others stakeholders. Prioritization was conducted through pair wise ranking where generally there was little argument but most smallholder farmers offered their view by shouting out their preference. Participation was excellent. Smallholder farmers provided very rational reasons for their choices especially when it was slightly more difficult to make a decision: e.g. they argued that you need farming cassava before you can put in rental shop, therefore farming cassava must be a priority; people come first so care for the disabled is more important than rental shop.

The list of needs, in this case, was almost too short. The exercise took quite a long time to complete. Due to that a longer list is not recommended as it would make the process too tedious as the number of comparisons would be vast. People would lose interest. This method for prioritizing needs within a common interest group. Problems may arise with this technique if the participants have conflicting interests and researcher were facilitate focus group members to compare mentioned needs and ranked by voting as indicated below.

Table 12: Pair Wise Ranking

	Farming and business	**Farming of cassava**	**Livestock keeping**	**Growing mushrooms**	**Market vendor**	**Rental shops**	**Score**	**Position**
Farming and business		Farming of cassava	Farming and business	Farming and business	Market vendor	Rental shops	2	3
Farming of cassava			Farming of cassava	Farming of cassava	Farming of cassava	Farming of cassava	5	1
Livestock keeping				Livestock keeping	Livestock keeping	Rental shops	2	4
Growing mushroom					Growing mushroom	Rental shops	1	6
Market vendor						Market vendor	2	5
Rental shops							3	2

Table 12 shows the levelling of the needs facilitated by the pair wise matrix and Focus group members were agreed by voting needs as farming of cassava production to address the income poverty was ranked as the first, followed farming and business. The total needs were 6 which were classified as shown below:

(i) Faming of cassava

(ii) Rental shops

(iii) Farming and business

(iv) Livestock keeping

(v) Market vendor

(vi) Growing mushrooms

Under the needs prioritization exercise, farming cassava ranked number one while growing mushrooms ranked at most last. These indicate that the first need by the IMBANAMUHIGO community was farming of cassava.

1.6 Conclusion

The struggle on poverty reduction in Rwanda needs multidisciplinary approach due to the fact that poverty has a multifaceted approach which calls for multidimensional approaches. Different approached have been used to cub the problem of poverty within the communities. Provided poverty has said to be rural phenomena, effective strategies have been employed to alleviate poverty in rural areas. Income poverty is believed to be aggravating any other kind of poverty.

The conducted CNA envisaged increasing income generating activities opportunities. Cassava production in Ngoma as one of the main horticulture is well grown at

Kibonde Village. However, the producers have been discouraged by different problems facing their production such as absence of remarkable Market of their produce which lead to distortion of their tree. The area could have been earned much income from cassava production if they could access other means on how to keep their production from damage. Most of Ngoma districts area is ideal for Cassava production, Kibonde Village can be used a model for cassava production so as to contribute in household income poverty reduction. The CNA has finally come up with various needs to be addressed by preparing different projects. However, the needs levelling process have simplified the chronological and logical order on how to address those needs.

Since the findings in table of interventions of needs revealed that 20.7% and 13.8% of IMBANAMUHIGO community engaged in farming of cassava and livestock keeping respectively, as a major source of income in Kibonde Village; It was also declared by smallholder farmers table of priority needs that cassava will raise their income for the following reasons, ‘‘if cassava produced in large quantity can be used as cash crop, cassava also is utilized for food (garri and vegetables) and can be used morning during tea as Polage. Cassava can also use in production of livestock feed’’. Members of Caritas Rwanda an organization and IMBANAMUHIGO community formed a committee to look for District support especially in improved cassava steam, fertilizers, market and other extension services.

CHAPTER TWO

PROBLEM IDENTIFICATION

2.1 Background of Research Problem

Struggling for poverty alleviation is a multi-disciplinary which needs multi-dimensional approach. Poverty for a long time has said to be rural phenomena whereby majorities are engaging in subsistence farming. Due to this fact agricultural diversification is the only possible was to address the problem. Rwanda has engaged itself into effective Participatory approach in its different planning process to involve local communities on the war against poverty alleviation. Community participation in development planning has been the contemporary approach to ensure that community participate in struggling pulling out from abject poverty as envisaged by the Economic Development for Poverty Reduction Strategy (January, 2011). Striving to pool out of poverty has resulted into different strategies. EDPRS II has an intention of halving abject poverty by 2018. Rwanda also has adopted the Millennium Development Goals which aim to reduce absolute poverty by 2018 (Government of Rwanda, 2012).

Identification of problems affecting Kibonde Village was executed under Participatory assessment approach. This has been the useful tool which in turn resulted into identification of problems thereafter plan for their immediate solutions to rescue the prevailing situation which has been an impediment and hindrance to the community striving pooling themselves out of poverty wheel (income poverty in particular) (Haushofer & Fehr, 2014). The study revealed that the Kibonde Village

Communities still trapped into income poverty which prohibits them from living decent life. Kibonde communities have been engaging into various activities in striving pooling out from the abject poverty, mainly been agricultural activities. From among farming activities, cassava production has been conducted within the Village (Layte & Whelan, 2003).

The study has unveiled different opportunities prevails within the community, among others are; availability and accessibility of suitable land for cash crops production in Kibonde Village and many other areas (about ¾ of land in Ngoma is suitable for cash crops production). Cassava production background goes as far as the first century since commenced practiced (Young, 2010). Currently, it has seen to be among the lucrative production Worldwide which can contribute to the people (Rural dweller in particular) to get rid of poverty (both income and food poverty) once majority will engage in the production. The problem identification at Kibonde Village based on the Community Needs Assessment which came up with a number of problems and ranked according to their importance to the community.

The Community Needs Assessment exercise resulted into identification of different problems pertaining at Kibonde Village. The main problem is the prevalence of income poverty within the community members. Identified problems concerning cash crops production as one of the strategy towards income poverty alleviation, these are; inadequate knowledge on how to prepare manure for cassava production which impede majority to engage in cassava production and or to undergo effective cassava production (United Nations Development Program & Chambers, 2006). Another problem is inadequate knowledge on preparation of cassava crop seedlings

which has led the majority not to plant many cash crops trees scarcity of cassava seedlings as well as high prices of seedlings (Dowler & O'Connor, 2012). Lack of adequate capital and market inaccessible for farming of cassava has exacerbated majority not to engage into cassava production. Farming of Cassava could have been rescued the rotten cassava due to lack of market and increase the community's income for the community not selling only cassava but also garri powder which is user friend to majority.

Another problem uncounted is Lack of garri powder packaging tools. Once garri powder is made it needs to be kept into special package to be used or sold some time in future. Lack of knowledge on how to use cultivate cassava in modern is another great problem to the community members. A feeder road for cassava transportation is of great importance because without good roads cassava cannot be easily transported. Therefore the problem of bad feeder roads aggravates poor cassava production. Having discussed with the community and ranked the problems of inadequate capital for farming of cassava. The profound of this problem is due to the majority of cassava producers to be discouraged planting more cassava trees due to unreliable market of their product and depending one sided market channel.

2.2 Problem Statement

Income poverty has been a great problem for IMBANAMUHIGO community members from a long time. Majority peasants including crops producers have been greatly affected by low household income. This has been attributed by many factors including; low price of their produce, unreliable markets, lack of adequate. Kibonde people have struggled to pull out of Poverty but still they are trapped in income

poverty wheel. Different studies undertaken at Kibonde Village include; Community participation in identifying different opportunities and planning for development (opportunity and Obstacles to Development) conducted in 2008 throughout the District (Government of Rwanda, 2012). Many study in Kibonde have been done but did not solve cassava cultivation problem, the current study came up with the detailed study which unveils the opportunities for viable and reliable economic activity with the focus of contributing in sustainable economic development. The cassava cultivation project therefore, is there to bridge the gap to ensure reliable market for sustainable cassava production in Kibonde and Ngoma as a whole.

2.3 Project Description

The targeted community in the project is Kibonde Village community which is one among 56 Villages of Ngoma District. Majority of the people in the village are poor due to the small scale farming which is mostly practiced in the area and in most cases it is subsistence farming. During raining season the roads becomes worse and not passable which prohibit selling even their few crops they harvest.

The project will be executed by the small group of cassava producers under the general supervision of the Village council. To ensure efficiency the group will have internal leaders. Project activities arranged to start on November but the Host organization accepted to commence the business on December and complete the project on August, 2015. CARITAS Rwanda through Ngoma Livelihood initiative District Council as the great stakeholder has promised to support the project by providing all necessary equipment and training necessary to run the project.

2.3.1 Target Community

The target community is the smallholder farmers in Ngoma Village. Under this study it has been unveiled that in order for the cassava production to be promoted, smallholder farmers are to be facilitated to access reasonable market and enabled to acquire skills on producing various products from cassava crops. Cassava processing project is therefore there to cater the problem of unreliable and sustainable market. The cassava processing project concur the Ngoma district effort to fight poverty within the District by the special campaign on Maize and Cassava production throughout the district. The establishment of cassava cultivation will expand crops market and influence majority to engage in cassava production hence cassava production promoted.

The cassava processing group will work under the supervision of the Village Council and consultancy of the District Agricultural Officer (Horticultural Officer), District Trading Officer in collaboration with Kibonde extension officer. The project will run by the selected group from among the smallholder farmers. Successful implementation of the project will help different institutions and organizations to learn of the suitability of cassava production and engage in production. The immediate consumers of the project products include; Kibonde Village communities and the neighbouring villages.

2.3.2 Stakeholders

Different stakeholders will contribute in the implementation of the project. The main stakeholder is the CARITAS Rwanda through District Council (Ngoma livelihood initiative) who will facilitate procurement of agriculture and the necessary training to

operate the project as well as hygiene aspects for quality products. Other stakeholders include; Kibonde Village Council who is the owner and the executer of the cassava processing project. Kibonde Village Community who will be the consumer of the cassava processing project products. Another important stakeholder is the Radio Izuba FM for advertisement on the products of the projects.

Table 13: Roles and Expectations of Various Stakeholders

S/N	Name of the stakeholders	Role of the stakeholders	Expectations
1.	Ngoma District Council	1.1 Facilitate procurement of cassava cultivation 1.2 Conduct training to the community on the best way to undergo crops processing activities. 1.3 Technical support to promote cassava production. 1.4 Assist the Village to search the market of the products to encourage farmers.	-Fund released at reasonable time for the cultivation processing. -Increased income earning from cassava production. -Increased skills on quality crops processing to the concerned people. -project Sustainability ensured.
2.	Radio Izuba FM	2.1 Promotion of cassava/powder market through advertisement.	-Increased number of cassava/powder customers
3.	Cassava producers.	3.1 Supplying cassava. 3.2 To improve cassava production to feed the market. 3.3 To produce quality product.	-Attain reliable market and reasonable price of produce. - To ensure sustainability of crops processing. -Improved standard of living from selling cassava products. - Cassava value added
4.	IMBANAMUHIGO community.	4.1 Consumer of the produced cassava products.	-Improved nutrition at household level.

Source: Researchers Findings

2.3.3 The Project Goal

The project goal is to improve economic status of the smallholder farmers' members by household income poverty reduction among the peasants (Cassava crops producers) for their decent life. Cultivation of cassava crops at Kibonde Village will help to rescue a certain amount of cassava used to rote due to extensive rain and result to a reliable market of the produced crops. Reliable market and good price of cassava products will in turn encourage majority of the community members to engage into cassava production hence, increased production.

2.3.4 Project Objectives

2.3.4.1 General Objective

The general objective of the project is smallholder farmers income poverty reduction through improvement of cassava tubers production by August 2015.

2.3.4.2 Specific Objectives

Specifically the project intend to;

(i) Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015

(ii) Equip 40 smallholder farmers with knowledge and skills on how to managed and cultivate the cassava crops processing project by March 2015.

(iii) Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015.

(iv) To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.

2.4 Host Organization/CBO Profile

The host organization is PASAB (Projet d'Appui a la Securite Alimentaire Au Bugesera) together with CARITAS Rwanda. The Kibonde Village Council is led by Village Chair person and the Village Executive Officer.

In order to run the project, the Village Council selected a group of 20 members in which 13 are males and 7 are females among the cassava producers to run the project. The group is working under the leadership of the Village Council. However, for effectiveness and efficiency of work the group has its own leaders, which are; chair person, Secretary and the treasury. The steering committee is made up with the group leaders with the three selected members to make five members of the steering committee.

2.4.1 Host Organization Leadership

The leaders of the host organization are; CARITAS Rwanda and PASAB (Projet d'Appui a la Securite Alimentaire Au Bugesera), Village Chairperson, Village Executive Officer. Under the Village leaders there are group leaders who are working in collaboration with Village leaders, specifically for the processing project, these are; Group chair person, Secretary and the treasurer. Therefore the steering committee have a sum of 6 persons.

2.4.2 Vision of the Host Organization:

Being exemplary in facilitating the community members in changing their mindset and enhance socioeconomic development.

2.4.3 Mission of the Host Organization

PASAB and CARITAS with Kibonde Village Council intend to become a model organization in provision of socio economic services to the community members so as to ensure decent life to her people and living in peace and harmony.

2.4.4 Kibonde Village Council Organization Structure

At the Village level, the Village Council have been vested the day to day tasks of Village Government, therefore the Village Assembly/Village Government have not been included in this structure. The Village Council Organization structure is shown on Figure 1**.**

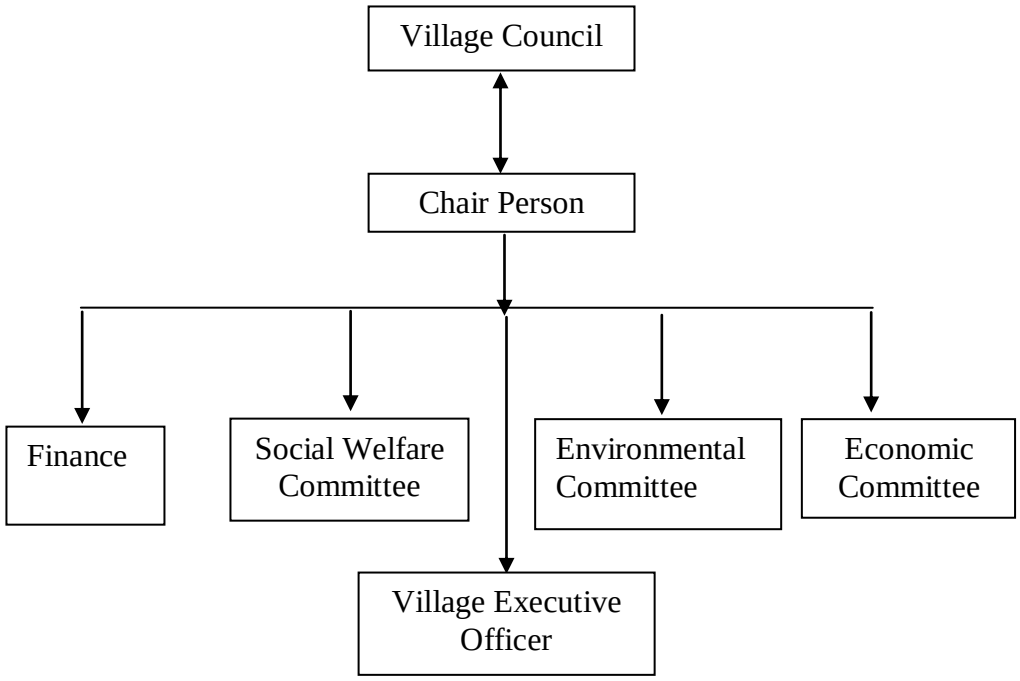

Figure 1: Village Council Organization Structure

2.4.5 Kibonde Village Council SWOC Analysis

SWOC analysis intends to depict in-depth information of the concerned organization on the available opportunities which can help in the intervention of the project. It also focuses to determine strength, weaknesses, and the challenges facing the

organization in question. In general, these components are of two major groups; internal and external components. Strength and weaknesses are internal variables while opportunities and challenges are external variables. The Strengths, Weaknesses, Opportunities, and challenges of Kibonde Village Council were identified as shown in the Table 14.

Table 14: SWOC Analysis of Kibonde Village Council

No	Strength	Weakness	Opportunities	Challenges
1.	Committed and active Village leadership	Treasurer is not an employee	Members trained on how to run the project	Village Chair person has no salary
2	Premises availability	It is hired from an individual none cassava producer	The premise situated at the centre of the Village along Sake sector road hence easily to access customers	The Village has no electricity. Generator has to be used
3	Presence of one guard man	Employed staff has no training in their duties.	The guardian is from within the Village	He has no contract
4	Extension office is within the Village	Extension officer is serving 5 villages	The extension officer is dwelling at Cassava Village	Sometimes uses to be out of the station for a long time
5	Village Executive Officer is the government employee	Sometimes being busy with some activities	Most of the time he is available	Close participatory supervision of the project

2.4.6 The Roles of Community Economic Development (CED) Student in the Project

The main role of CED student's is to ensure that the planned interventions are successful implemented as per plan. To fulfil this the following activities undertaken;

(i) To sensitize IMBANAMUHIGO community members on the importance of crops processing project.

(ii) To consult different stakeholders to access resources needed for the project implementation.

(iii) To facilitate the purchase/access of project cassava seeds for project implementation.

(iv) To facilitate training to Kibonde Village and group leaders on managing and operating the processing project.

(v) To facilitate market reliability in collaboration with Village and District officers.

(vi) To facilitate and ensure participatory Monitoring and Evaluation process of the project.

2.4.7 The Roles of the Host Organization

(i) To attend all required training

(ii) To participate in the community sensitization on the project

(iii) To participate in the project product marketing

(iv) To ensure safe guard of all the project seeds

(v) In collaboration with the MCED students to consult different stakeholders for fund to run the project

(vi) To participate in the process of the project seeds cultivation

(vii) To sensitize crops producers to bring at the processing centre timely

(viii) To ensure administrative activities throughout the project life

(ix) To ensure the progress report is provided at every interval it needed

(x) To ensure the project sustainability

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter review authors who wrote on issues related to cassava production, reports the findings from various projects related to community livelihood, and the policy that guides the operation of the community livelihood in Rwanda. The chapter is divided into four parts: theoretical literature, empirical literature, policy reviews and the literature review summary. In theoretical reviews, the emphasis is to analyze the theory behind cassava production. The empirical review, the objective is to narrate on work done by others, with the special interest on the approach used, outcomes, experiences and lessons learnt and their similarity. Lastly it ends by analyzing policy issues as they impact the project. Concurrently books, professional journals, reports from livelihood departments and personal experience were used in gathering information.

3.2 Theoretical Literature

Cassava production is an idea to most our community members, as a result people are expecting to have sophisticated agriculture technologies. Through in-depth gatherings, people managed to define that cassava production is a central station where by community livelihood is to improve their production. (Kristensen, Birch-Thomsen, Rasmussen, Rasmussen, & Traoré, 2014) stated that village cassava production unit usually involves a group of cassava producers living within a given

area near the unit. For community livelihood means to improve cassava production unit.

3.2.1 Status of Cassava Production in Developing Countries

In Nigeria, cassava production is well-developed as an organized agricultural crop. It has well-established multiplication and processing techniques for food products and cattle feed. There are more than 40 cassava varieties in use. Cassava is processed in many processing centres and fabricating enterprises set up in the country. In 1999, Nigeria produced 33 million tonnes, while a decade later; it produced approximately 45 million tonnes, which is almost 19% of production in the world. The average yield per hectare is 10.6 tonnes. The continental strategy expands on national and regional strategies. The continental strategy highlights the needs and support that transcend national and regional concerns. The continental cassava includes: i) Finding and obtaining the commitment of a continental champion or champions for cassava; ii) Obtaining financial support from international/development agencies such as the World Bank, African, Asian and Latin American development bank's; iii) Formulation and implementation of plant protection systems for evaluation and monitoring of pests/diseases within the continent and that combine resistant varieties, biological control measures and plant materials sanitation and safe movement of improved cassava germ plasma through public and private sector partnerships (Oyegbami, Oboh, & Omueti, 2010).

Continental differences in production, processing and marketing of cassava must be taken into account. Therefore, each continent [or subcontinent or region in some

cases] will have to develop a plan of its own. These continental plans should link with the bottom-up industry analyses and top-down plans emanating from the global review and strategy development.

In Africa Except for Nigeria and a few other countries, cassava is still grown mainly as a staple food accounting for up to 70% of output. Increased consumption for food is the combined result of droughts, increased population, and with civil strife, devaluation of the CFA in Francophone countries and recent policies aimed at reducing cereal imports. Gari accounts for 70% of total cassava consumption in Nigeria, compared to 40-59% in Ghana, Cameroon and Côte d'Ivoire. Other forms include gari or farinha (made by grating roots, fermenting, drying in the sun, followed by heating over low heat) and foo-foo (a paste-like meal made from cooked fermented roots or flour) (de Groot, Abrahamse, & Jones, 2013). Young leaves can be eaten as a fresh vegetable, ground fresh and frozen in plastic bags, or dried and ground for sale in plastic bags, and being more nutritionally balanced than the roots, they help to prevent certain deficiency diseases (Njeru, 2006).

Potential for the Future: There a great potential for cassava for food particularly with increased population, recurrent droughts, disasters, and market opportunities and recent policies aimed at reducing cereal imports. FAO projections are that global area devoted to cassava by 2005 will be 18.6 million ha, with Africa accounting for about 11.9 million ha. Industry uses could expand, especially for starch and animal feeds. In Africa, it is estimated that the combined effect of alleviating pre-and post-harvest constraints could increase economic yield by 168% and controlling a relatively few

damaging pests and diseases could produce large improvements in yield (United Nations, 2015).

Major Strategy Concerns: In Africa, supporting and improving the status and performance of cassava as a food while expanding its potential commercial role should receive high priority, particularly with the rapid migration to urban centres and increasing income. This should involve public and private efforts, particularly various farmers groups who are major stakeholders, supported by infrastructure developments so as to reduce the current high production costs and make cassava more competitive with grains. Continuing research and development efforts are needed in soil fertility, tissue culture and rapid multiplication of planting material crop protection and integrated pest management for the continent where cassava has been greatly affected by pest and disease attack (Nations, 2014).

In Asia Cassava is almost entirely a commercial crop in Asia, playing a role in agriculture, commerce and industry. A highly versatile crop, cassava historically gained importance in Asia as a food security crop in times of political unrest, wars and famine, particularly in parts of Indonesia and India. Asia has few problems with pests and diseases, unlike Africa and LAC, Asia has little potential to increase yields by their control. Overcoming pre- and post harvest constraints are expected to increase economic yield by 116%, the lowest figure for the three continents (Tefera, 2012). Use for feed in China represented 40% of 1992 – 1994 total output. Also in China, India, Thailand, Indonesia and Viet Nam, starches from fresh or chipped roots are important both for human and industrial use. China and Thailand for example

make noodles and sodium glutamate from processed starch at household level (Samperio, Prieto, Blanco-Cipollone, Vivas, & Moñino, 2015).

Potential for the Future: Trade developments in such Asian countries as Japan and Republic of Korea as well as the EEC and improved domestic markets will continue to boost the Asian cassava industry. Major Strategy Concerns is to increase population growth, limited options by some farmers for other crops besides cassava due to environmental constraints, poor soils on which cassava is grown, all indicate the need to increase on-farm efficiency productivity and expand processing and marketing opportunities (Fermont, 2009).

Production in LAC (Latin America and the Caribbean) has been stable for 25 years in a context of traditional production processing systems and constrained markets. Over that time LAC's share of the global production dropped from 35% in 1970 to 19% in 1996, because both African and Asian production doubled, while that of production of Brazil and Paraguay, the main producers, slightly decreased. The area harvested in LAC peaked at 2.85 M Mt. in 1977.

At least half of total production is used directly for human food. Animal feed and industrial uses account for 20 to 30% of production. Brazil and Paraguay are the region's largest producers. On-farm feeding of fresh or dried cassava has been practised for a long time, but their use in balanced rations is growing. Starch production in Brazil, Columbia and Paraguay is on the rise and is used mainly in paper processing, adhesives and paper and textiles whereas in Columbia, a powerful

antiseptic known as cassareep and capable of preserving meat is a by-product of boiling the poisonous juice of bitter cassava varieties (El-Sharkawy, 2006).

Practical soil and crop management can raise yields in LAC more than 50% and adding improvements in yield potential and pest and disease control could more than double yields. The combined effect of alleviating pre-and post-harvest constraints could increase economic yield by 133%, or the equivalent of 41 M Mt. LAC food preferences are shifting away from basic staples and more towards convenience foods, and diversified diets. Considerable potential exists for improving additional revenues [within a range of 60-130%] from post-harvest handling and processing, the estimates being lowest for fresh roots, highest for animal feed, and intermediate for starch and flour. Major Strategy Concerns: Increasing markets by developing convenience foods for urban dwellers, use of cassava feedstuffs, and new uses for starch and flour may be important. Moves to support industrial growth of cassava and to increase value added are needed (Cenpukdee & Fukai, 1992).

3.2.2 Cassava Production in Rwanda

Cassava production in Rwanda is still young but developing. Current Development strategies aim at modernizing its commercializing the industry and making it competitive. Production of cassava according to Rwanda Agriculture Development Authority (RADA), the government intends to increase yields to 20,000 tons per hectare and total production to 2 million tons per year, and as cassava is a priority, because it’s a staple food for most Rwandans and are produced as different varieties. Also drought-resistant, in comparison with other crops, cassavas are consumed as

fries, chipped-off dried tubers, a solid meal, and flour and tapioca starch. Dried cassava roots and meal are also used as raw material for compound animal feed while cassava starch is used for industrial purposes (NISR, 2012).

In Rwanda Cassava grow four times as plentifully and feed many more people. Cassava is mainly grown in Southern Province but government intends to expand the acreage of plantations to 90,000 from 70,000ha. Rwanda exports cassava flour to Belgium. Agriculture constitutes the second biggest component of GDP with 36.0 percent. But only as recent as 2005 agriculture was the main GDP contributor. The retreating agriculture share was absorbed by the services sector, while the industry sector stagnated at around 13.9 percent of GDP. However, agriculture remains the main employer, especially of the poorer and less educated segments of the population (NISR, 2012).

As Food crops constitute 84.0 percent of agriculture GDP, or 30.3 percent of overall GDP. Over the past five years, they registered an average growth of 5.2 percent. Food crops also dominate the cultivable land with almost 67.1 percent, reflecting the subsistence nature of Rwandan agriculture. Since the formulation of the NAP, the cultivated area increased by only 2.0 percent from 2004 to 2010, while food crop output registered an average growth of 7.0 percent per year. This reflects good productivity growth through intensification (rather than environmentally unsustainable extensification), which is desirable to continue. Strong growth in food crop production can be partly attributed to the CIP. Complementary investments in marshland irrigation, integrated soil fertility management, farmer field schools have

also played a role, as well as favourable weather conditions. The project have assisted many farmers to organize themselves and have given them management and financial training. This has brought a significant remarkable improvement of community livelihood development in these regions (NISR, 2012).

3.2.3 Problems Facing Cassava Production in Rwanda

The agriculture sector which currently contributes significantly to national GDP (32.6 per cent) has of recent experienced remarkable. There was also a rebound in cassava yields following depressed production in 2006 and 2007 due to the cassava mosaic epidemic. The Crop Intensification Programme and improved crop diseases prevention and treatment measures in 2007 and 2008 have, in the main, been responsible for growth in food and export crops production. In order to fully realize its strategic role, the agriculture sector will need to address a number of urgent challenges, including: (i) preserving soil fertility and preventing soil erosion, (ii) large irrigation needs, (iii) poor post-harvest management, and (iv) limited access to financial services. These could impinge negatively on agricultural productivity, despite the progress achieved in recent years. Government, in partnership with donors, started to put in place a series of measures to deal with these challenges. Most of these measures are being undertaken under the second PSTA and they truly represent seeds for higher future agricultural and overall growth (Rwanda Ministry Of Health (MOH) [Rwanda], 2009).

Heavy demographic pressure resulted in many, very small and scattered farms. More than 80.0 percent of households hold less than 1.0 ha of land. This land is over-

cultivated, leading to the disappearance of traditional techniques of soil fertility regeneration such as fallowing practices. In addition, the cultivation on slopes up to and above 55 percent steep is unavoidable given that 80 percent of arable land is on a slope in Rwanda. Encroachment on marginal lands on steeper slopes results in heavy erosion. The main causes of losses include: Poor infrastructure, adverse environmental conditions, lack of technical knowhow and lack of equipment, lack of trained personnel, inappropriate transport and poor handling practices lack of appropriate market oriented products and poor product quality (Taxis & Barber, 2003).

Three thematic areas were identified as being the most relevant to address the reported causes of losses are Training, Technology Transfer and Information Platform system. Enhancing stakeholder's organizations through registration; formalization, provision of information, capacity building, training, skills enhancement and Empower stakeholder organizations to access production marketing and financial services among others. Cassava mosaic disease is also another major problem to cassava growers in Rwanda. The disease is caused by a virus which is moved from a plant to plant by the feeding of small insects called whiteflies. The whiteflies are attracted to the yellow colour. The disease goes into the stem and leaves of the plant. The planting material might already contain the disease before it is known (Perry & Malkin, 2011).

Poor post harvest management results in the loss of up to 15 percent of total production and poses a big challenge to further productivity increases, if not

addressed. Government is supporting post-harvest infrastructure through farmer and cooperative investments in storage facilities, drying grounds, as well as the procurement of silos and grain stocks. These activities are handled by the newly created Storage and Post Harvest Task Force in the Ministry of Agriculture. USAID is also supporting post harvest development in the sector through the Post Harvest Handling and Storage Project (Fairbanks & Caplan, 2004).

The agriculture sector suffers from insufficient access to finance and insufficient investment capital for farming, agro-processing and export development. Low productivity and high vulnerability of the agricultural sector make banks reluctant to offer financial services to rural farmers, largely due to lack of information on profitability of value chain activities. The banking system also imposes heavy collateral requirements and poses inappropriate lending conditions, such as periodicity of repayment not linked to the agricultural cycle. In 2010, the agricultural sector received only 2.1 percent of total new authorized loans (Kibret & Abera, 2012).

Mechanisms to increase access to financial services in the agriculture sector mostly benefit the export and livestock subsectors. Some of these mechanisms comprise the Government Agricultural Guarantee Fund, the World Bank's Rural Investment Facility I & II, and the Belgian Horticultural Investment Fund and similar schemes are embedded in various other projects. However, they remain largely uncoordinated and did not allow agricultural finance to take root yet. In 2010, Department for International Development's Access to Finance Rwanda Program established a

Company Limited by Guarantee to coordinate efforts to deepen financial literacy and financial access. The purpose is to increase access to financial services for poor rural and urban people, especially women, and for Micro, Small and Medium Enterprises. In March 2011, the Agricultural Finance Support Facility launched a project to support the BPR in order to build its capacity for agricultural finance, thus increasing access of smallholder farmers to financial services. However, for most of the pastoralists, needs strong mobilization and sensitization in order to change attitude of community members towards their traditions of having many cassava production as a prestige (Kibret & Abera, 2012).

3.3 Empirical Literature

Traditionally the Cassava root, after maturing, was left in the ground and harvested when needed. This "underground storage practice" has many disadvantages because it makes land unavailable for further cultivation, and the quality of the roots diminishes with storage in the soil and leaves roots unsuitable for many types of processing. Increasing land pressure, population growth, and expansion of area under cultivation resulted in the evolution of storage of dried Cassava chips in the Northern Region of Ghana. Changes in farming systems have affected harvesting and storage patterns and caused farmers to store Cassava in large amounts in storage structures with increasing susceptibility to attack by insects and fungi. Falade & Akingbala, (2010) study revealed that about 42% of harvested cassava roots in West and East Africa are processed into dried chips and flour, but data on post-harvest losses of cassava are scarce; this is probably related to the fact that cassava is regarded as of low commercial value and loss studies are too cost-intensive. Most data on local or

national post-harvest losses result from casual estimates, as serious studies are rarely undertaken for roots and tubers (Montagnac, Davis, & Tanumihardjo, 2009).

In the early 1970s there was a developing awareness that total food availability could be improved through reduction of post-harvest losses and attention was focused on this neglected area. A 50% reduction in post-harvest food losses by 1985 was called for by the United General Assembly in 1975 (Daellenbach, Kerridge, Wolfe, Frossard, & Finckh, 2005). The greatest emphasis was placed on cereals, and only recently root and tuber crops are being given more attention. Serious attempts have been made to establish reliable and replicable methods of assessing post-harvest losses during the last decade to evaluate the impact of insect pests and the consequent effects on food security (Salvador, Steenkamp, & McCrindle, 2014).

Isolated estimations of loss, for example, the much-quoted global figures of 30% for post-harvest losses of cereal grains or roots and tubers to insects after harvest, may serve as a preliminary indicator to draw the attention of administrators and to others responsible for post harvest matters to the fact that some losses are occurring, and to the need for more detailed studies. There has been a tendency to overestimate losses, and to base estimates on extreme cases rather than on sound empirical testing. By contrast, the results of detailed field studies suggest that under traditional storage systems in tropical countries, losses are typically around 5% over a storage season for grains studied. There has been concern in recent years about unreliability and lack of standardisation of observations on post-harvest losses, particularly in tropical countries and in the root and tuber field. For many years the estimation of such losses

has been based on extrapolation of comparatively non-standardized studies together with subjective assessment (Ortiz & Nassar, 2006).

The major cause of losses during cassava chip storage is infestation by insects. A wide range of species that feed directly on the dried chips have been reported as the cause of weight loss in the stored produce. Some loss assessment studies and estimations on dried cassava chips have been carried out in different countries. Abass et al., (2014) measured 12 – 14% post-harvest weight losses in India for chips stored for about five months. Blagbrough, Bayoumi, Rowan, & Beeching, (2010) estimated for Ghana that 19% of the harvest cassava roots are lost annually, and Nweke, F.I., Spencer, D.S.C. and Lynam, (2002) estimated a 15 - 20% loss of -dried chips stored for eight months. Noon & Booth, (1977) estimated for Tanzania a 12% weight loss of cassava chips stored for five months.

An area of controversy lies in the calculation of storage losses which could subsequently be expressed in economic terms. Losses may be measured in terms of quantity and quality. It is difficult to incorporate different types of losses, e.g. nutritive deterioration or reduced processing quality, into a single index of food loss. Because of these difficulties there is so far a general consensus that the major emphasis in loss assessment studies should be upon physical loss (Sehat, Evans, & Newman, 2004). Instruments in assessing losses are mostly quantitative methods which consider only one aspect of post-harvest losses. But for a complete appraisal of the post-harvest storage techniques it is also necessary to incorporate other aspects such as the perception of farmers towards the extent of losses or the socio-economic

environment of farm households, which are rarely taken into account when assessing losses and recommending improved storage management or investment in pest control for farm-stored roots.

The specific economic, technical and, especially, socio-cultural environment of subsistence farm-households have important implications for peasants' decision-making behaviour (Payne, Wiffen, & Martin, 2012). Weight losses in a range of up to 5% appear to be accepted by many farmers in African countries because it is God's will, and additional efforts are often not undertaken because there are other limitations such as financial problems that have to be taken into account. Thus it is very important to obtain information on farmers' view of storage management and constraints affecting certain options and objectives (Payne et al., 2012).

3.3.1 The Cassava Plant

The cassava plant (Manihot esculenta Crantz) is a perennial shrub, ranging in height from one to five meters, with branching stems, green, pale or dark grey or brown in colour. The root crop is an ideal subsistence crop for the tropical world because it is well adapted to marginal soils, has the ability to tolerate environmental stress, gives relatively high yields compared to other staple crops, is an excellent source of carbohydrate and can be kept underground from 6 – 36 months after planting and is thus always available to the farmer.

Cassava leaves contain about 7 – 12% protein and are used as a vegetable in traditional soups and stews. The root itself is rich in carbohydrates (32%), vitamin C and calcium but poor in protein and other vitamins and minerals. Cassava roots are

different from yams because they are not dormant organs and thus have very few biological functions (Swift, Johannsen, Lavie, Earnest, & Church, 2014).

Figure 1: Cassava Plant

Figure 2: Tuberous Cassava Roots

3.3.2 Processing of Cassava

The purpose of processing cassava roots into a wide range of products is to control the deterioration of the food products. Apart from controlling losses, post-harvest processing decreases the toxicity of cassava by reducing its cyanogenic glycoside content. Cassava contains two cyanogenic glycosides, linamarin and lotostraulin, the

former being present in much larger quantities, usually up to 90% of the total. The normal range of cyanogenic glycosides content, calculated in HCN, of cassava falls between 15 and 400 mg HCN/kg fresh weight. The content varies greatly among varieties and also with agricultural conditions.

The tubers are detoxicated by hydrolysis of the cyanogenic glycosides and subsequent elimination of the liberated HCN. Contact between enzyme and substrate occurs when the tissues are mechanically damaged or there is loss of physiological integrity, such as during post-harvest deterioration. Most traditional food preparations appear designed to bring about the necessary contact by cell rupture when grating or pounding. This is then followed by elimination of HCN by volatilisation or solution in water. Equally, the processing or cooking which the cassava roots undergo prior to being consumed reduces these substances to a point that poisoning is prevented (Kohrt, Bloomfield, Little, Nelson, & Yingling, 2004).

Processing technologies for cassava in Ghana can be divided into three broad categories: **(a)** dry cassava products fermented or unfermented; **(b)** fermented grated cassava and **(c)** starch and tapioca. The processing of cassava by the traditional techniques is often a very laborious and time-consuming occupation and is invariably carried out by women. Drying of cassava roots is the simplest method of preserving the root in the Northern Region of Ghana.

Over 80% of the cassava produced remains on small-scale farms which range from 2 – 5 acres. The tubers are peeled, cut into pieces and sun-dried. Drying is normally done on the concrete floor, roof tops, roadsides, or wooden platforms built over

fireplaces in traditional kitchens. Leftover peels are fed to animals to prevent waste. The dried chips are normally pounded or milled by existing commercial plate mills to prepare kokonte. Kokonte, a flour product, is prepared from low cyanide varieties that are widespread in Ghana (Gomez, Valdivieso, De La Cuesta, & Salcedo, 1984). Cassava chips are used solely for food preparation in Southern Ghana (Brunnschweiler, Mang, Farah, Escher, & Conde-Petit, 2006).

The association of dried chip production with very dry climate zones may also be due to the requirements for drying. The quality of dried cassava chips processed by traditional methods is often poor, causing fungal or bacterial contamination. The flour is mixed with boiling water, prepared into a thick starchy paste and eaten with soup. In the grain-flour consuming areas of the North, it is used in combination with sorghum, maize or millet flour, either to improve the texture of the prepared food or as a cheaper supplement, and then referred to as tuozaafi (T.Z.), the traditional dish in the North of Ghana. It often supplements staple foods or even provides hunger relief where yields of other traditional staples are declining, such as in the North (Brunnschweiler et al., 2006).

Other very popular cassava products in Ghana are fufu, gari, agbelima, agbelikaklo and yakeyake. In all these preparations, the roots undergo a fermentation process when they are immersed in water for some days. In the case of fufu the peeled or unpeeled roots are watered for some days, then dried in the sun and pounded into flour. The dried fragments possess a distinctive, pleasant taste due to the fermentation that takes place during the watering. In the West African preparation of gari or atieké, fresh roots are peeled, grated and then left to ferment, and the pulp is

finally cooked and heated plates (Kidmose, Christensen, Agili, & Thilsted, 2007). Gari is the most commercialised product in Ghana because of a long shelf-life. The processing of agbelima is nearly the same as for gari but differs in being terminated after fermentation. If the dough is mixed with salt and moulded into balls, which are fried, it is referred to as agbelikaklo; and if these balls are only steamed it is called yakeyake (Nebiyu & Getachew, 2011).

3.4 Policy Review

3.4.1 The National Agricultural Policy (NAP)

The NAP was developed in April 2004 as a framework for the effective implementation of the government's development strategies in line with the Vision 2020 goals and the PRSP medium-term objectives in the agricultural sector, as well as with other relevant national, regional, and international development frameworks and policies. The NAP's key principles are: (i) to pursue food security instead of food self sufficiency; (ii) to better integrate agriculture into the national economy and enable it to become a viable, profitable, and non-seasonal income generating profession; (iii) to recognize the strategic role of research and extension; (iv) to move toward market oriented agriculture by promoting selected commodities for which the country has comparative advantages; and (v) to establish an adequate and effective institutional framework to ensure a conducive environment for the successful implementation of the Policy (Donovan, Cynthia, Edson Mpyisi & Loveridge., 2001).

Also NPA evolved on the basis of experiences in implementing the cooperative development act. It marks a change from cooperatives being state controlled

institutions to becoming autonomous and member-controlled private organizations. The policy provides the framework for the restructured co-operatives to operate on an independent, voluntary and economically viable basis and to develop into centers for providing and disseminating agricultural inputs, implements, technologies and information. This will empower farmers to enhance their bargaining position in the market (MINAGRI, 2013).

3.4.2 Agriculture Related Policies

The design, planning and implementation of agricultural development interventions in Rwanda are based on the Strategic Plan for Agricultural Transformation in Rwanda – Phase II (PSTA II). This strategy is a follow up Phase from the first Phase implemented during the 2005-2008 period. The PSTA II was planned to be implemented through the 2009-2012 period. The PSTA aims at increasing the incomes of the rural population through improved agricultural productivity and facilitating transformation from a subsistence economy to one that is geared to production for both domestic and export markets, thus, contributing towards achieving the national development objectives of the Vision 2020 and EDPRS. In addition, the PSTA-II is aligned to guide Rwanda in implementing and achieving the continental and global socio-economic development goals as guided by the Comprehensive African Agricultural Development Program (CAADP) of NEPAD and the Millennium Development Goals (MINAGRI, 2013).

Several other policies have a bearing on the development of agriculture. The overall aim of the National Land Policy is to promote and ensure a secure land tenure system, encourage the optimal use of land resources, and facilitate broad-based

socio-economic development without endangering the ecological balance of the environment. The principle of gender equality is enshrined in the Rwandan Constitution of 2003, which not only grants equality to marginalised groups but also empowers the State and other actors to provide resources to promote gender equality.

This constitutional framework provides quotas (at least 30%) for women in decision making structures. The other legal instruments for promoting gender equality include the 'Law on Matrimonial Regimes, Donations, Succession and Liberalities', enacted in 1999, the 'Civil Code' and the 'Law on the Prevention, Protection and Punishment of Gender Based Violence'. The legal instrument on gender based violence was approved in 2008 following widespread incidences of gender based violence. In 2005, the Organic Land Law was adopted. The Law has provisions for equal rights of women and men to land ownership (Government of Rwanda, 2012).

3.4.3 Principle for Development Strategy

As well as establishing the key areas of intervention, in the form of Programmes and Sub-Programmes, and what is to be achieved in each area, the Strategy must specify how the aims will be achieved. Both the definition of the areas of intervention and the specification of the modalities of intervention the how have been guided by a set of basic principles that underlie sector policy. These principles are eight in number and are enunciated in this section. As is evident from the foregoing discussion, national policies consider the agricultural sector to be the main springboard for the fight against poverty. Reducing poverty is the first basic principle of this Strategy and is a defining characteristic of the interventions. Economic growth in the primary sector should become the principal vehicle for raising rural households out of their

situation of generalised poverty. At the same time, agricultural growth should spur progressive development in secondary and tertiary sectors, and this will further alleviate poverty by creating increasingly greater opportunities for off-farm employment. Off-farm employment within the agricultural sector itself also will be an avenue for raising rural incomes. Studies have shown that even subsistence farmers benefit from intensification of agriculture through the opportunities it creates for them to work on other farms and in enterprises such as collection centres, pack houses, and processing facilities (Baiphethi & Jacobs, 2009).

This additional employment in turn provides a way to increase their household food security, along with better yields of their own subsistence crops. Nevertheless, benefits for the poor cannot be taken for granted in any development programme, and it is important to put mechanisms in place for guaranteeing that different categories of farmers, especially the most vulnerable, benefit from the economic growth that is being generated. The key to reducing poverty, in turn, is increasing productivity and competitiveness. This is the only sustainable manner of reducing poverty and is to be achieved through a number of simultaneous thrusts, starting with intensification of input use, improved management of soil and water resources, and farmer training (increasing the stock of human capital in rural areas). The actions will include increasing farmers' access to physical capital in the form of livestock, to basic resources such as irrigation water and to rural infrastructure such as roads, collection points, and drying and packing facilities. The third fundamental principle guiding the Strategy is that resource allocations and production decisions must be market driven (Hill, 2004).

There are undoubted opportunities to increase productivity and production in Rwandan agriculture, but the full benefits of those efforts cannot be realized unless the outcomes, and hence the decisions, are linked to the markets from which higher farmer returns are obtained. This also means that the development of the sector rests increasingly on the role of the private sector, and the State will play a facilitating and regulatory role.

In many areas, MINAGRI needs to become more of a facilitator and less of a doer A corollary is that appropriate incentive structures need to be put in place to drive the desired transformations of the sector. For example, coffee and tea producers merit quality premiums in the prices of the raw material they produce. In some cases, incentives can be transitory, until farmers become familiar with the benefits of new approaches and technologies and generate enough revenue to take on cost burdens themselves. Fertiliser use subsidies may be a case in point (Kiers et al., 2008).

Given the degradation of soils in Rwanda and the continuing fragility of the resource base it is essential that this Strategy for Agricultural Transformation should recognize that the sustained intensification of agricultural activities will require the sustainable management of land and water. Thus environmental sustainability is a fourth fundamental principle of this Strategy. It is a critical necessary condition for the continuation of benefits to the rural population. It includes not only the sustainability of new agricultural activities but also actions directed toward the recovery and recuperation of the degraded resource base, so that it can support more highly productive activities in the future. The interactions between agricultural productivity and the environment are fundamental. Soil erosion and over cultivation

reduces soil fertility and agricultural productivity so that food production declines, rural incomes decrease and thus poverty increases (Smith, Ferreira, Van De Kop, Ferreira, & Sabogal, 2003).

To compensate for declining soil fertility, a solution may be to apply more inorganic fertilizer, but that costs money, which again requires foreign exchange and sets up a spiral of needing to apply increased amounts of fertilizer to compensate for worsening soil fertility. Moreover, fertilizer run-off has environmental impacts, especially in water resources, which again have economic impacts. In contrast, sustainable agricultural practices reduce soil erosion and soil fertility decline, which mean that agricultural productivity is maintained at less cost. Participation in and local ownership of activities is a fifth fundamental principle of the Strategy. Unless farmers are convinced of the soundness of approaches, they will not be adopted in a lasting manner. Equally, local participation in the design of projects, and in the carrying out of activities like adaptive research, improves the effectiveness of the interventions. In the end agricultural development requires changing attitudes and habits, and this will not happen unless the beneficiaries participate in the undertakings from the outset (Smith et al., 2003).

As an illustration of the importance of this principle, in 2007 MINAGRI conducted a pilot test of Citizen Report Cards for farmers to record their satisfaction with agricultural services such as extension and veterinary services, and a full roll of the system is being made this year. A sixth fundamental principle of the Strategy is institutional sustainability. In a first instance this means developing fiscal mechanisms and capacity building strategies that ensure the sustainability of the role

and functions of local governments. But more broadly, this principle means implementing activities and measures in ways that help create and strengthen sustainable modalities and private institutions. For example, credit operations conducted at the retail level directly by projects and government agencies are not sustainable and tend to undermine the development of viable financial institutional modalities in rural areas (Brown & Miller, 2008).

Equally, input delivery must be carried out in ways that foster development of sustainable private networks (including producer cooperatives) for that purpose. A seventh fundamental principle is that the strategy is flexible and dynamic. It pretends to create a new future for the rural population, and there are always uncertainties and risks with fundamental changes in paradigms. Therefore the Strategy must be open to revision over time through feedback from the grass-roots level. Despite the introduction of these demonstration farms, which are mainly based on agriculture, still there a need to strengthen cassava production sector in the same manner. Restructuring marketing system is much needed to secure good prices for products of small farmers. Thus, the improvement of cultivating cassava is one of the strategies that encourage small farmers to change the mode of production from solely subsistence to commercial trade (Wiggins, Kirsten, & Llambí, 2010).

3.5 Literature Review Summary

The gap observed in the empirical literature is that none of the case study countries had organized marketing channels for rural crop products especially perishables. Although, the marketing system is not well organized but there is a lot of opportunities for smallholder farmers to sell their cassava tubers in big hotels,

restaurants and urban market provided they are organized in groups and trained in good agricultural practices technologies to have better quality and presentable cassava which could fetch higher prices.

Good policies and strategies are available if the implementers are to adhere to them for political support of varied projects regarding marketing of agricultural produce; however the major gap that affects many communities and IMBANAMUHIGO community inclusive is the networking and coordination of activities within the same locality for effective supply chain management. Effort is fragmented and not transparent. Many people do not know policy opportunities available to them for their development. Implementation of this particular project will fill this gap through awareness creation and mind shift of the community because they will be seeking information as an important prerequisite in due course of implementing the project.

Various efforts have been made by the Government of Rwanda and stakeholders to increase employment opportunities and promote livelihoods for Rwandan smallholder farmers for poverty reduction. These efforts include creating favourable policy and legislative environment for attracting domestic as well as foreign investments to increase employment opportunities, promoting of skills training, accessing micro financial and information.

A number of problems such as lack of support on sustainability governed, availability of investment capital, risk absorption capacity, know how in terms of financial management, enterprises development and market accessibility. Solutions that have been located in the smallholder farmer’s development policy seem to be

theoretical solutions to the problem and not practical solutions. One of the suggested solution is improving smallholders farmers through improvement cassava tubers production in kibonde village sake sector ngoma district. Therefore this project will improve their income.

CHAPTER FOUR

PROJECT IMPLEMENTATION

4.1 Introduction

Project implementation plan is a schedule of activities which indicates time frame within which the activity carried out over the project implementation period. The activities should follow a logical flow, that is, activities that have to be done first have to appear during initial period. Implementation plans helps to get things done on time and thus get good value for money by enabling the project committed to allocate resources efficiently and within the budget.

This chapter presents the products and outputs of the project, details of project planning, project implementation and the implementation report is provided at the end, highlighting on the important activities performed and the end results. It was planned that by May 2015 the project would accomplish its activities except evaluation. The planned project product is the improvement in community livelihood opportunities achieved through improved Cassava production.

However this is yet to be realized as the project is just at the end. It will be more evidenced after the project evaluation by the end of July 2015. It is anticipated IMBANAMUHIGO community will improve livelihood in terms of their basic needs and savings for other obligations such as Health and Education. It is expected that, the private firm Kinazi Company Ltd. which runs a medium scale cassava processing plant shall acquire all cassava from Kibonde Village. The company also intends to introduce contract cassava farming for smallholder farmers.

Project budget was prepared after preparing project implementation plan which indicated activities, time frame, resources/inputs and responsible people. The total Project Budget was 8,746,200 Rwf Out of the total budget IMBANAMUHIGO Community Contribution was 1,500,000 Rwf estimated through work force. Ngoma District Council contributes 3, 626,200 Rwf and the rest were donated by CARITAS Rwanda through Rwanda Agriculture Partnership.

4.2 Project Outputs

The project is expected to accomplish the following outputs.

Table 15: Output and Activities

Objective	Output	Activity
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend meeting.	To conduct Advocacy Meeting to members of Kibonde Village council
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.
	1.3. 230 Community members sensitised.	To conduct one day Sensitization Meeting to IMBANAMUHIGO community Members.
2. Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training and Organise training
	2.2. Smallholders farmers attend training for cassava processing.	Conduct training
		Outsource expert
3. Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.
	3.2. One meeting for stakeholders conducted	Identify stakeholders.
		Cassava growing procedure and demonstration training for stakeholders.
4. To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.	4.1. Cassava tubers production will harvested	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.
	4.2. People participated	Conducting Project Monitoring
		Conducting Mid and Annual Project Evaluation

The main project product is the improved community livelihood opportunities in Kibonde village as a result of Cassava tubers production. This would be achieved after realization of income from the sale of cassava which utilized as human food, other uses like starch making, livestock feed in income generating avenues.

4.3 Project Planning

The following steps was involved during project planning; Identification of project objectives, Sequencing the identified project activities, Identifying Preparation responsible people, Identifying facilities equipments and services needed and Preparing the Budget plant as shown in the Table 16.

As per Planning above the project is started January 2015 through implementing five activities as the base for project. These are advocacy Meeting to members of Kibonde Village council, Community Needs Assessment, Sensitization Meeting to IMBANAMUHIGO community Members, Capacity building on Cassava agricultural best practices and entrepreneurial and business management skills and Cassava growing procedure and demonstration training, later we will have a percent of smallholder farmers to access reliable market for cassava tubers production where cassava tubers production will be harvested and people participated.

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Table 16: Project Implementation Plan

Objectives	Outputs	Activities	Project implementation month												Resource needed	Responsible person
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend meeting	To conduct Advocacy meeting to members of Kibonde Village council													Fund, Stationery	Committee members
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.													Human Fund and stationery	CBO and Host organisation
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.													Personnel, Human Fund and stationery	CBO, CARITAS Rwanda and Host organisation
2. Equip 40 cassava producers with knowledge and skills on how to manage and planted the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training													Training, fund and stationery	Facilitator and CBO
		Organise training													Training, fund and stationery	Facilitator and CBO
	2.2 Smallholders farmers attend training for cassava processing.	Conduct training													Fund, stationery	CARITAS Rwanda
		Outsource expert													Human and time	Host organization
3. Facilitate accessibility of cassava seeds from Ngoma	3.1 Plant enough cassava seeds to produce	Capacity building on Cassava agricultural best practices.													Human time and transport	CBO and Host organization

district and other stakeholders by April 2015.	more cassava tubers production.															
	3.2. One meeting for stakeholders conducted.	Identify stakeholders.													Human and time	CARITAS Rwanda
		Cassava growing procedure and demonstration training for stakeholders.													Funds, human and stationery	CBO and Host organization
4. To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.	4.1 Cassava tubers production will harvested.	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.													Human time and transport	Host organization
	4.2. People participated	Conducting Project Monitoring													Human, fund, stationery and time	Host organisation
		Conducting Mid and Annual Project Evaluation													Human, M&E plan fund	Host organization and CARITAS Rwanda

4.3.1 Implementation Plan

Implementation plan portray how the project was carried out to achieve project outputs, objectives and the overall goal. In the implementation process the project involved the following key stakeholders, CARITAS Rwanda, District Agriculture extension officer, Kibonde village Agriculture Extension Officer. As per Implementation planning schedule above, the project expected to implement four objectives and thirteen activities started January 2015 to November 2015. But Project Monitoring Evaluation is expecting to be done late on December 2015.

4.3.1.1 Project Logical Framework Matrix

Table 17: Project Logical Framework Matrix

Intervention Logic	Objectively verifiable indicators (OVI)	Means of verification	Assumptions/risks
Goal: Income Poverty reduced and standard of living of IMBANAMUHIGO community improved through improvement of cassava tubers production.	Increased income and improved standard of living of smallholder farmers.	Reports, records and household survey data available at CARITAS Rwanda.	Good cooperation and participation in project implementation among various stakeholders.
Objective 1: Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.			
Output 1: 200 members attend meeting.	Response of Kibonde Village council members	Community Needs Assessment report	Members of Village council be aware and know the importance of Project identification
Activities:			
1.1 To conduct Advocacy Meeting to members of Kibonde Village council	18 members attended	Project Reports	Readiness of the Council members to support the Project.
1.2 Conducting Community Needs Assessment.	Six needs were mentioned and prioritized.	Project Reports	Readiness of the Council members to support the Project.
1.3 To conduct one day Sensitization Meeting to IMBANAMUHIGO community Members.	240 Members attended	Meeting Minutes	Readiness of the Community members to support the Project.
Objective 2: Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.			
Output 2: One training on how to plant cassava.	190 Famers participated	Survey (Cultivated plot)	Positive cooperation among Head of households
Output 3: Smallholders farmers attend training for cassava processing.	40 smallholder farmers participated	Cultivated plot	Positive cooperation among smallholders farmers

Intervention Logic	Objectively verifiable indicators (OVI)	Means of verification	Assumptions/risks
Activities:			
2.1 Prepare budget for training	Budget of how to plant cassava	Survey Planted area	Positive cooperation among smallholders farmers
2.2 Organise training	Expert train smallholder farmers	Survey Cultivated plot	Positive cooperation among smallholders farmers
2.3 Conduct training	150 participate attend training	Survey Planted plot	Positive cooperation among smallholders farmers
Objective 4: To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.			
Output 4: Cassava tubers production will be harvested.	Harvesting cassava	Survey and Report	Positive cooperation among smallholders farmers
Activities:			
4.1. Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.	Harvesting cassava	Survey and Report	Positive cooperation among smallholders farmers
4.2. Conducting Project Monitoring.	10 People participated	Evaluation Report	Willingness of members of the Team
4.3. Conducting Mid and Annual Project Evaluation	People participate	Monitoring and Evaluation report	It is expected to done after six month and annual.

The Logical frame matrix above directs the project implementers through intervention logic and Objective Verifiable Indicators on what to do through reasons. That means by implementing objective one, project implementers expect to have the following output; Members of Kibonde Village council familiarized with the aim of conducting CNA and Project identification. In order to achieve the mentioned output five activities were implemented as mentioned above. The Logical frame matrix also help to track if planned activities implemented at the right way through means of verification.

4.3.2 Project Inputs

To fulfil the project goal, which is reducing income Poverty and improving living standard through cassava tubers production of IMBANAMUHIGO community particular smallholder farmers some inputs were required. These are financial, material and resource person and services necessary for carrying out activities. Resource Person were CBO Officers, Extension staff from Ngoma District Council and other development Partners like Rwanda Agriculture Partnership. Financial resources were used for Capacity building, purchase and haring of project equipments. Normally inputs are supposed to be stated in specific and measurable terms.

4.3.3 Staffing Pattern

The project would run under the Project Committee elected by Village Meeting with consultation. However Project Committee is reporting to Village council. Project Committee led by the Chairperson who would chair the meetings. The Secretary supervises day to day duties including project and keeps all project records. The Treasurer keeps all project financial records. Staff Pattern are shown in the Table 18.

Table 18: Staff Pattern

Staff Position	Responsibility
Project Committee – Chairperson	1- Chair of all Project meetings 2- Supervisor of implementation Plan Schedule 3- Chief spokesperson of the project 4- Submission of quarterly report to Village council.
Project Committee – Secretary	1- Supervises day to day duties 2- Keeps all project records 3- Follow up of project inputs to the stakeholders in Collaboration with CDAC officer 4- Direct other Project members on daily duties
Project Committee Treasurer	1- Keeps all project financial records 2- Follow up of project inputs/funds from stakeholders in Collaboration with Secretary and Community Development Association Committee officer
Project Committee Members	1- Project smallholder farmers' supervisors and implementers.

Ward Agriculture Extension Officer played a big role in running the project by providing the necessary extension and advisory services with regard to agriculture best practice which necessitated in the increase in productivity. The Project Committee planned establish Kibonde cassava saving and employ qualified persons who will run the established savings.

Project budget was prepared after preparing project implementation plan which indicated activities, time frame, resources/inputs and responsible people. The total Project Budget was 8,746,200 Rwf Out of the total budget IMBANAMUHIGO Community Contribution was 1,500,000 Rwf estimated through work force. Ngoma District Council contributes 3, 626,200 Rwf and the rest were donated by CARITAS Rwanda through Rwanda Agriculture Partnership.

4.3.4 Project Budget

Table 19: Project Budget

Objective	Output	activity	Resources needed	Quantity	Unity price in Rwf	Total price in Rwf
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend meeting	To conduct Advocacy Meeting to members of Kibonde Village council	Flip Chart	3	5,000	15,000
			Papers Ream	3	4,000	12,000
			Marker Pen Box	1	5,000	5,000
			Facilitator Allowances	3	15,000	45,000
			Stationery	1	8,000	8,000
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.	Mark pen	2	5,000	10,000
			Flip chart	5	5,000	25,000
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.	Facilitator allowances	3	15,000	45,000
			Mark pen	2	5,000	10,000
			Flip chart	3	5,000	15,000
2. Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training	Time is required		0	0
		Organise training	Per diem	2	10,000	20,000
			Soft drink	30	700	21,000
			Flip chart	3	5,000	15,000
			Marker pen	2	5,000	10,000
	2.2. Smallholder farmers attend training for cassava processing.	Conduct training	Flip chart	2	5,000	10,000
			Marker pen	1	5,000	5,000
			Driver allowances	2	20,000	40,000
			Fuel (litres)	50	900	45,000
			Per diem	3	10,000	30,000
			Soft drinks	50	700	35,000
		Outsource expert	Stationery	1	3000	3000

3. Facilitate accessibility cassava seeds from Ngoma district and other stakeholders by April 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.	Note book	30	500	15,000
			Ball pen	30	100	3,000
			Flip chart	3	5,000	15,000
			Soft drink	30	700	21,000
	3.2. One meeting for stakeholders conducted.	Identify stakeholders.	Time	0	0	0
		Cassava growing procedure and demonstration training for stakeholders.	Manuel book	20	300	6,000
			Facilitator allowances	3	15,000	45,000
			Fuel (litre)	30	900	27,000
4. To ensure 60% of cassava producers access reliable market by May 2015.	4.1. Cassava tubers production will be harvested.	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.	Harvesting cost	1kg	200	200
			Transportation cost	800	10,000	8,000,000
	4.2. People participated	Conducting Project Monitoring	Time	0	0	0
			Driver allowance	2	20,000	40,000
			Fuel	50	900	45,000
		Conducting Mid and Annual Project Evaluation	Time	00	0	0
			Allowance	5	20,000	100,000
	Total					**8,746,200**

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4.4 Project Implementation

This section describing of actually implemented project activities started at January 2015. The implemented activities were among those which were planned during project design phase. Many of the planned activities were actually implemented as reflected in the implementation plan. This part is divided into two major subsections; project implementation report and the project implementation Gantt chart which shows when the actual implementation of activities happened and for how long.

4.4.1 Project Implementation Report

Actual execution of the project started in January 2015 by the target group of smallholder farmers to plant cassava for the production of cassava tubers and district executive members having prepared the process as it can be seen in the Project Plan. The Project implementation was done base on three aspects, which is sensitization and training to 250 IMBANAMUHIGO community members on improving cassava production techniques, entrepreneurial and business management skills. Equip 40 cassava smallholder farmers with knowledge and skills on how to manage and planted the cassava seeds processing project by March 2015 and to ensure that 60% of smallholder farmers access reliable market by November 2015. The following activities have been conducted and some have been accomplished and some are still going on.

Table 20: Implementation of the project

Objective	Output	Activity	Implementation status	Reasons
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend meeting.	To conduct Advocacy meeting to members of Kibonde Village council	Advocacy were conducted well to concerned members	
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.	CNA were conducted successful	
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.	Kibonde meeting successful sensitized and 200 people participated	
2. Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training and Organise training	A sum 750,000Rwf for a training used	
	2.2. Smallholders farmers attend training for cassava processing.	Conduct training	Training conducted	
		Outsource expert	Expert from RAB accessed and conducted the training	
3. Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.	Smallholder farmers were practiced well.	
	3.2. One meeting for stakeholders conducted	Identify stakeholders.	CARITAS Rwanda, RAB, and Ngoma district	
		Cassava growing procedure and demonstration training for stakeholders.	Cassava are still growing	Cassava growing procedures are not yet implemented.

4. To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.	4.1. Cassava tubers production will be harvested.	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.	Cassava tubers not yet harvested	Harvesting of cassava tubers not yet implemented due to long time cassava acquire to grow.
	4.2. People participated	Conducting Project Monitoring and evaluation	Pre monitoring and evaluation during implementation has been done.	
		Conducting Mid and Annual Project Monitoring and Evaluation	Mid and annual monitoring and evaluation have not yet been conducted	Annual monitoring and evaluation will be conducted after the project take off.

Through aspect one of sensitization and training to 200 members attend meeting, meeting was conducted; 40 smallholder farmers of Kibonde Village council as part of familiarization aimed at conducting CNA and project identification. After blessing of Village council, Community Needs Assessment was conducted was conducted. Major task implemented was selection of focus Group discussion, collection of basic information data, focus Group discussion and Pair wise ranking where six needs were mentioned and prioritized. Project Design and budgeting was done.

Awareness to IMBANAMUHIGO community on improving cassava production through cassava tubers was done by one day Sensitization Meeting about the Project where 200 Community members attended meeting. In the meeting 40 smallholder farmers were selected to attend training on cassava agricultural best practices and entrepreneurial and business management skills. Four days training was conducted to 40 smallholder farmers on cassava agricultural best practices and entrepreneurial and business management skill. As per project plan 40 smallholder farmers each of them train other 5 smallholder farmers on cassava growing procedure which make the total number of those who trained 200 with assistance from CARITAS Rwanda, District Officer and Village officer. Training based on Cassava growing procedure and demonstration.

The CED student in collaboration with CARITAS Rwanda members and other stakeholders like Rwanda Agriculture Partnership participated in all arrangement of project take off. Monitoring of day to day was conducted to by project committee. The CED student, CARITAS Rwanda members, members of Village council and Chairperson of Project committee conducted monitoring once after every four month.

Normally Evaluation is meant to measure long term impact and sustainability in terms of achievement of purpose and goal, evaluation supposed to be done during November 2015 (Midterm) aimed at assessing the ongoing project activities and provide information to improve the project.

Project Objective and planned activities were done accordingly expect two activities that is harvesting of cassava which is expected to be done at December, 2015 or next year of 2016 and Annual Evaluation which will be done after harvesting. All two activities will successful implemented due to skills obtained during training. Training to smallholder farmers on Cassava agricultural best practices and entrepreneurial and business management skills will contribute to the success of the Project as well as Contribution from stakeholders such as Ngoma District Council and Rwanda Agriculture Partnership. In Objective two the main purpose was to prepare training and how to plant cassava in general which must done in March according to implementation plan.

Figure 3: Kibonde Village Project Committee Members

Seen on picture above are Project Committee elected by Village Meeting to Supervises day to day duties and making follow up of required resources/ inputs with consultation from CARITAS Executive Committee. Project Committee is responsible to Village council. Project Committee led by the Chairperson who would chair the meetings. The Secretary supervises day to day duties and the Treasurer who keeps all project financial records.

Figure 4: Training of IMBANAMUHIGO Community Conducted at Kibonde Village by Stakeholder

Figure 5: Meeting of IMBANAMUHIGO Community Members

Among the Project objective is to sensitize and train smallholder farmers on improved cassava production techniques entrepreneurial and business management skills. Above picture shows stakeholder present one of the topic from Village Agriculture extension Officer and 20 smallholder farmers were attended participated full.

Figure 6: Cassavas are Waiting to be Harvested to Produce Cassava Tubers

4.4.2 Project Implementation Gantt Chart

Table 21: Project Implementation Gantt Chart

Objectives	Outputs	Activities	Project implementation month											
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend meeting	To conduct Advocacy meeting to members of Kibonde Village council												
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.												
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.												
2. Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training												
		Organise training												
	2.2. Smallholders farmers attend training for cassava processing.	Conduct training												
		Outsource expert												
3. Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.												
	3.2. One meeting for stakeholders conducted.	Identify stakeholders.												
		Cassava growing procedure and demonstration training for stakeholders.												
4. To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.	4.1. Cassava tubers production will be harvested.	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.												
	4.2. People participated	Conducting Project Monitoring												
		Conducting Mid and Annual Project Evaluation												

Gantt Chart has been prepare to simply the intervention process and to indicate series of activities to be performed to ensure that all planned activities are implemented as planned, Gantt chart was prepared showing activities and their respective month to be implemented. The Gantt chart shows the Objective, expected Output and the concerned activity. However, some of activities like training were not implemented in time due to delay access of funds, and, Mid and Annual project evaluation will be examined after harvesting of cassava. The series of activities is well elaborated in Table 21.

CHAPTER FIVE

PROJECT PARTICIPATORY MONITORING, EVALUTION AND SUSTAINABILITY

5.1 Introduction

This chapter discusses project participatory monitoring, evaluation and sustainability. Monitoring is the process of looking the implementation of day-to-day activities and facilitates to make improvements so as to achieve the desired goal. Evaluation is defined as systematic investigation of the worth or merits of an object. Monitoring and evaluation are linked together since monitoring sets benchmarks for evaluation. Thus monitoring and evaluation help to gather information needed to keep the project on schedule and predict problems as well as formulate solutions, measure progress and evaluate program success.

It is through this part that one can understand the health of the project whether it will die or be sustained regardless of changes in external support: funding sources or internal resources: change in staff. Thus participatory monitoring and evaluation is an action of involving all stakeholders of the project from the beginning to an end. In so doing participants become aware of proceedings and once they overcome challenges they discuss and come with solutions and ultimately creates sense of ownership hence contribute to project sustainability. The chapter is divided into the following parts; monitoring information system, participatory monitoring methods, participatory monitoring plan, participatory evaluation plan, performance indicator, participatory evaluation methods, project evaluation summary and project sustainability.

5.2 Participatory Monitoring

It is the process of routinely gathering information on all aspects of the project activities that involves the members of the group/community in project implementation. Participatory monitoring is carried out using various techniques and different methods. It is a system of collecting information and making use of the information to determine the progress of the planned work/activities.

articipatory monitoring was intended to monitor the implementation of all activities, that include advocacy meeting to community members, preparing and distributing brochures, training to CBO members, cassava farmers (smallholder farmers), conducting lobbing and advocacy meeting to other stakeholders, conducting study tour, collecting funds and project equipments, facilitate acknowledgement of received aids. Other activities are facilitating the purchase of project tools and equipments, identification of cassava suppliers, recruiting full time working staff and arrangement of business license. The involvement of CBO members and cassava farmers (smallholder farmers) in field visits and in all stages of project implementation allowed them to be aware on the activity progress hence creates room for decision making.

5.2.1 Monitoring Information System

It is a system designed to collect and report information on a project and project activities that enable a project manager to plan, monitor and evaluate the operations and performance of the project. For improving cassava production, the monitoring and information system designed to establish a data base by recording relevant information to activities that were planned in a specified period. Information required

include project facilities required and available, Staff required and available, number of cassava farmers Actual demand and supply, project customers, project stake holders, training required and actual implementation, number of people who participated in project activities, information on fund received and list of material used. Monitoring will also cover utilization of funds, items purchased as authorized by relevant authorities, bought items and their respective receipts. Obtaining all these information help the project manager to plan, monitor, evaluate and report project operations easily.

5.2.2 Participatory Monitoring Methods

Various methods and techniques were used to involve CBO members, cassava farmers (smallholder farmers) in monitoring of project activities. The participatory rural appraiser key principles and techniques were used to gather information which includes key informants interview, observation, and documentation. The analysis that will done on the system of cassava harvesting and processing in the field visits and at the project centre will help to make some improvement on quantity that should be harvest and purchase.

5.2.2.1 Key informants Interview

The researcher gathered information through key informants that includes extension staffs, CBO committee members and district officials and agreed to measure to what extent the project is going to operate. Through discussion they agreed that cassava suppliers should be those who have been trained on cassava handling so as to determine the quality of cassava supplied. Also they insisted and set time for those

who haven't attended the training to attend the training so that they benefit from the project.

5.2.2.2 Observation

The researcher in collaboration with CBO members and cassava officer observed if all activities are implemented as planned. Thus observed training and advocacy meeting carried out, number of participants attended, purchased project equipments and arrangements for project take off. That includes recruitment of project full time staff and their performance to their cassava production, identification of smallholder farmers as cassava farmers who will manage to supply quality cassava. Necessary information to observe is about customer care to both cassava suppliers and cassava consumers.

5.2.2.3 Documentation

Documentation involves minutes of monthly meetings whereby CBO members will get feedback on project progress. The CBO secretary was required to take note on each agenda during the meeting especially on discussion about achievements, challenges, solutions and the way forward. The CED student, extension staff and other invited stakeholders attend meetings and respond to any technical issues and challenges as experienced by members as well as reviewing the group's plan. In case there are problem encountered, this forum creates a room for discussion and agree on measures to improve the situation. Also information about all transactions in relation to cassava business is documented in relevant books. For example financial records books including receipt books, payment vouchers, cashbooks, ledger and journals.

5.2.3 Participatory Monitoring Plan

Table 22: Participatory Monitoring Plan

Objective	Output	Activities	Indicators	Data source	Methods/ tools	Person responsible	Time frame
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend Meeting	To conduct Advocacy meeting to members of Kibonde Village council	List of Attendants	CBO progressive report	Meeting	CBO Members, Extension officer CED student	Jan 2015
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.	List of Attendants	CBO progressive report	Meeting	CBO Members, Extension officer CED student	
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.	List of Attendants	CBO progressive report	Meeting	CBO Members, Extension officer CED student	
2. Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training	List of aids/Support	CBO progressive report	Letters, Email	CBO Secretary CED Student	March 2015
		Organise training	Training report List of participants	CBO progressive report	Lectures Group discussion Study tour Case study	CBO Members, Extension officer CED student	
	2.2. Smallholders farmers attend training for cassava processing.	Conduct training	Training report List of participants	CBO progressive report	Lectures Group discussion Study tour Case study	CBO Members, Extension officer CED student	March 2015
		Outsource expert	Training report List of participants	CBO progressive report	Lectures Group discussion Study tour Case	CBO Members, Extension officer CED student	

					study		
3. Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.	Letter of Correspondence Funds or Items received	CBO progressive report	Direct contact (Face to face) Internet, Mobile phones	CBO Members, Project Staff CED student	April 2015
	3.2. One meeting for stakeholders conducted.	Identify stakeholders.	List Aids/Support	CBO progressive report	Vehicles	CBO Members CED Student Extension Staff	April 2015
		Cassava growing procedure and demonstration training for stakeholders.	Acknowledgemen t letter	CBO progressive report	Letters E-mail	CBO Secretary CED Student	April 2015
4. To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.	4.1. Cassava tubers production will be harvested.	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.	Business License and working permit	CBO progressive report	Discussion	CBO Leaders Smallholders farmers officer CED Student Smallholder farmers	December 2015
	4.2. People participated	Conducting Project Monitoring and evaluation	Available working staff	CBO progressive report	Mobile product promotion advertisements	CBO Leaders Extension staff.	December 2015
		Conducting Mid and Annual Project Monitoring and Evaluation	Number of Evaluation conducted List of participants	CBO progressive report	Direct contact Participatory Evaluation	CBO Leaders CED Student Smallholders farmers officer	After harvesting

5.3 Participatory Evaluation

Is the process of gathering and analyzing information to determine whether the project is carrying out its planned activities and it investigate if the project is achieving its stated objectives. Participatory monitoring and evaluation is a process of collaborative-problem solving through the generation and use of knowledge. It is a process that leads to collective action by involving all level of stakeholders in shared decision making. From the definition the key concept is involvement of stakeholders and collective actions towards problem solving or improving the situation. That evaluation to be termed as a participatory evaluation should involve stakeholders at different levels who will work together to assess the project so as to take corrective action required.

In course of action while implementing the Cassava production and Processing project the community members, smallholder farmers, CBO members, and other stakeholders were involved in the community needs assessment exercise they found that establishment of planting cassava were worthwhile for sustainable economic development of smallholder farmers. After they agreed on the project they discussed and set project goal, objectives and activities that need to be implemented. Also they discussed when to conduct evaluation how, when and who will be responsible. With the assistance of CED student they prepared an action plan agreed to evaluate the project after harvest of cassava tubers.

5.2.1 Performance Indicators

Performance indicators of the cassava harvesting and processing project fall in two categories qualitative and quantitative based on project objective and project goal.

Table 23: Project performance indicators

Objective	Output	activity	Resources needed	Performance indicators
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend Meeting	To conduct Advocacy Meeting to members of Kibonde Village council	Stationery Facilitators Allowance	Number of Participants attended the advocacy meeting.
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.	Stationery Allowances	List of trainees
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.	Stationery Facilitators Allowance Soft drinks& Snacks	List of trainees
2. Equip 40 smallholder farmers with knowledge and skills on how to manage and cultivate the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training	List of tools Funds	List of Tools/ Equipments received
		Organise training	Participant Allowances Fuel	
	2.2. Smallholders farmers attend training for cassava processing.	Conduct training	Participant Allowances Fuel	List of development partners visited.
		Outsource expert		List of development partners visited and supporting the project.
3. Facilitate accessibility of cassava seeds from Ngoma district and other stakeholders by April 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.	Time Funds	List of development partners visited and supporting the project
	3.2. One meeting for stakeholders conducted.	Identify stakeholders.	Time Funds	List of Tools/ Equipments received Funds received from Stakeholders
		Cassava growing procedure and demonstration training for stakeholders.	Participant Allowances Fuel	List of development partners visited and supporting the project
4. To ensure 60% of cassava producers access reliable market by May 2015.	4.1. Tons of cassava will harvested	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.	Funds for fuel Stationery	Copy of acknowledgement letter Not yet performed
	4.2. People participated	Conducting Project Monitoring and Evaluation	Participant Allowance Fuel	Number of brochures prepared and distributed.
		Conducting Mid and Annual Project Monitoring and Evaluation	Participant Allowance Fuel	Not yet done

To measure the input indicator members were to examine resources that were utilized in project implementation that include number of hours, money spent while for output indicators involves number of CBO members, cassava farmers and project staff trained whereas impact indicators will be measured by examining actual change to smallholder farmers. That smallholder farmers are expected to improve their standard of living by fulfilling their basic needs such to produce more cassava tubers. Project goal and project objectives performance indicators were developed as shown in Table No.23.

5.3.2 Participatory Evaluation Methods

Participatory evaluation method used two methods being Participatory Rural Appraisal (PRA) and Participatory Learning Action. Both methods were in use depending on available resources, environment, and required information. The PRA techniques used are Key informant Interview, Focus Group Discussion, Direct Observation and Workshop. Main issues to be evaluated were agreed through democratic way during the Focus Group Discussion, Planning meeting and monthly meetings. The participatory evaluation will focus on progress in work plan, Implementation of planned activities, Achievement of Objectives, Project success, Impact of the project and Project sustainability. In order to have a clear understanding and flow of information's, a check list were prepared to guide the discussion during the Workshop, Key Informant Interview and Focus Group Discussion.

For the case of cassava production processing project key informants were CBO committee members, Project Manager, cassava suppliers and cassava customers.

Observation was used to examine the information collected during the Workshop, Focus Group Discussion, and Key Informant Interview. The collected data and information involved investigating project performance in line with participatory evaluation objectives. That is to check whether planned activities were accomplished according to plan then project outcome were evaluated. Based on participatory evaluation exercise the following results were observed. During the advocacy meeting, when discussing about poor "cassava eating culture" participants were in a position to give live examples of people who have poor health and how troublesome is, to their family members.

Capacity building to CBO members, smallholder farmers which later will called cassava farmers and Project staff has a trickledown effect of development all areas of intervention. The CBO members are part and parcel with the Community Development Officer and District farmers Officer since they mobilizes community members and cassava farmers about the project output or outcome. The implementation of second objective (capacity building) was done as planned by 80%; unexpectedly, objective of collaborating with other stakeholders to seek advice and support were met as stakeholders showed immediate positive response.

Two stakeholders namely Kibonde local advice and Caritas Rwanda played a great role in the implementation of the project and achievement of project objective. The procedure used to establish the project from CNA, project planning, budgeting, project implementation and evaluation plan are methodologies that contributed to get support from the stakeholders. Although it is too early to evaluate achievements of

objective of ensuring smallholder farmer's access reliable market for cassava tubers; still smallholder farmers found that the project needs more advocacies to proceeds.

5.3.3 Project Evaluation Summary

Table 24 indicates the project evaluation summary based on the project goal, objectives, performance indicators, expected outcomes and actual outcome. Based on the project goal, objectives and activities planned have been met with exception of mid and annual evaluation that will be done after harvesting of cassava tubers of project implementation. Generally the evaluation shows that there are strong commitments of various stakeholders from the planning stage to the implementation activities. This indicates that the project is the real need to the direct beneficiaries and community at large.

Table 24: Project Evaluation Summary

Objective	Output	activity	Performance indicators	Expected outcome	Actual outcome
1. Sensitize 250 IMBANAMUHIGO community members on cassava processing project by January 2015.	1.1. 200 members attend meeting.	To conduct Advocacy Meeting to members of Kibonde Village council	Number of Participants attended the advocacy meeting.	1.1 Positive responses 1.2 Increased cassava supply and sales	1.1 A total of 190 People attended. 1.2 Will be examined later
	1.2. Six needs were mentioned and prioritized.	Conducting Community Needs Assessment.	List of trainees	Improved efficiency in proper project management	Committee members were trained
	1.3. 230 Community members sensitised.	To conduct one day Sensitization meeting to IMBANAMUHIGO community Members.	List of trainees	Improved efficiency in proper project management.	Committee members were trained
2. Equip 40 cassava producers with knowledge and skills on how to manage and planted the cassava crops processing project by March 2015.	2.1. One training on how to plant cassava	Prepare budget for training	List of Tools/ Equipments received		
		Organise training			
	2.2. Smallholders farmers attend training for cassava processing.	Conduct training	List of development partners visited.	Positive response.	Real positive response.
		Outsource expert	List of development partners visited and supporting the project.	Positive response from two development partners.	Real positive response from three development partners.
3. Facilitate accessibility of crops seeds from Ngoma and other stakeholders by 2015.	3.1. Plant enough cassava seeds to produce more cassava tubers production.	Capacity building on Cassava agricultural best practices.	List of development partners visited and supporting the project	Positive response from two development partners.	Real positive response from three development partners.
	3.2. One meeting for stakeholders conducted.	Identify stakeholders.	List of Tools/ Equipments received Funds received from Stakeholders	All project tools/equipments purchased timely.	All project tools/equipments purchased.
		Cassava growing procedure and demonstration training for stakeholders.	List of development partners visited and supporting the project	Positive responses.	Feedback from the recipients.
4. To have 60% of smallholder farmers access reliable market for cassava tubers production by November 2015.	4.1. Cassava tubers production will be harvested.	Harvesting of cassava tubers for Kinazi Company Ltd acquires cassava production for processing.	Copy of acknowledgement letter	Positive response.	Feedback from the recipients.
	4.2. People participated	Conducting Project Monitoring and Evaluation	Number of brochures prepared and distributed.	Increased number of customers.	Increased income.
		4.2.2. Conducting Mid and Annual Project Monitoring Evaluation	Not yet done	Positive response.	Will be examined later.

5.4 Project Sustainability

Project sustainability is the capacity of a project to continue functioning, supported by its own resource (human, material and financial) even when external source of funding have ended. It is commonly known as a state whereby the project functions will totally depend on its own resources. However, it is very important to the Organization /CBO/NGO to develop its own definition of sustainability, the links between organization's own contexts, focus, and the state of affairs.

5.4.1 Institutional Sustainability

The sustainability of cassava to produce cassava tubers and processing project for smallholder farmers in Kibonde village is most likely to be sustainable since human resource (CBO members, community members, smallholder farmers, project staff, and extension staff and other stakeholders) are readily available towards project implementation. Essentially the materials required as inputs are produced by the beneficiaries themselves (cassava tubers into cassava powder). Other material input are in place that once depreciate replacement is within the project's capacity.

Capacity building done to smallholder farmers on cassava diseases prevention and cure as well as genetically modified will contribute to increased cassava tubers production in future. Referring to the information gathered from key informants and focus group discussion during the CNA exercise, it was revealed that despite small market and low price of cassava still they appreciated that they gains money to access basic needs. Thus improving of cassava tubers production is a liberty since it will enable smallholder farmers to be engaged in other socio-economic activities due

to time saved from going around house to house looking for customers. Also training to CBO members and project staff on business management will contribute to project sustainability since they are sure of profit making and employment. The community participation in identifying, designing, planning, implementation, monitoring and evaluation of the project is the key issue that creates sense of ownership that leads to sustainability of the project.

5.4.2 Financial Sustainability

The cassava tubers production processing and project has started readily with 1,000,000 Rwf as the starting capital for rent land to plant cassava. Additional funds will be collected as per agreement with cassava suppliers by charging a certain percentage per kilogramme. As it was proposed by smallholder farmers during the training that cassava suppliers will form an organization whereby money will be raised from entering fee and monthly contributions for capital investment. Organization members will get loan that capital investment and pay a reasonable interest that will be used for development of members and the project. Based on the plans the project is expected to expand the cassava supply apart from Sake town centre to other nearby business/institution centres after acquiring packing materials.

Through collaboration with other development partners such as Small and medium enterprise competitiveness facility they encourage and insist the improving of cassava production to acquire paper permit that will allow the product to win the National and International market. Therefore having such qualifications the project will be financially sustainable since it will be in business with local market, National and International levels. Support from Kibonde local leaders particularly extension

staff from key departments will continue to support the project even after completion of the project of which reduce project expenses.

5.4.3 Political Sustainability

The Cassava production and processing project is directly supporting the Rwanda Agricultural Livestock Policy, the Nation Strategy for growth and Reduction of Poverty EDPRS II. That being a case, the local leaders at village level, Councillors, Executive Officers at ward level and District Council chairperson and District Executive Director are in favours of the project. Efforts done by various stakeholders, development partners to support the cassava processing project has created good environment between local government and community members.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter concludes the work of project that was done during January 2015 to December 2015. The conclusions are the result of activities done during community needs assessment, which gave rise to the problem identification. It was through the identified problems that the work on a project: improving smallholder farmers through improvement cassava tubers production in Kibonde village sake sector Ngoma district was effected. The summary of conclusions implications of the project as well as some recommendations and areas for further research are suggested.

6.2 Conclusions

According to participatory assessment the overall results revealed that low prices and lack of reliable market for agricultural product is a great challenge for the smallholder farmers to their cassava tubers in IMBANAMUHIGO community. This is the result of many reinforcing factors including lack of awareness of the quality parameters of food processing, poor marketing information of the required domestic market, low volume of the produce, lack of training of marketing strategies, lack of training on agro processing, and lack of reliable storage facilities. The gap observed in the empirical literature is that none of the case study countries had organized marketing channels for rural crop products especially perishables. Although, the marketing system is not well organized but there is a lot of opportunities for farmers to sell their vegetables in big hotels, restaurants, supermarkets and urban market

provided they are organized in groups and trained in good agricultural practices technologies to have better quality and presentable vegetables which could fetch higher prices.

The lessons researcher got from these studies makes think that the project were doing the proper project to the community and it would be sustainable reach CBO goals because training in agro processing skills would give everlasting knowledge on value addition, an activity would provide the wise. Researcher could fill the gap left by some organizations like MFIs because these provide funds only while researcher gave the knowledge on the use of the funds and no one had ever given the technologies as a priority in poverty alleviation to the said community. CBO is already been registered since 2009 hence make the organization be in line with the country's laws and regulations. I concur with some writers that an outsider can help changes the community so long as she/he works closed with it, is committed, willing to learn from them and can accept change accordingly. The Ethiopian models are worth adapting in an area of provision of technology to change the community.

Elements of empowerment and knowledge are crucial in the development process of the community if we are aiming at sustainable poverty reduction. The poor needs savings that can enable them to invest income generating activities and capital accumulation techniques to accumulate own capital and make it grow. There is an indication of availability of a fair demand of crop products from the community and outside and this motivates cassava farmer's members to grow vegetables and fruits. However, the markets are not consistent, and buyers include traders from other

neighbour village markets. During the discussion, it was learned that the demand of vegetables was higher during the dry season and lower at the rainy season.

From this project of cassava several important conclusions can be given:

(i) Diseases, low crop prices and lack of technology were identified as major constraints of horticultural crops production in Kibonde division.

(ii) Vegetable & fruits production contribute about 70% of the household's income with a possibility of increasing its contribution to 80% with improved technologies.

(iii) Women dominate in most activities of crop production.

(iv) Value addition (agro processing) micro-enterprise is an effective and viable project to alleviate income poverty for women in Kibonde division.

(v) Few respondents received training on value addition to horticultural crops

6.2.1 Comparison between this Project of Cassava and Other Cassava's Project Done Elsewhere

There is a big difference in this survey results comparing to other surveys done by Aichi Kitalyi (1998), Mbilinyi (2005) and Gedi (2004), problems facing farmers in rural areas regarding marketing of their crops are more or less the same. However in these particular studies, apart from looking on constraints and opportunities each research had interest on specific issues that were deficient of the holistic nature of solving the whole food chain for something else like quantifying the contribution of horticulture crops to the household income as well as relevance of the interventions to the villagers. The researcher recognize the importance of utilizing the food supply chain technologies to the economy of farm families and the

need to provide the said training in a participatory manner for achieving competitive and sustainable markets.

This survey was done with an assumption that understanding current opportunities and constraints within the existing farming system will facilitate development of proper strategy for the initiation of value addition project which was proposed by smallholder farmers to produce cassava tubers in Kibonde village, the study form as basis of measuring the success in the future. Training programs have been formulated keeping in mind that majority of farmers are literate.

Problem of low price is very significant; sensitizing farmers to grow good quality cassava crops will reduce the crises .This study showed that the project is relevant and effective in alleviating poverty as seen on the results provided by the interviewees. It is wise to proceed with the project. For the first time, the researcher manage to link the CBO with the district authorities and other partners like Caritas Rwanda, both of which nobody saw the importance of working together in the past.

Though this established link, the CBO will be able to access assistance from various departments in the District, including community development, agricultural extension and social oriented work. Most of the services provided at the District level were unknown to the CBO management. The Council authorities were impressed by the CBO upon the need to collaborate with its peers both within and outside the district, so as to learn and emulate the positive aspects, especially those related to income generation and management.

6.4 Recommendations

I recommend the use of different approach during the assessment like Participatory Rural Appraisal, Participatory Action Research, Appreciate Enquiries, and Sustainable Livelihood Approach due to the reasons that it contributes both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously. There is dual commitment in action research to study systems and concurrently to collaborate with members of the system in changing together the desirable direction. Accomplishing this twin goal requires the active collaboration of researcher and client, and thus it stresses the importance of co-learning as a primary aspect of the research process. Action researching is learning by doing where by a group of people identify a problem, do something to resolve it, see how successful their effort were satisfied, and if not try again.

Authentic participation in their own change and monitoring processes means that communities can give insight into indigenous knowledge and strategies that may otherwise be missed by structured/preset indicators and monitoring tools, the district authorities should commence a schedule of visiting various CBOs in the district so as to ensure timely support and consultations. Authorities should from time to time (at least on a quarterly basis) organize forums with various CBOs in the District to facilitate exchange and dialogue among them on issues of common interest.

The CBO will work in partnership with local partners such as Agricultural and Food security, Natural Resources, Health, Education, Community Development offices from the District government and other stakeholders to implement specific activities, monitoring the progress and evaluate the impacts of the project. Village

Development Committees, Village Health Support Groups and religious institutions will also be encouraged to take part in the implementation of the project.

The project covered only one division in Ngoma District; that is Kibonde division however the good results of project implementation will also be enjoyed by the neighboring divisions and other villages. Above all communities in Rwanda can come and learn best practices as a result of project implementation. During implementation project information will be stored in form of hard and soft copies. The lesson learnt and best practices will be documented and shared at all levels for replication.

To avoid duplication of resources and also for quality improvement the project will involve other development stakeholders in project implementation. More training on value addition technologies will enhance the production of horticultural crops and hence increase income. Agricultural advice and support that complements, builds on and values smallholder farmers to produce cassava tubers own knowledge, giving them access to affordable appropriate technology to improve production and add value to their produce.

The local person at the grass root level should not be neglected or disempowered for he/she is a very resourceful provider of quality information from the community that helps in development and transformation development. Development or common interests can bring together people with otherwise conflicting or antagonistic affiliations like political parties and religions. Children are a source of very good development ideas that are otherwise fore gone if they are not involved in the development process.

Development of village based processed products can be a useful way of helping to meet the nutritional, income, employment and gender needs of the rural population. Training farmers on good agricultural practices will improve quality as well as maintain the supply. Empowering youth clubs to form IGAs and train them on business planning as well as link them with financial institutions so as they will manage to access loans and knowledge on financial management. Research on promotion of the best supply chain of horticultural produce is important by network at the region/district/village level, is of paramount for facilitating community development.

Research on marketing of processed products is important. Markets are under-developed and often difficult to access. Access to appropriate extension advice is minimal. Institutional arrangements governing resource use may not function efficiently, to the detriment of local livelihoods and the environment. The study suggests that households have a varied livelihood portfolio, with displays of infinite resourcefulness to make ends meet. Patterns of livelihood change over time, with their concomitant changes in institutions, illustrate the responsiveness of farmers and the community to external signals, and their resourcefulness.

Farmers in the old system were supposed to produce whatever they wanted to. Smallholder farmers therefore have only very little experience in marketing. The marketing problem is probably the most crucial one in the agricultural sector; wherever there is a reliable market outlet agricultural production is being stimulated and growth rates of primary production are high. There is a widespread belief that people with money are ready to invest in sectors like trade, cafes and restaurants,

which give a good return, but not in agriculture, mainly because of the uncertainties with marketing.

This study was done in only small sample. Some more studies more studies regarding the same subject with more sample and across the country might provided a detailed picture of the status of this subject and hence more contribution. The need for research on promotion of the best supply chain of fresh and processed horticultural produced is important. Another study is needed to concentrate on impact of service providers/change agents of agricultural products for farmers' development. This study will establish how effective they are, the working for. Information obtained can be used to advise government and other institutions on the best way of service provision for effective development.

REFERENCES

Abass, A. B., Ndunguru, G., Mamiro, P., Alenkhe, B., Mlingi, N., & Bekunda, M. (2014). Post-harvest food losses in a maize-based farming system of semi-arid savannah area of Tanzania. *Journal of Stored Products Research*, *57*, 49–57.

Baiphethi, M. N., & Jacobs, P. T. (2009). The contribution of subsistence farming to food security in South Africa. *Agrekon*, *48*(4), 459–482.

Basit, T. N. (2003). Manual or Electronic: the Role of Coding in Qualitative Data Analysis. *Educational Research*, *45*(2), 143–154.

Blagbrough, I. S., Bayoumi, S. A. L., Rowan, M. G., & Beeching, J. R. (2010). Cassava: An appraisal of its phytochemistry and its biotechnological prospects. Phytochemistry. Retrieved on 23rd March 2016 from: https://doi.org/10.1016/j .phytochem.2010.09.001

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Brown, C., & Miller, S. (2008). The impacts of local markets: A review of research on farmers markets and community supported agriculture (CSA). *American Journal of Agricultural Economics*. *45*(2), 143–154.

Brunnschweiler, J., Mang, D., Farah, Z., Escher, F., & Conde-Petit, B. (2006). Structure-texture relationships of fresh pastes prepared from different yam (Dioscorea spp.) varieties. *LWT - Food Science and Technology*, *39*(7), 762–769.

Cenpukdee, U., & Fukai, S. (1992). Cassava/legume intercropping with contrasting

cassava cultivars. 1. Competition between component crops under three intercropping conditions. *Field Crops Research*, *29*(2), 113–133.

Daellenbach, G. C., Kerridge, P. C., Wolfe, M. S., Frossard, E., & Finckh, M. R. (2005). Plant productivity in cassava-based mixed cropping systems in Colombian hillside farms. *Agriculture, Ecosystems and Environment*, *105*(4), 595–614.

de Groot, J. I. M., Abrahamse, W., & Jones, K. (2013). Persuasive normative messages: The influence of injunctive and personal norms on using free plastic bags. *Sustainability (Switzerland)*, *5*(5), 1829–1844.

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. Medical Education. Retrieved on 23rd March 2016 from: https://doi.org/ 10.1111/j.1365-2929.2006.02418.x

Donovan, Cynthia, Edson Mpyisi, and S., & Loveridge. (2001). FSRP/DSA Working Paper. MINAGRI. Forces Driving Change in Rwandan SmallholderAgriculture, Forthcoming. Kigali, Rwanda.

Dowler, E. A., & O'Connor, D. (2012). Rights-based approaches to addressing food poverty and food insecurity in Ireland and UK. *Social Science and Medicine*, *74*(1), 44–51.

Elo, S., Kaariainen, M., Kanste, O., Polkki, T., Utriainen, K., & Kyngas, H. (2014). Qualitative Content Analysis: A Focus on Trustworthiness. London: SAGE Publications Inc.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115.

El-Sharkawy, M. A. (2006). International research on cassava photosynthesis, productivity, eco-physiology, and responses to environmental stresses in the tropics. Photosynthetica. Retrieved on 23rd March 2016 from: https://doi.org/10.1007/s11099-006-0063-0

Fairbanks, R. J., & Caplan, S. (2004). Poor interface design and lack of usability testing facilitate medical error. *Joint Commission Journal on Quality and Safety*, *30*(10), 579–584.

Falade, K. O., & Akingbala, J. O. (2010). Utilization of Cassava for Food. *Food Reviews International*, *27*(1), 51–83.

Fermont, A. M. (2009). Cassava and Soil Fertility in Intensifying Smallholder Farming Systems of East Africa Report on Production. Nairobi, Kenya.

Fischer, J., Hartel, T., & Kuemmerle, T. (2012). Conservation policy in traditional farming landscapes. *Conservation Letters*, *5*(3), 167–175.

Geiger, H. J. (2002). Community-oriented primary care: A path to community development. *American Journal of Public Health*. *27*(1), 51–83.

Gomez, G., Valdivieso, M., De La Cuesta, D., & Salcedo, T. S. (1984). Effect of variety and plant age on the cyanide content of whole-root cassava chips and its reduction by sun-drying. *Animal Feed Science and Technology*, *11*(1), 57–65.

Government of Rwanda. (2012). EICV - 3 and DHS4 (2010/11) Preliminary Results, 4. Kigali, Rwanda.

Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, *344*(6186), 862–879.

Hill, C. M. (2004). Farmers' Perspectives of Conflict at the Wildlife–Agriculture Boundary: Some Lessons Learned from African Subsistence Farmers. *Human Dimensions of Wildlife*, *9(3)*, 279–286.

Hsieh, H. F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, *15*(9), 1277–1288.

Hsieh, H. F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, *15*(9), 1277–1288.

January, L. G. (2011). National Social Protection Strategy, (January).

Kibret, M., & Abera, B. (2012). The sanitary conditions of food service establishments and food safety knowledge and practices of food handlers in bahir dar town. *Ethiopian Journal of Health Sciences*, *22*(1), 27–35.

Kidmose, U., Christensen, L. P., Agili, S. M., & Thilsted, S. H. (2007). Effect of home preparation practices on the content of provitamin A carotenoids in coloured sweet potato varieties (Ipomoea batatas Lam.) from Kenya. *Innovative Food Science and Emerging Technologies*, *8*(3), 399–406.

Kiers, E. T., Leakey, R. R. B., Izac, A.-M., Heinemann, J. a, Rosenthal, E., Nathan, D., & Jiggins, J. (2008). Agriculture at a crossroads. *Science (New York, N.Y.)*, *320*(5874), 320–321.

Kohrt, W. M., Bloomfield, S. A., Little, K. D., Nelson, M. E., & Yingling, V. R. (2004). Physical Activity and Bone Health. *Medicine & Science in Sports & Exercise*, *36*(11), 1985–1996.

Kristensen, S. B. P., Birch-Thomsen, T., Rasmussen, K., Rasmussen, L. V., &

Traoré, O. (2014). Cassava as an energy crop: A case study of the potential for an expansion of cassava cultivation for bioethanol production in southern mali. *Renewable Energy*, *66*, 381–390.

Layte, R., & Whelan, C. (2003). Moving In and Out of Poverty. *European Societies*, *5*(2), 167–191.

MINAGRI. (2013). Strategic Plan for the Transformation of Agriculture in Rwanda Phase III, (July), 76.

Montagnac, J. A., Davis, C. R., & Tanumihardjo, S. A. (2009). Nutritional value of cassava for use as a staple food and recent advances for improvement. *Comprehensive Reviews in Food Science and Food Safety*, *8*(3), 181–194.

Morton, J. F. (2007). The impact of climate change on smallholder and subsistence agriculture. Proceedings of the National Academy of Sciences of the United States of America, 104(50), 19680–5. Retrieved on 30th May 2014 from: https://doi.org/10.1073/pnas.0701855104

Nash, K. (2014). What is interactivity for? The social dimension of web-documentary participation. *Continuum: Journal of Media & Cultural Studies*, *28*(3), 383–395.

Nations, F. and A. O. of the U. (2014). FAOSTAT. *Agricultural Producer Price Indices*. New York: FAO

Nebiyu, A., & Getachew, E. (2011). Soaking and drying of cassava roots reduced cyanogenic potential of three cassava varieties at Jimma, Southwest Ethiopia. *African Journal of Biotechnology*, *10*(62), 13465–13469.

NISR. (2012). Fourth Population and Housing Census, Rwanda, 2012. *Rwanda*, *226*(4676), 782.

Njeru, J. (2006). The urban political ecology of plastic bag waste problem in Nairobi, Kenya. *Geoforum*, *37*(6), 1046–1058.

Noon, R. A., & Booth, R. H. (1977). Nature of post-harvest deterioration of cassava roots. *Transactions of the British Mycological Society*. Retrieved on 15thJune, 2012 from: https://doi.org/10.1016/s0007-1536(77)80049-1

Nweke, F. I., Spencer, D. S. C. and Lynam, J. K. (2002). The cassava transformation: Africans best-kept secret. *Michigan State University Press, U.S.A*, 3–63.

Ortiz, R., & Nassar, N. M. A. (2006). Cassava improvement to enhance livelihoods in Sub-Saharan African and Northeastern Brazil. First International Meeting on Cassava Breeding, Biotechnology and Ecology, Brasilia, Brazil, 11-15 November 2006. *Cassava Improvement to Enhance Livelihoods in Sub Saharan African and Northeastern Brazil. First International Meeting on Cassava Breeding, Biotechnology and Ecology, Brasilia, Brazil*. Retrieved on 13th July 2015 from http://www.geneconserve.pro.br/meeting2/proceedings.pdf\nhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=cagh&AN=20083073484\nhttp://lshtmsfx.hosted.exlibrisgroup.com/lshtm?sid=OVID:caghdb&id=pmid:&id=doi:&issn=&isbn=&volume=&issue=&s

Oyegbami, A., Oboh, G., & Omueti, O. (2010). Cassava processors' awareness of occupational and environmental hazards associated with cassava processing in south-western Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*, *10*(2), 2176–2186.

Payne, C., Wiffen, P. J., & Martin, S. (2012). Interventions for fatigue and weight loss in adults with advanced progressive illness. *The Cochrane Database of Systematic Reviews*, *1*(1), CD008427. Retrieved on 25th September 2011 from: https://doi.org/10.1002/14651858.CD008427.pub2

Perry, L., & Malkin, R. (2011). Effectiveness of medical equipment donations to improve health systems: how much medical equipment is broken in the developing world? *Medical & Biological Engineering & Computing*, *49*(7), 719–732.

Programs, U. S. D. of J. O. of J. (2010). Best Practices to Address Community Gang Problems. *Juvenile Justice*, 2(1), 1–63.

Pulleman, M., Jongmans, A, Marinissen, J., & Bouma, J. (2003). Effects of organic versus conventional arable farming on soil structure and organic matter dynamics in a marine loam in the Netherlands. *Soil Use and Management*, *19*(2), 157–165.

Rwanda Ministry of Health (MOH) [Rwanda], N. I. O. S. O. R. N. A. I. M., (2009). *Rwanda Interim Demographic and Health Survey 2007-08*. *Methodology*., Kigali: Rwanda Ministry of Health.

Salvador, E. M., Steenkamp, V., & McCrindle, C. M. E. (2014). Production, consumption and nutritional value of cassava (Manihot esculenta, Crantz) in Mozambique: An overview. *Journal of Agricultural Biotechnology and Sustainable Development*, *6*(3), 29–38.

Samperio, A., Prieto, M. H., Blanco-Cipollone, F., Vivas, A., & Moñino, M. J. (2015). Effects of post-harvest deficit irrigation in “Red Beaut” Japanese plum:

Tree water status, vegetative growth, fruit yield, quality and economic return. *Agricultural Water Management*, *150*, 92–102.

Sehat, K. R., Evans, R. L., & Newman, J. H. (2004). Hidden blood loss following hip and knee arthroplasty. Correct management of blood loss should take hidden loss into account. *The Journal of Bone and Joint Surgery. British Volume*, *86*(4), 561–5.

Smith, J., Ferreira, S., Van De Kop, P., Ferreira, C. P., & Sabogal, C. (2003). The persistence of secondary forests on colonist farms in the Brazilian Amazon. *Agroforestry Systems*, *58*(2), 125–135.

Swift, D. L., Johannsen, N. M., Lavie, C. J., Earnest, C. P., & Church, T. S. (2014). The role of exercise and physical activity in weight loss and maintenance. *Progress in Cardiovascular Diseases*, *56*(4), 441–447.

Taxis, K., & Barber, N. (2003). Causes of intravenous medication errors: an ethnographic study. *Quality & Safety in Health Care*, *12*(5), 343–347.

Tefera, T. (2012). Post-harvest losses in African maize in the face of increasing food shortage. *Food Security*, *4*(2), 267–277.

Turner, D. W. (2010). Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, *15*(3), 754–760.

United Nations, F. and A. O. (2015). FAOSTAT. Retrieved on 1st May 2016 from http://faostat.fao.org/

United Nations Development Program, & Chambers, R. (2006). What is poverty? Concepts and Measures. *Poverty in Focus*, (December 2006). Retrieved on 24th

May 2015 from: https://doi.org/10.1080/14649880600768553

Wiggins, S., Kirsten, J., & Llambí, L. (2010). The Future of Small Farms. *World Development*, *38*(10), 1341–1348.

Young, A. A. (2010). New Life for an Old Concept: Frame Analysis and the Reinvigoration of Studies in Culture and Poverty. *The ANNALS of the American Academy of Political and Social Science*, *629*(1), 53–74.

APPENDIX

Appendix 1: Questionnaire on Cassava Project

I am **BITATI Nansingizwe Sousan** Master's student in Community Economic Development at The Open University of Tanzania Kibungo centre. Currently am doing Community Need Assessment (CNA) at your village as a part of partial Fulfilment of the Requirement for masters' degree. The information provided is confidential. Please be free to answer as there is no wrong and write answer.

Please circle the most appropriate information.

1. Gender
   - (1)Male
   - (2) Female
2. Marital status
   - (1) Single
   - (2) Married
   - (3) Divorced
   - (4) Widow
   - (5) Widower
3. Age
   - (1) 18-30
   - (2) 31-40
   - (3) 41-50
   - (4) 51-60
   - (5) Above 61
4. Education level of the respondent
   - (1) Primary
   - (2) Secondary
   - (3) Technical/ Vocation
   - (4) College
   - (5) Higher Education

5. What is your average monthly income?
    (1) Less than 40,000 Rwf
    (2) Between 40,001 Rwf and 80,000 Rwf
    (3) Between 80,001 Rwf and 120,000 Rwf
    (4) Between 120,001 Rwf and 160,000 Rwf
    (5) More than 160,001 Rwf
6. What is your Major source of livelihood (Occupation)?
    (1) Farming and Business
    (2) Farming of cassava
    (3) Livestock keeping
    (4) Business
    (5) Employed by government
    (6) Construction worker
    (7) Other

ECONOMIC ACTIVITIES

7. What is your Major Economic activity?
    (1) Farming and Business
    (2) Farming of cassava
    (3) Business only
    (4) Growing mushroom
    (5) Market Vendor
    (6) Rental shops
    (7) Hand cloths selling
    (8) Construction work
    (9) Poultry keeping
    (10) Other
8. What will be your interventions/projects need of the project?

    (1) Farming and Business
    (2) Farming of cassava
    (3) Livestock keeping
    (4) Business

(5) Growing mushroom

(6) Market Vendor

(7) Rental shops

(8) Employed by government

(9) Construction worker

(10) Other

9. What will be the impact of that project?

Please, cycle the appropriate score using the following scale

1=First class 2=Second class 3=Third class

1. Increase of individual income	1	2	3
2. Decrease of dependence	1	2	3
3. Creation of employment	1	2	3

10. What challenges do you think you may face in implementing the cassava production?

(1) Inaccessibility of market during rain

(2) Lack of market

(3) Low price

(4) Inadequate capital

(5) Lack of technical skills

11. Does the government/private institution provide support to income generating activities in the community?

01) Yes ( ) 2) No ( ) 03) I don't know ( )

12. If yes what kind of support do they get?

01) Financial support ( ) 02) Entrepreneurship training ( ) 03) Tools and equipments ( )