

ANALYSIS OF THE SOCIOECONOMIC IMPACT OF THE PALM OIL INDUSTRY ON
SMALLHOLDER FARMERS IN RUMONGE, BURUNDI

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DECLARATION

I, Nzokizwa BENOIT (Student No: 339695), declare that “ANALYSIS OF THE SOCIOECONOMIC IMPACT OF THE PALM OIL INDUSTRY ON SMALLHOLDER FARMERS IN RUMONGE, BURUNDI” is my own work and has never been submitted either in part or in totality for examination at any institution for any other qualification. I further declare that all the sources that I have consulted have been duly acknowledged throughout the text and by means of a complete list of references

DEDICATION

I dedicate this thesis to my late father, who unfortunately did not live to see this day.

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ABSTRACT

This study analysed the impact of the palm oil industry on smallholder and subsistence farmers in the Rumonge region of Burundi, the second poorest country in the world. Burundi has widespread poverty and suffers severe capacity constraints, and skill shortages brought about, in part, by ethnic civil war, political conflict and internal displacement. Ingrained animosity has disrupted farming, escalated poverty and hampered development projects such as palm oil farming. Little research has been conducted into the causes and possible solutions to these problems. Using sustainable development theory and agricultural development theory, this study addressed this gap by considering the potential benefits of sustainable palm oil production in the context of the socio-economic challenges facing Burundi. Using qualitative and quantitative methods, the study targeted four villages of Rumonge District, including Kizuka, Busaga, Dama and Birimba. A combined total of 300 respondents was derived from these four villages. Findings of the quantitative study suggest that palm oil had a positive impact on the social and economic lives of rural communities in Rumonge District;. However, challenges remained in capacity, farming skills and resources. Results from qualitative interviews and focus groups confirmed that earnings from palm oil could be used to support education, skills transfer through family ties; and employment of local people. However, from the perspective of environmentalist activists, it was indicated that while palm oil generated economic benefits for local communities, at the same time traditional farming methods led to pollution and degradation of the natural environment. Qualitative findings further showed that small-scale palm oil farmers faced numerous challenges which often led to the failure of some of their ventures, such as access to funds, lack of technical support, lack of knowledge in utilising business networking, low skills levels, limited understanding of land rights issues, civil conflicts and rising production costs. Additional problems were noted regarding environmental problems and the disappearance of wildlife. The study confirmed the need for small-scale farmers to be adequately capacitated with information, training, resources and technical support to be able to use sustainable farming methods in order to enhance yields. The study contributes to knowledge by identifying how rural smallholder farmers can design more extended longer-term plans to improve their livelihoods, particularly concerning how palm oil production can address the socio-economic problems facing the people of Burundi.

Key words: Palm oil, smallholders, small-scale, poverty alleviation, poverty measurement, socioeconomic, Sustainable development.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFDB	African Development Bank
AGRA	Alliance for a Green Revolution in Africa
CAADP	Comprehensive African Agriculture Development Programme
CPRC	Chronic Poverty Report
DFID	Department for International Development
FAO	Food Agricultural Organisation
GNI	Gross National Income
GDP	Gross Domestic Product
ILO	International labour organisation
IFAD	International Fund for Agricultural Development
MMT	Million Metric Tons
SDGs	Sustainable Development Goals
SMME	Small medium and micro-enterprises
World	Commission on Environment and Development
ITS	International Trade Strategies Global
OECD	Organisation for Economic Cooperation and Development
OHP	Office of palm oil
PLA-RUBUBU	Project d'intensification Agricole Rumonge, Burambi, Buyengero
SADC	Southern African Development Community
SRLDA	Sustainable Rural Livelihoods Development Approach
SRDR	Société Regional de Development Rumonge
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
UNCED	United Nations Conference on Environment and Development
UNSD	United Nations Statistics Division
WIPO	World Intellectual Property Organisation
USDA	United States Development Agency

CHAPTER 1

INTRODUCTION

1.1 Introduction

Small palm oil farming is central to improving food security and alleviating poverty and unemployment, particularly in developing countries such as Burundi where the majority of citizens still reside in rural areas (Niragira, Brusselaers, Buysse and Van Orshoven, 2018). As such, smallholder transformation and sustainability becomes paramount to both economic growth and poverty reduction efforts (Bitama, Lebailly, Ndimanya and Burny, 2020).

Despite growing scholarly interest in palm oil farming, however, empirical studies in Burundi's small scale agricultural activities to date have not yielded conclusive evidence on the socio-economic impacts of palm oil farming on sustainable livelihoods. A study by Bitama, Lebailly, Ndimanya and Burny (2020) analysed food security among 120 smallholder tea farmers in two communes located in the Mugamba natural region of Burundi. However, their analysis excluded palm oil as an analytic variable, leaving unanswered questions as to whether palm oil plays any role in food security.

Considering the challenges mentioned above, the present study argues that harnessing and strengthening the resource capabilities of smallholder farmers could play a much more significant role in promoting sustainable livelihoods, job creation and poverty reduction in Burundi's rural communities.

1.2 Background

Burundi is a landlocked country in the great lakes region of central-eastern Africa. With a population of 10.1 million people and a density of 379 inhabitants per km², Burundi is one of the most densely populated countries in Africa. This calls for the intensification of agricultural production to mitigate poverty and unemployment.

While Burundi is incrementally rebuilding and repositioning itself in the global market, challenges remain in poverty, with 62 per cent of the population undernourished; with average annual incomes of just \$140. Besides, more than 90% of the population lives in 1.5 million smallholder farming where households still provide 95 per cent of the country's food. Key players in agricultural production are women who account for 55% of the workforce and do 70% of the farm work. Unemployment remains relatively high at 50% among people aged 30. More than 4 million Burundians were affected by floods, landslides and rains in 2015, exerting pressure on the state to scale up agricultural production, including palm oil. (The Economic Commission for Africa, 2017: viii).

With slow industrial development and technological innovation, the country is forced to depend entirely on agricultural production. The country is endowed with diverse agro-climate conditions which permit the production of a more extensive variety of crops, including palm oil, which is the subject of this research. Agricultural activity compromises people's livelihoods, contributing 95% food supply and 80% export revenue (Niragira, 2019: 17-18). Despite these gains, farmers have difficulty raising their production and efficiency levels due to limited land resources and support systems (Mpozi, Mizero and Egesa, 2020). "The most challenging aspect of the economy is the progressive atomisation of farms resulting high demographic growth, climate change as the agricultural sector depends largely on rainfall and traditional farming methods with few investments in machinery and equipment." Recurring shifts influence prices of agricultural commodities in climatic conditions, which impact adversely on food security, trade, affordability and market accessibility..Similarly, water resources are increasingly becoming scarce due to rising demand for irrigation of farms and population density (Ndayiragije,

Mkezabahizi, Ndimubandi & Kabogoye, 2017). These issues need to be explored to learn how they affect the contribution of small space palm oil farmers to economic growth and poverty alleviation. Presented below is a map of Burundi.

. Figure 1.1 is a map of Burundi, showing Rumonge, the key focus area of the study.



Figure 1.1 Map of Burundi

Of all the areas mentioned above (figure 1.1), the study was more interested in Rumonge Province. With multiple uses creating great demand and with evidence from many countries of palm oil's positive impact on economic development, the main focus of this study will be: (i) to analyse the socioeconomic impact of palm oil on Rumongan smallholder farmers, (ii) to analyse

what are the economic benefits that vegetable oil has brought to the Rumongan people and (iii) to analyse its impact on poverty reduction as evidenced in Rumonge District.

Palm oil production in Burundi (which is primarily cultivated by smallholders 60 % of the smallholders plays an essential role in local economies and rural livelihoods such as Rumonge. As a multi-functional crop, it is embedded in everyday life of rural and urban Burundian both by individual households and on an industrial level (Economic Outlook 2016:4). Burundian smallholders gain many benefits from palm oil production as a source of regular income, a drought-resilient crop, and a source of cooking oil for household use. However, different levels of access to finance, markets, land, and technical support, along with differing views and visions of the oil palm sector undermines smallholder farmers' involvement and participation in palm oil farming activities. Compounding the problem is that governmental and RSPO initiatives on international trade-based incentives overlook this diversity and, in particular, the importance of local markets for Burundian livelihoods. This poses a threat to women millers and traders, more impoverished producers, and the local markets they supply who risk losing access to the palm oil supply chain. More generally, these findings illustrate the importance of understanding how markets interact at multiple local to international scales, in order to design interventions that will more equitably reach and benefit local communities such as Rumonge. Palm oil farming contributes 40% of the GDP and 80% of employment in the economy of Burundi (Economic Outlook 2016:4).

1.3 Problem Statement

The palm oil sector plays an important role in reducing poverty in Burundi especially in the rural areas where millions of people live. The palm oil sector has been identified as a potential solution to reduce poverty and hunger and to promote food security in the country. Despite this potential and opportunities for economic development through palm oil farming, poverty remains persistently high in rural communities. The agricultural sector as a whole face severe challenges in population growth, shrinking land holdings; climate change with food insecurity; lack of training and resources among small farmers and the rising costs of farming infrastructure (Ndayiragije, 2017: vi). Intensification of agricultural production, including palm oil, is not

complemented with modern farming methods and as such, it leads to unplanned land expansion and deterioration of ecological systems (Niragira, 2019: 17-18). Although there have been numerous studies focusing on small farmers in Burundi (Bamber 2014); however, many of these studies investigated a wide range of topics which are not necessarily aligned to palm oil farming. Examples include poultry, banana farming; rice, tomato, farming; tea (Baghdadli, Harborne and Rajadel, 2008 and Sebushahu, 2011). Even those studies that have investigated palm oil fail to provide a comprehensive account of the socio-economic impacts of palm oil farming on poverty alleviation in Burundi's rural communities (Bamber, Abdulsamad and Gereffi, 2014 and Djomo, 2016).

Considering these challenges, the pressing question that can be asked is: To what extent is palm oil farming contributing to poverty alleviation and economic growth in Rumonge District? Burundi as it is endowed with arable land for agriculture. Palm oil farming has been the significant economic activity for centuries, and there are large and growing global and domestic markets for palm oil products, which Burundi could harness for poverty reduction. It is precisely these challenges that inspired the researcher to investigate the role of smallholder farmers in poverty alleviation in Rumonge District.

1.4 Research Aim and Objectives

The purpose of this study is to determine the socio-economic impact of the palm oil agricultural development in Rumonge District, in the Republic of Burundi and to find out how this agricultural development of palm oil can reduce poverty and stimulate the growth of the economy.

Specifically, the objectives of this study were:

Investigate the growth and socioeconomic benefits of palm oil in Rumonge, Burundi.

Assess the role played by palm oil farming on poverty alleviation.

Assess the challenges experienced by small-scale farmers of palm oil.

Study the sustainability of palm oil farming in rural Burundi.

Assess various policy recommendations around small-scale farming of palm oil.

This study aims to determine the socioeconomic impact of the palm oil industry in Burundi. The focus will be on how the agricultural development of palm oil can reduce poverty and stimulate the growth of the economy. Despite the potential benefits of palm oil development, divergent views have emerged towards palm oil production. One theory argues that development must meet the needs of the present and future generations (inter-generational). In contrast, the second theory notes that development must focus on meeting the needs, well-being and quality of life of the current generation (intra-generation equity). In order to examine how agriculture can reduce poverty, promote economic growth and rural development through the cultivation of palm oil, the study was informed by the inter-generational perspective (i.e. development must meet the needs of present and future generations). The study objectives include the following:

1.5 Research Question and Sub-questions

The following research questions guided the study:

1.5.1 What is the socio-economic nature of the Rumonge District?

1.5.2 What are the factors affecting the socio-economic of Rumonge?

1.5.3 What are the benefits of palm oil in Rumonge, Burundi?

1.5.4 What is the role played by the palm oil farming on poverty alleviation in Rumonge, Burundi?

1.5.5 What are the challenges experienced by small-scale farmers of palm oil in Rumonge?

1.6 Significance of the study

The aim of this study was to analyse the socioeconomic impact of palm oil production, and how agriculture, with a primary focus on palm oil production, was used as a development tool in poverty alleviation in rural areas. This necessarily included a discussion of the socio-economic challenges facing Burundi. This study contributes to the developmental studies field by highlighting the long-term focus of small-scale farmers in rural areas and the impact of such efforts on sustainable development, poverty alleviation and promotion of sustainable livelihoods. A specific focus was the influence of palm oil production on the socio-economic problems faced by the people of Burundi, namely poverty, unemployment and economic stagnation. Much

scholarly work within Africa has concentrated on agriculture in a broad sense and has not explicitly focused on connections between agriculture and economic growth (Oyimbo & Rekwo, 2014; Johnston & Mellor, 1961). It has been suggested by FAO (2015) to policymakers that there is a need for a policy on agricultural sustainability in terms of poverty alleviation. However, cash crops such as coffee, tea, cotton and cocoa have drawn the most attention. There are few studies of the crucial role that emerging crops, such as palm oil, could play in poverty alleviation and economic development. This study attempted to fill this gap by looking at the long-term contribution that small-scale and subsistence farming of palm oil had played in addressing poverty alleviation and improving the sustainability and well-being of poor people, especially in rural areas of Burundi.

1.7 Limitation of the study

Although there are various crops produced in Burundi, this study focused only on palm oil production in Rumonge district. The participants in the study were expected to be familiar with palm oil farming, although some may have had limited experience. There was also the possibility that some of the participants would not answer freely as people in Burundi fear expressing themselves, perceiving that they will get into trouble with the authorities. Another limitation was language, as many of the farmers could not understand English. To mitigate this, Kirundi language was used, and it is possible that some meaning may have been lost in translation.

Given that the study focused only on palm oil production in Rumonge district, the results may not represent all small-scale farmers farming palm oil elsewhere.

Further limitations of the study, in terms of the amount of data collected, follow from the time and financial resources needed to conduct field research using a combination of quantitative and qualitative methods. Thus, this study covered the chronic poverty of Burundi from 2004 to 2018, and it compared the poverty level on the leadership of minority Tutsi who ruled Burundi from 1965 to 2005 compared to the poverty level on the leadership of majority Hutu from 2005 to 2018. Both leaderships exercised autocratic power, concentrating on buying weapons to maintain power rather than focusing on poverty alleviation and economic growth.

1.8 Theoretical approaches

This study benefited from theories of sustainable development and agricultural development theories; all of which were used to facilitate analysis of the role of small palm oil farmers in economic growth, poverty alleviation and job creation. While sustainable development theory shed light on issues of equity in the allocation of resources; power relations, gender equality, as well as the need to promote responsible and prudent use of scarce natural resources in palm oil farming; agricultural development theory the means for evaluating smallholder farming practices and contributions to economic growth, job creation and poverty alleviation.

1.9 The research methodology

The study triangulated qualitative and quantitative research methods. The intention was to generate both textual data and numeric data to enable a comprehensive analysis of the research phenomenon. While qualitative research approaches helped improve understanding of people's feelings and experiences in their social and cultural context (Tesch, 1990; Creswell, 2009) regarding the role of small scale palm oil farming in promoting sustainable livelihoods in rural areas, survey data shed light on how smallholder farmers used palm oil as a tool to alleviate poverty in Rumonge District. Integration of qualitative and quantitative research methods enhanced both the validity and reliability of research findings (Onwuegbuzie & Leech, 2005).

1.10 Case study design

The researcher also used a case study design. A case study, according to Gillham (2000), is one that investigates a case in order to answer the specific research questions that seek a range of different kinds of evidence, evidence which is there in the case community setting and which has to be abstracted and collected to get possible answers to the research questions. Babbie & Mouton (2004) stated that a case study is an intensive investigation of a single unit. Case studies deal with events and are concerned with how things happen and why. A case study research typically observes the perceptions, attitudes and characteristics of people such as a grandparent, parent, lecturer, student, a social group of people, a school or a university and it can be a country or a community (Gillham, 2000). The case for this study is the Rumonge socio-economic impact of the palm oil industry on smallholder farmers in Burundi. This is a single case because it only

refers to the Rumonge socio-economic impact of the palm oil industry, which is just a small agricultural industry development. The case study design employed in this research provided in-depth information and details on the socio-economic nature of the Rumonge industry. A single case of Rumonge urban centre, the province in the Republic of Burundi was studied in this research, as the researcher was interested in describing critical aspects of socio-economic endangerment.

1.11 Participants and Sampling

Participants in this study included diverse stakeholders within the small palm oil farming sector. These included smallholder farmers; managers of palm oil companies and representatives of environmental groups. Purposive sampling was used to identify and select participants for the qualitative study. Survey respondents were identified employing simple random sampling where every member of the target population had an equal chance of being considered in the sample. Combining purposive and random sampling mitigated the subjectivity that often results when one sampling method is used.

1.12 Data Collection process

Data collection methods were triangulated to enhance data quality and integrity, and they included interviews, focus groups, document analysis and questionnaires. The intention was to facilitate the gathering of both qualitative and quantitative data necessary to answer the research questions. Primary data was obtained through semi-structured interviews, focus groups and the survey. Secondary data, which was used to verify the results during the analysis; was generated through document analysis. Collection of primary data was confined to four villages of Rumonge District, namely Kizuka, Busaga, Dama and Birimba.

1.13 Data Analysis

The primary aim of data analysis in any study is to create a shared understanding of the issue under study—the analysis strategy in this study comprised two elements.

Qualitative data were presented using textual evidence and direct quotes from the participants' responses, while the analysis was accomplished through the use of themes. Quantitative data was analysed through software application, namely SPSS. The resulting data sets were primarily descriptive statistics displayed in frequency tables and charts as percentages.

1.14 Ethics statement

Throughout the study, conventional research ethics were observed using different techniques. Examples include securing permission before conducting the study and informing participants about the goals of the study ahead of fieldwork. The anonymity and privacy of participants were also respected as their true identities were concealed during the compilation of the research report. Only the names of the villages were published in the study. None of the participants was coerced to take part in the research. More importantly, the participants were also reminded that participation was a voluntary exercise and that such participation could be withheld or withdrawn if there were any perceived irregularities or unfairness in the research.

Structure of the Dissertation

This dissertation comprises the following six sections:

1.15 Chapter One Introduction to the study

In this chapter, the introduction, background, research objectives, research questions, limitations and importance of the study will be discussed. This will serve as the roadmap for the research. The main goal of chapter one is to contextualise the study.

Chapter Two: Conceptualizing the socioeconomic impacts on small-scale farmers and theoretical framework

This chapter will provide a review of the literature around agriculture in general and the palm oil industry. The socioeconomic impact of palm oil production and the two schools of thought, inter-generational and intra-generational, are discussed. The socioeconomic impact of the palm oil industry on smallholder farmers in Rumonge is analysed, using a combination of sustainable development theory and agricultural development theory.

Chapter Three: Research Methodology

This chapter outlines the mixed methods research approach applied by the study to understand the socioeconomic impact of palm oil among small-scale palm oil farmers. Key issues covered include research design and sampling methods, data collection instruments, validity and reliability and ethical considerations.

Chapter Four: Historical overview of Burundi

This chapter presents the data collected for this study, and the history of Burundi, the economic situation, and take a historical look at palm oil production in Burundi. The review of palm oil production and processing, specifically by small-scale farmers, will cover costs, harvesting, selling, organisation, government role, challenges, income generation, poverty alleviation and economic growth, concerning the Rumonge District of Burundi.

Chapter Five: Presentation and discussions of findings

The purpose of this chapter is to present the results from the qualitative study and the survey.

The quantitative and qualitative data are presented and analysed integratively. Quantitative data are presented in frequency tables and pie charts. Qualitative data are presented using textual evidence, e.g. direct quotes from the participants' responses to substantiate survey results.

Chapter Six: Summary, Conclusion and Recommendations

In this chapter, the findings, summary, contribution to knowledge, conclusion and policy recommendations will be presented, including the gaps identified to be filled by future research.

1.16 CONCLUSION

Chapter one presented the background and context of the study; whose primary purpose was to assess the socio-economic impact of small scale palm oil farming on economic growth, employment creation and poverty reduction in Rumonge District. The study sought to establish whether smallholder farmers used palm oil farming as a tool to address poverty and promote sustainable livelihoods in rural areas of Rumonge District. The following chapter is focused on literature review to provide a conceptual and theoretical foundation for the study.

CHAPTER 2

CONCEPTUALIZING THE ANALYSIS OF SOCIOECONOMIC IMPACT ON SMALLHOLDER FARMERS

2.1 Introduction

Agriculture is the cornerstone of poverty alleviation. Dewbre and Cervantes-Godoy (2010) emphasize that understanding the economics of agriculture sheds light on the state of being poor. The main aim of this study is to analyse the socioeconomic impact of the palm oil industry on smallholder farmers in Rumonge, Burundi. This chapter presents a literature review to underpin this study, focussing on the role of agriculture in economic growth and employment creation, global and domestic Burundian growth in palm oil, poverty, sustainability, the processes and challenges involved in producing palm oil, environmental and generational issues, the different sustainable development schools of thought such as inter- and intra-generational equity.

2.2 The farming sector in Burundi

Agriculture is the central pillar of Burundi's economy (Bamber, Abdulsamad & Gereffi, 2014: 5). Burundi's agricultural sector is an essential source of growth (40.7% of the GDP in 2018, more than 80% of the workforce and about 70% of export revenue), but it is faced with significant constraints. Agronomic constraints relate to (i) low soil fertility that limits productivity; (ii) low input use; (iii) land fragmentation; (iv) inadequate supervision of the agricultural sector; (v) poor water management, processing and product conservation problems, and low agricultural mechanisation. Technological constraints include: (i) inadequate technological innovations; (ii) insufficient water resource management techniques for irrigation; (iii) insufficient technology for the processing and conservation of agricultural products, and the inadequate rural electrification. Socio-economic constraints comprise (i) land issues and

demographic pressure that make access to land difficult; and (ii) poor access to agricultural credit and inputs. Institutional constraints include (i) difficulty in carrying out structural reforms and inadequate involvement of the private sector in financing the sector (Republic of Burundi: Country Strategy Paper, 2019-2023:6). Ahishakiye (2011:25) explains that food crops production occupies on estimate 85% of the total cultivated area in Burundi. Food crops in Burundi include cereals (maize, sorghum, rice, wheat, grasses), legumes (beans, green peas), oilseed crops (soybeans, groundnuts, oil palm, and sunflowers), tuber crops (sweet potatoes, cassava, potatoes, and yams), bananas, fruits, and vegetables

Burundi's smallholder farmers face a myriad of constraints to increasing their farm production. They cultivate an average of just half a hectare of land, well below what is needed to guarantee good nutrition. Land scarcity and uncertain land tenure arrangements are significant barriers to agricultural growth and can be a source of conflict. Other significant constraints to smallholder farm production include inadequate extension and research services, poor access to credit, weak producer associations, as well as variable water supply and localised droughts, resulting from climate change. However, subsistence farming continues, despite increasingly difficult circumstances, because the rural population has few other options – there is little off-farm employment and few adequate markets in which to sell products. Smallholder families themselves consume most food production; only 20 per cent of harvests reach the market. Per capita crop production in 2007 was less than half the 1993 level (Curtis, 2013:6). To address the significant challenges that it continues to face, the Government of Burundi in August 2018 prepared a National Development Plan for Burundi for the decade 2018-2027. The aim of the PND was, among others, to generate multiplier and lasting effects on improving economic growth and average per capita income, and to foster poverty reduction, development of human capital, environmental sustainability and social equity (Republic of Burundi: Country Strategy Paper, 2019-2023:iv).

2.3 The Role of palm oil in poverty alleviation and job creation

The various ways poverty is conceptualized and measured are crucial because different poverty measures tend to capture different people as inferior (Majid, Rahim and Hassan, 2012:1). This makes the phenomenon of poverty complex to describe or define. Scholars who have tried to

define poverty may be influenced by what they believe or want to prove. Lamont, Michele, Mario, Small and Harding (2010:1) view poverty as culture. At the same time, the World Bank Poverty Group report (PREM 1999) defines poverty as humiliation, the sense of being dependent on others and of being forced to accept insults and rudeness when we seek help. The report includes the words of a poor man in Kenya saying “Do not ask me what poverty is because you have met it outside my house. Look at the house and count the number of holes. Look at my utensils and the clothes that I am wearing. Look at everything and write what you see. What you see is Poverty” (PREM, 1999:26). The different ways of seeing poverty show that poverty is a multidimensional social phenomenon, affected by age, culture, social and economic contexts. The Chronic Poverty Report (CPRC, 2004) viewed poverty as a lack of skills, education and assets. Kakwani (1993:1) notes that poverty refers to deprivation and the OECD (2006a) explains poverty as deprivation in economic, human, political, socio-cultural and productive forms. Sen (1981:21) categorized poverty into two contexts, people who are poor and an overall picture of poverty (aggregation). Later, Sen (1999:92) viewed poverty as depending on the lives people lead and the freedoms they have, identifying poverty as a political issue. The United Nations study (2009) notes that poverty is the principal cause of hunger and under-nourishment. In a study in Ukraine, it showed that poverty is viewed as not meeting basic needs such as food, shelter and water. Nolan and Whelan (1996) measured poverty as an income level separating the poor and the non-poor.

In other words, poverty is viewed as a system where the majority of a population is deprived of the resources. Lewis (1970: X) explains that the dominant higher class accumulates wealth and property in creating upward mobility and then blames the poor for their personal incapability to work. In Lewis’ (1970) estimation, poverty is characterised by exclusion from the institutions of corporate society. According to Bondad-Reantas and Subasinghe (2013), poverty is seen as a symptom of society’s social ills. Bondad-Reantas and Subasinghe (2013) further view poverty as a social dysfunction. Lewis (1970) adds that poverty can be seen as marginality, helplessness, inferiority and dependence. Lewis (1970) also notes that the culture of poverty, once in existence, tends to perpetuate from generation to generation due to its effect on children. However, the notion of a culture of poverty have been opposed by Majid, Rahim and Hassan (2012:1) who claim that poverty emerges at three significant levels: (i) individual (attitude), (ii)

cultural and situational (the influence of people's residential environment that tends to shape poverty or success) and (iii) structural (capitalism creates conditions that promote poverty). The United Nations Human Development Program (UNDP, 2013:98) states that poverty is multidimensional: it is not only inadequacy of income and wealth but also a deprivation in terms of health, knowledge, security and participation.

On the other hand, O'Connor (2001:120), concerning Lewis (1970), sees no relationship between any culture of poverty and either the political or social conditions of the state. An earlier United Nations Human Development Report (UNDP, 1998) identified poverty as a complex issue that refers to shortages of the resources and deprivation of the choices that would enable people to enjoy adequate living conditions. According to Yunus (1987), poverty is viewed as the denial of human rights or the fulfilment of basic needs. In other words, poverty has set as a standard to create the perception of poverty. For example, The World Bank (1999) set a poverty line at an income of one dollar a day. Freedman (2007:27) argues that poverty is a concept of the economy accorded by social status. This means that to be low, you have to fall under the categories of the poverty line.

The definitions and perspectives on poverty outlined above demonstrate that poverty is a social ill caused by political instability and disunity of mass populations. Addae-Korankye (2014) identifies contributors to poverty in Africa like its notorious civil wars, either between neighbouring countries or the same country. On the other hand, political instability disperses the population and scares away investment that could foster economic development and the creation of employment (Addae-Korankye, 2014). As explained in the Chronic Poverty Report (CPRC, 2004) and the UNDP Report (1998), poverty is the lack of skills and knowledge for turning resources into a tangible means of production. It is also a system which has been fashioned to allow a small portion of global society to enrich themselves with raw materials from developing countries, while keeping those countries in chronic poverty. Pogge (2005) claimed that about 270 million people or one-third of all humans died from poverty-related experiences in the 15 years after the end of the Cold War; which is more than the 200 million who died in wars during that period, and more than either Hitler and Stalin were ever responsible for. The people dying from poverty-related problems are found mainly in Africa and Asia.

Majid, Rahim and Hassan (2012) measure poverty in terms of total income or consumption proxied by either expenditure or income and also highlight social exclusion theory which views poverty as declining participation and access to resources. Laderchi, Saith and Stewart (2003) argue that poverty analysis should consider the household as a unit of observation. The United Nations (2016:1) adds that measures of poverty need to go beyond the monetary, including the concepts of social exclusion and inclusion, social cohesion, capability poverty, multidimensional poverty and clustered disadvantage. The World Bank (2017:6) lobbies for the adoption of global goals for poverty eradication. Alkire and Foster (2008) argue that a poor person can never rise out of poverty even with access to resources. However, it can be argued that people are flawed precisely because they lack access to financial power, information, resources, capital and skills. The 2030 Agenda for Sustainable Development” (UN, 2015) notes that eradicating extreme poverty remains the most significant global challenge and an indispensable requirement for sustainable development. The World Bank (2007:3) identified uncertain progress in poverty alleviation by saying that ‘we now stand between the success and failure of our grand endeavour’. The UNDP (2013:1) also confirms that poverty remains widespread in many parts of the world, implying that the war against poverty is not yet over, specifically noting high rates of youth dependency in low households.

The majority of the population in the developing world, specifically in sub-Saharan Africa, are unskilled and the only productive work is in agriculture. It has been estimated that there are three million smallholders involved in palm oil cultivation throughout the world (Teoh, 2010). This confirms that future food production lies in the hands of smallholder farmers. As smallholder farmer numbers increase, income among households will increase, and poverty will be reduced. Thus, it implies that upstream activities like increasingly more palm oil trees, more households increase mechanism to eliminate poverty by income generation. Ikejiaku (2009:16) stresses that there is no continent without peace and stability, but where progress is still being made. Where there are war and conflict, the alleviation of poverty and the promotion of development is limited (Ikejiaku, 2009). Wanyande (1997) shows how wars have caused not only the stagnation of the economy but the loss of human life and property, as in the DRC were from 1998 to 2002 four million people died in civil wars (Report of the Commission for Africa (RCA, 2005). One could

ask the question if these four million had each cultivated ten palm oil trees, what impact on the economy and poverty might that have had? To alleviate poverty, it is necessary first to address the question of peace and security. When smallholder farmers cannot think ahead or plan, any form of development or eradication of poverty from palm oil crops is impossible. RCA (2005) reminds us that where conflict occurs, the purchase of military equipment comes at the expense of socio-economic development. For example, in Burundi people are in extreme chronic poverty. However, the government of Burundi chose to purchase heavy arms and other war equipment to keep them in power, instead of buying, for example, tractors to farm and vehicles to transport crops to market. Scholars such as Gurr (1970), Sandbrook (1982), Burton (1997) and Nathan (2003) argue that poverty causes conflict, instead of conflict causing poverty. Although where there is poverty, the money to buy war equipment may be hard to find, when poor people lack other options, they may join the conflict for money or in the hope that after the war their situation may be better. The United Nations (2015) emphasise that wars disrupt agriculture and industry because of insecurity and the displacement of the population as well as the damage to infrastructure. Coghlan, Brennan, Ngoy, Dofara, Otto and Stewart (2003) claim that the trauma caused by war does not only compromise the well-being of the victim but affects the entire society. On the other hand, failure to address the question of war and its causes leads to failure to alleviate poverty and improve the well-being of the population, especially in rural areas. Added to this, rich people are the ones who create wars in developing countries, often in the search for minerals and oil. Evidence for this can be drawn from the DRC where Belgium, the former colonial power, used social division along ethnic and regional lines in the exploitation of national resources for enrichment (Kisangani, 2012; Lemarchand, 1964; Young, 1965). Based on the atrocities by Belgium against the population of the Great Lakes region in Africa, including Burundi, there is evidence that ethnic conflict sown by external forces have caused poverty. In order to eradicate poverty in Sub-Saharan Africa, it is necessary to first address peace and security: with the eradication of ethnic discrimination and racism precursors to dealing with poverty. The FAO (2018) report states that conflicts adversely impact food security in many ways, such as the displacement of smallholder farmers, disrupting livelihoods and lowering household income. For example, in Afghanistan, conflict has destroyed employment and income opportunities, resulting in deteriorating food security and growing poverty while in Burundi, it has decreased purchasing power (FAO, 2018). In the same report, the Central African Republic

(CAR) is identified as one of the few countries where over 50% depend on handouts, while in the DRC, conflict is causing roads to be cut off and farmers displaced, adversely affecting crop production (FAO, 2018). The socio-political situation in Burundi has caused 400,000 people to flee to neighbouring countries, while 192,000 were internal refugees, including smallholder farmers who have left their farms to escape the conflict. As a result, if the situation remains as it is, the smallholders' mission to alleviate poverty through the agriculture of palm oil is in jeopardy. Where there is insecurity, people with skills will run away, to other countries where there is peace. The United Nations Department of Economic and Social Affairs (UN, 2014) claim that the loss of one highly skilled person is likely to lose about \$184,000 from the economy. Panic (2005) confirms that without peace, the achievement of sustainable development and economic growth is difficult, with many conflict countries ranked as poor in terms of literacy, education, health and life expectancy. There is a consensus that all the countries experiencing conflict are where chronic poverty can be found. All ten poorest countries in the world lack peace and security, including the DRC, Burundi and Somalia, with citizens becoming refugees around the world. When, peace and security are missing, planning, thinking ahead and implementing plans to alleviate poverty are absent. Now let us look at some downstream, midstream and upstream activities in the palm oil industry in terms of responding to poverty alleviation and improving human well-being.

2.4 The Palm oil Value chain

The palm oil global value chain is made up of a wide range of stakeholders, from producers of all sizes to processors, traders, consumer goods manufacturers (CGMs) and retailers. Despite being dominated by a handful of companies at the refining and international trading stages, production involves a wide range of suppliers from companies to smallholders, and manufacturing involves a wide range of CGMs in a market that is diversifying. This makes the palm oil value chain hard to govern for environmental outcomes. However, given that the refinement and refined palm oil trade stages are concentrated in the hands of just a few corporate groups, these groups have often been the main target of international NGOs and environmental groups' campaigns. Several public and private efforts, in both consumer and producer countries, have emerged to improve the governance of palm oil production and reduce its negative social and environmental impacts. Governments in producer countries, notably Indonesia, have

implemented policies to regulate the expansion of oil palm, with different degrees of effectiveness. The conditions under which oil palm plantations expand as well as their social and environmental implications are ambiguous, which makes palm oil one of the most controversial globally traded commodities (Pacheco, Gynch, Dermawan, Komarudin and Okarda, 2017). However, the value chain is still dominated by larger players, manufacturing companies and suppliers who often dictate prices of palm oil products and limit the ability of small farmers to reach the primary market. Cross-country evidence shows that small farmers in the palm oil sector are often not linked to milling facilities; do not receive adequate education and training; they do not get supervision and support from large corporations that dominate the industry and are often left out of the sustainable development agenda (Suhada and Bagja and Saleh, 2018).

2.5 The Small palm oil farming sector in Burundi

Palm oil was first introduced in southern Burundi in the late 1970s by the government in an attempt to enhance agricultural development and economic growth (Tchatchoua, 2016). However, in Burundi, palm oil has caused severe conflict among former and new landowners. It has been said that the civil wars which marked the history of Burundi since independence have generated numerous land ownership conflicts concerning palm oil plantations (Ricardo, 2013:26). The Ministry of Agriculture in Burundi (Miniagri, 2013) reported that 1.56 million households are dependent on agriculture. Nkurunziza and Ngaruko (2002) demonstrate that agriculture in Burundi employed 90% of the labour force from 1975-1998. The United Nations (FAO, 2013) observes that 35-40% of GDP is from the agriculture sector has contributed US\$5 million in 2005 and US\$14 million in 2011 (German, Schoneveld, and Pacheco, 2011). The area given to palm oil grew from 1250-5800 ha between 1990 and 2012.

TABLE 2.2 Palm oil production in Burundi (1990-2017)

1990	1995	2000	2005	2010	2012	2013	2014	2015	2016	2017
Area (ha)	1250	1250	1200	3300	5800	-	-	-	-	-
Production (T)	14,200	14,000	13,000	33,000	58,000	79,000	85,072	84,465	86,247	86,511

Sources: FAOST

2.6 The Capacity of palm oil farmers

To increase productivity and agricultural returns, there is a need to empower smallholder farmers, build capacity and develop knowledge about palm oil production. Small-scale farmers will need resources and access to capital and skills. According to the Comprehensive African Agriculture Development Programme (CAADP, 2011), the agriculture sector was seen as the panacea for a breakthrough to economic growth, elimination of hunger and poverty alleviation in Sub-Saharan Africa. In order to succeed in alleviating poverty in rural Africa, investment is needed in securing resources and building human capacity among smallholder farmers (CAADP, 2011). The World Bank (2007) observed that empowerment for smallholder farmers would enable them to utilise the land for food production and poverty eradication. The FAO (2017) emphasises that to achieve the goals for 2030 in ending poverty and hunger, and there is a need to increase smallholder farmers' productivity and income, diversify their income streams through value chain development and create more jobs for the rural poor. Vermeulen (2006) emphasizes the benefit and need for skills training and development strategies among small-scale farmers. Becker (1962) stated that smallholder farmers enhance productivity as they acquire knowledge, skills and an improved attitude towards sustainable development. The call is therefore on the government to formulate policies which assist small-scale farmers in acquiring skills and building capacity. The call is also on private investors to revise investment policies for small-scale farmers with the focus on providing human capital development and finance for the necessary natural resources. For a country like Burundi to move from poverty to prosperity,

political instability needs to give way to the formulation of sustainable policies in favour of small-scale farmers and with access to natural resources and the capacity to turn these natural resources into tangible products. Burundi can learn from Malaysia, where smallholder farmers of palm oil have been organised and assisted both in terms of credit, management and planning by the government, resulting in significant poverty alleviation. Mbengwa (2009) finds that small-scale farmers in South Africa often lack farming skills, including marketing and infrastructure development. However, in Israel, investment in capacity building in agriculture led to significant poverty alleviation (Moshav, 2001), even though Israel has no physical capital, it had high skills. By contrast, Sub-Saharan Africa lacks human capital and skills and is characterised by corruption. For small-scale farming to contribute to poverty alleviation and job creation, governments and policymakers in sub-Saharan Africa need to focus on developing human capital and providing access to resources. The farming of palm oil among smallholder farmers needs management and planning, from preparing the ground all through to the final phase of production. Hansen and Roll (2016) explain that to address the challenges involved in operating a palm oil plantation, management must play its part. Smallholder farmers of palm oil are becoming increasingly expert in how to produce palm oil and market it. By effective knowledge management, they can boost production. Abernethy and Bouwens (2005) confirm that managerial decision making and control, can boost the performance of the overall system. Linking management decisions to small-scale farming ensure better organisation of land preparation, germination, planting and harvesting. Hjorth & Bagheri (2006) stress that understanding the decision-making process can result in more effective production. Small-scale farmers can benefit from investment in human capacity building in terms of managerial skills.

2.7 Challenges in palm oil farming

Burundi's weak economy, land conflicts and environmental hazards have created many socioeconomic challenges for producers of palm oil. Teoh (2002:24) notes a large productivity gap between actual and achievable yields, smallholder farmers lack the capital to invest in modern palm oil cultivation. Delgado (1999:169) argues that poverty is one of the main barriers preventing African smallholders from being more productive, even in relatively high potential agricultural areas. In terms of land, farmers do not have enough land to enlarge their agricultural

plantation for the harvesting of palm oil. They are limited to a small number of palm trees, meaning that economic growth is limited. Fitzherber, Struebig, Morel, Danielsen, Bruhl and Donald (2008) demonstrate how Indonesians claimed land because the government had not solved land issues, while according to Rietberg (2011) land and environmental disputes, deforestation and exploitation of poor and indigenous communities have held back development. Land conflict remains a significant challenge to agriculture in Burundi. It has also been argued that the land and the people of a nation are its primary raw material (Leo, 2015:33). People in Burundi encounter social conflict concerning land ownership, where palm oil trees are planted. The battle between refugees who returned from Tanzania and the occupants of land from 1972 remains a stumbling block. The challenges of cultivation of palm oil in Burundi can also be attributed to political conflict, especially among the leaders who have ruled Burundi, where the focus was on recruiting soldiers and buying weapons instead of agricultural production (World Bank, 2007). The World Bank has said that the world is caught in a vicious circle of poverty, where poverty causes conflict and conflict leads to poverty. Tiku and Bullem (2015:244) argue that economic chaos and political instability are the main problems facing the agriculture of palm oil in Nigeria. The same problem occurs in Burundi. Clay (2004) identifies the problem of deforestation and loss of biodiversity through conversion for oil palm cultivation. Ludwig, Biemans, Jacobs, Supit, Van Diepen, and Fawell (2011:27) identify the sustainability issues associated with palm oil production as deforestation and carbon emissions, specifically when tropical peatlands are drained to make them suitable for palm oil. Ludwig et al. (2011:27) note that palm oil is grown in tropical regions with very high rainfall. Therefore there are no significant issues with the sustainable use of water resources in these regions. However, with changes such as global warming, it remains to be seen if, in the future, there will be water resource issues. Much of the land used to increase the size of existing palm oil plantations requires the draining of peatland which results in carbon emissions and a drop in the water retention capacity (Ludwig et al., 2011:27). Hartemink (2006:1) notes that soil is removed from between the tertian and quaternary feeding roots near the soil surface.

Claydon (2009) attributes deforestation and land degradation throughout Asia to factors which include the high demand for timber and palm oil. Alcamo, Henrichs and Rosch (2000) estimate that more than half of the world population will be living in countries facing high water stress by the year 2025, not only owing to rainfall and water levels but also because of population density

and competing needs for water. Tiku and Bullem (2015:244) identify economic chaos and political instability as significant problems associated with the agriculture of palm oil in Nigeria. This same concern applies to Burundi. For instance, Nkurunziza and Ngaruko (2005:35) attribute the economic decline to political instability during decolonisation, causing the loss of Burundi's export markets to be neighbouring Rwanda, Congo and elsewhere. From the period 1972-1998 to the present day, political instability based on ethnic conflict has adversely affected peasants and small-scale farmers. By not dealing with the problem of ethnic conflict between Hutu and Neolithic Tutsi, tribalism and ethnic division based on regionalism and political affiliation, it will take centuries to eradicate poverty.

2.8 Palm oil farming and sustainable development

The analysis of the socioeconomic impact of the palm oil industry on smallholder farmers and the approach to development is based around creating sustainable rural livelihoods. Scoones (1998) sheds light on how sustainable livelihoods are achieved with access to resources including economic, human and social capital. A combination of these resources will be required in agricultural intensification in Burundi in order to lift poor people from chronic poverty to well-being. The linkages of two schools of thought in sustainable development will be adopted, namely intra-generational and inter-generational. The sustainable rural livelihoods development approach (SRLDA) was considered in this study because of its capability to assess the role of smallholder farmers in poverty alleviation, job creation and economic growth. This is justified by the Brundtland Commission report on environment and development, which linked socioeconomic and ecological considerations in a cohesive policy structure (Krantz, 2001). Also, the United Nations Conference on Environment and Development (UNCED, 1992) asserted that in addressing sustainable development, the question of poverty alleviation must be on the agenda. It was therefore decided to promote policies to address sustainable development, resource management and poverty eradication (Krantz, 2001). In the joint report, "Caring for the Earth: A Strategy for Sustainable Living" (UNEP, WWF and IUCN, 1992) it is stressed that: "Living sustainably depends on accepting a duty to see harmony with other people and with nature. The guiding rules are that people must share and care for the Earth. Humanity must take no more from nature than nature can replenish. This, in turn, means adopting lifestyles and development paths that respect and work within nature's limits". The differences between

development and sustainable development are that development is seen as a process through which a society moves from one condition to another, including the goal of that process (Richard, 2000). The challenge is in moving from poverty to prosperity without jeopardising future generations. For example, in 1950, the focus was merely to produce goods to satisfy human needs. Goulet (1968) explains that development was assessed only in terms of total human needs, values and standards as perceived by the society changing. Sustainability development pays equal attention to both present and future generations. Roche (2013) notes that the ideas of sustainable development appeared in German forestry in the 17th century about logging, intending to utilize timber responsibly and sustainably (Birnbacher and Chichicha, 1996). The concept of sustainable development became a central concept in 1997 when the Brundtland report emerged, stressing that development cannot compromise future generations (WCED, 1987) noting that a strong economy is a prerequisite for, rather than a burden to, a healthy environment. In the same report, sustainable development is viewed as an integrating concept which gives a balance between economy and environment (WCED, 1987). According to Bâc (2008:1): Sustainable development has emerged from a series of Conferences and Summits, where influential people have tried to agree on how to tackle the “burning issues” of the 21st Century: poverty, increasing inequality, environmental and human health degradation. Hirschman (1958) observes that sustainable agriculture is essential for economic growth. The World Bank (2008) adds that agricultural activity is seen as a significant and viable sector for sustainable rural development. The World Development Report (1992) mentions that sustainable development is a development that continues. In the views of Escobar (1995), sustainable development is a new theoretical structure that aims to transfer the social field to the problem of nature’s health preservation. Hedlund-de Witt (2014) views sustainable development as a navigation principle and a political and societal ideal of great importance in the 21st-century global context with a vision of agriculture providing a sustainable route into the future. Waas, Hugé, Verbruggen, and Wright (2011) consider that sustainable development is a bridging concept that ties together distinct policy domains by uniting opposing views and the welfare of society’s stakeholders behind a common goal. Parris, Kates, and Leiserowitz (2012) describe sustainable development as a combination of development and environment. According to Martens (2002:1), the goal of development is to provide the needs of humankind without violating ecology. Martens (2002:1) identified four conceptions of sustainable development:

Inter-generational phenomenon (transfer of development from one generation to another); Level of scale (global to regional and local); multiple domains (economic, ecological and socio-cultural) and Multiple interpretations (current and future social needs, how they can be provided for). Given the above, the present study uses theories of sustainable development as an analytic lens to understand the role of small palm oil farmers in poverty alleviation, economic growth and job creation. Loucks and Gladwell (1999) explain sustainable development in three phases: economic, social and environment and that for sustainable development to occur, they must operate together. The United Nations (UN, 2014) also came to such a conclusion in their Global Sustainable Development Report, with the emphasis on economic, ecology and equity with regards to sustainable development. The United Nations Research Institute for Social Development (UNRISD, 2011) claims that green economies which fail to address the causes of poverty will prevent the achievement of sustainable development. Apart from the benefits of palm oil production on economic growth and poverty reduction, palm oil production may negatively impact on the environment (UNEP, 2011). The palm oil industry is land-use intensive and as such, has been linked to the negative environmental impact of the loss of biodiversity. This leads to two schools of thought. Palm oil is expected to rise in significance due to the high demand for oil and its other benefits, as has already happened in Indonesia. Jobs and incomes have grown, including among those smallholder farmers who have participated significantly in this increase. However, Clay (2004) has demonstrated how palm oil cultivation is a major cause of environmental problems such as air pollution. Colchester (2010) adds that palm oil cultivation has led to land conflict between palm oil companies and local communities in Indonesia. The reputation of palm oil cultivation has been badly damaged, as it has been implicated in the disappearance of Orangutans (Nellemann, Miles, Kaltenborn, Virtue and Ahlenius, 2007). A further negative impact of palm oil is its perceived threat to food security. Clancy (2008) claims that palm oil production has skewed markets and caused problems for other food crops. Based on these negative impacts of palm oil on the environment, food security and orangutans, Friends of the Earth (2005) and Green Peace (2008) have campaigned against palm oil crops. On the other hand, Basiron (2007) views palm oil in a positive light, arguing that palm oil is a commodity playing an important role in providing energy and development, specifically regarding the livelihood in rural areas where palm oil is cultivated. The World Bank (2012) explains that for palm oil to produce long term economic growth, the sustainability of the environment must be

ensured. Mohammed, Fauziah and Suhaila (2017) conclude that the palm oil industry has played a significant role for sustainable development and inclusive economic development and that through the supply chain, has the potential to contribute to sustainable development. Although palm oil is a key component in economic growth and uplifting the income of smallholder farmers in surrounding communities, there is a concern that in developing the present, we are compromising future generations. Thus, this led us to the discussion of the Inter-generational school of thought.

2.8.1 The sustainable Livelihoods Approach

Livelihoods perspectives have been central to rural development thinking and practice in the past decade (Scoones, 2009). Livelihoods perspectives start with how different people in different places live. A variety of definitions are offered in the literature, including, for example, ‘the means of gaining a living or a combination of the resources used and the activities undertaken in order to live’. Simply put, a livelihood comprises the capabilities, assets (including both material and social resources) and activities for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks maintain or enhance its capabilities and assets, while not undermining the natural resource base (Chambers and Conway, 1992 in Scoones, 2009:1). Livelihood includes income, both cash, and equivalent, besides social institutions, gender relations, and ownership rights needed to support survival (Ellis, 1998). Furthermore, livelihood includes access and benefits obtained from public and social services provided by the state, such as education, health services, roads, water supplies, etcetera (Obie, Pakaya and Syilfi, 2020:2).

Oil palm expansion, however, raises various problems for local rural communities. Oil palm expansion can lead to environmental problems (Yusop et al., 2018; Sharma et al., 2019). Expansion of oil palm plantations can also result in deforestation, increased carbon emissions, and climate change, which can disrupt environmental conditions (Pacheco 2012; Ishak et al., 2017; Ordway et al., 2019; Taheripour et al., 2019). The conversion of the function of forest areas into oil palm plantations closes access to rural communities (Ribot & Peluso, 2003); as a result, poverty of rural communities around oil palm plantations becomes a necessity (Obie, Pakaya and Syilfi, 2020:2). The impact of oil palm development on the economic wellbeing of

rural farmers is critical as many smallholders have benefited substantially from the higher returns to land and labour afforded by oil palm, but district authorities and smallholder cooperatives play critical roles in the realisation of benefits. Conflicts between communities and companies have resulted almost entirely from lack of transparency, the absence of free, prior, and informed consent and unequal benefit-sharing, and have been exacerbated by the absence of clear land rights (Rist, Feintrenie and Levang 2009)

2.8.2 The Inter-Generational approach

Smallholder palm oil farmers have to connect the present generation to the next. This implies that the next generation will need the same land used by smallholder farmers. That is where the issues of sustainable development come into this study. According to Intergenerational Solidarity (2009), such demographic evolution will be accompanied by profound social change in terms of social protection. Some successful examples of inter-generational shared programs combining children and older adults already exist (Generations United, 2002:13). Solow (1974:9) confirms that in social decision-making, there is no excuse for treating generations unequally. This does not mean that the generations have to be developed in the same way, but that protection of resources for the next generation is needed. This implies that smallholder farmers have a duty and an obligation to produce palm oil sustainably and not to compromise the needs of the next generation. Sustainability appears to be an obligation to present-day economic opportunities such as productive capacity (ecology) for the future generation (Solow, 1974). Thus, it implies that the connectivity between development and environment provides a mechanism for the protection of natural resources.

2.8.3 The intra-generational approach

This school argues that development must meet the needs of both present and future generations. Williams and Oppong (2014:3) argue that the concept of intergenerational equity is premised on the principle that every generation needs to pass on the Earth and its natural resources in at least as good condition as we received them. Gozie (2010:2) notes that development must meet the needs of the present without compromising future generations. This study explored the role of

small-scale palm oil production in economic growth and poverty alleviation within the context of sustainable development. However, development, in the sense of meeting present needs without compromising generations to come, requires policies to support small-scale farmers. Hamann (2017) concludes that in order to deliver sustainable development in the palm oil industry, much could be achieved by supporting smallholder farmers. Gozie (2010) espouses a different view on sustainable development, arguing that it restricts development and that development itself can be beneficial for both present and future generations. IPCC (2007) notes that the definition of sustainable development is ambiguous. Grosskurth and Rotmans (2005) mention that for sustainable development to cater for present and future development, space, domain and social constraints have to be considered, in line with the Brundtland definition. Bagheri and Hjorth (2007) say that sustainable development cannot be a fixed goal; instead it can be evolved continually. The negative impact of palm oil on the environment, including land degradation, erosion and the disappearance of species such as Orangutans, remain considerable concerns, especially in Burundi. Firstly, in Burundi, much of the population is starving, and children under the age of five are not surviving as a result of chronic poverty. The challenge then is the extent to which nations can be concerned for future generations when not even meeting the needs of present generations. In that sense one can argue that sustainable development in the palm oil industry will be hard to achieve. However, for the palm oil industry to respond to economic growth, poverty eradication and social equity, it must be developed in terms of sustainability, and this includes protecting the environment. Barbu (2012) explains that to maintain competitiveness in the global market, and there is a need to create conditions that allow farmers to promote sustainable development and the protection of ecology. This concern for the resources future generations will use is not supported by the intra-generation school of thought. Many posts World War II development only concerned current generations. Sohn and Weiss (1987) confirms that economic development originating from the industrial revolution has resulted in water and air pollution and deforestation but reminds us that sustainable development is based on the commitment to share this planet with current and future generations. Sohn and Weiss (1987) opine that there is a conflict attached to sharing the resources between the generations concerning depletion and degradation. However, if the environment is well protected, degradation is not inevitable: depletion and degradation depend on the current generation. Based on the principles and views of this intergenerational school of thought,

sustainable development is required to consider the earth and its resources as an asset for our current and future generations. Weiss (1992) championed the view that earth and its resources are passed to us by our ancestors for our benefit, which we also need to pass on to our descendants for their use. Rachel (2015) indicates that the key principles of sustainable development differ from all other types of development in terms of the integration of environmental, social, and economic concerns into all aspects of decision making. African countries such as Burundi, therefore, need to formulate policies in which intergenerational equity is made viable. Sustainable development must shape the palm oil industry while responding to poverty alleviation, economic growth and job creation. Although the role of the intergenerational school is to create resources for both the current and future generations, Pagell, Dobson, Gavronski (2010) argue that one purpose is the improvement of resources by current generations actually to increase opportunities for economic sustainability in future generations. Jitender (2017) opines that the conceptions of intergenerational equity have objectives to support socio-economic development and to build bridges between social and economic development alongside environmental protection. Sustainable agriculture refers to systems that are capable of maintaining their productivity and usefulness indefinitely (Ikered, 1990). The term sustainable agriculture is viewed by different scholars in different contexts. Francis and Youngberg (1990) viewed sustainable agriculture as a philosophy of human activities and concerning their long-term impact on the environment and other living species. Thompson (1998) looked at sustainable agriculture as a driving force for farmers in terms of activities and production. Douglass (1984) viewed sustainable agriculture as food sufficiency encompassing the economic concerns of productivity, environmental stewardship, and community well-being. This study sees sustainable agriculture as uplifting the rural community within the parameters of considering the present generation and the generation to come.

2.8.4 The intra-generational Approach

Intra-generational equity refers to social justice between contemporary communities and nations, and it embodies the nations that persons within the same generations should have access to resources left by the previous generation, and shall not be exposed to disproportionate environmental risks and burdens, with radioactivity a prime example (Wu, 2002:29). This

concept is different from inter-generational equity in being concerned with the development of fairness among the current generation. Jitender (2017) stresses that resources which are not conserved for the future generations need to be distributed equally among the constituents of the current generation. Kariuk (2010) highlights its role in sustainable development, given that inequities among the current generations are the most important cause of environmental degradation. This school has more of an interest in accumulating wealth in the current generation, while future generations are of little concern with Kariuk (2010) pointing out that the poor of the current generation, especially in less developed countries, are destitute of the option to choose environmentally good decisions. The report “Our Common Future” (WCED, 1990) stated: Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land, and in growing numbers, they will crowd into congested cities. Although, there is a link between the inter-generational equity and intra-generational equity. One wants to satisfy the needs of the present without concern for tomorrow, while the other is concerned for the present as well as for coming generations. Kariuk (2010) argues that if the current earth’s ecosystem cannot cater to the needs of all people in this generation, how can it fulfil the needs of future generations? Kariuk (2010) also observed that sustainable development involves considering the earth and its resources not simply as an investment prospect, but as an expectation approved to us by past generations for our use, to pass to our next generations for their use. Sharon (2000) notes that the most important environmental problem is not poverty but global warming, chemical contamination and nuclear waste management, warning starkly that it is better to have poverty in a safe environment than to be wealthy in a destroyed environment. Chye and Wahidul (2015:1) note that sustainable palm oil production protects the natural environment and promotes intra- and inter-generational equity while enhancing commercial operations and sharing economic growth within the local community through employment and fair trade. Ralph (2006) quotes Westrum (1991:4) notes that “the technological progress, industrialization such as systems supply power to our homes, place of work,...we no longer need to be concerned about how to generate light, ... and if we feel sick we found an abundance of modern drugs that can ease our suffering...” while focussing on intra-generational equity. However, a question then arises as to why communities should be concerned about future generations. Daly (1999) notes that the welfare of future generations is beyond our control and it

not our business, claiming that the priority is only to make wealth, leaving the next generation to find their own. Nevertheless, climate change is the legacy of the industrial revolution, which was concerned only with the production and economic growth for that generation. Cook (2010) adds that 97% of climate change experts are convinced that human activities changed global temperatures: what we do today affects future generations. If the palm oil industry does not utilize sustainable development, it will harm future generations. Kumar and Sukhdev (2008) note that all human beings depend on the earth's ecosystem, and it is the same ecosystem which delivers economic and social services. This implies that future generations have a right to mother earth to meet their own needs. Sen (1982) argues that the value of living a good life is when you have access to ecosystem services. Therefore, small-scale farmers can access the ecosystem to eradicate poverty in return for a good life, but by doing so should consider the unborn who will need to access the same ecosystem in future. This study will explore how palm oil can be operated to integrate the three pillars of sustainable development: environment, economic and social. Ekins (1993:278) states: The sustainability of something is its capacity for continuance into the future. Where economic activity or, more generally, a way of human life. is concerned, this sustainability will depend on economic, social (including cultural and ethical), and ecological factors. Based on this idea, sustainability depends on economic and social behaviour. One could argue the converse, that environment or ecology is the cornerstone for a strong economy. If we have a green environment, we can also have a clean and green economy. Future generations will be able to use the same ecology to create their means of survival if a long-term view is taken rather than a selfish one. If, after World War II, the environment had been damaged beyond repair, where would we be today? Intra-generational equity believers would, alternatively, see protecting our resources for future generations as limiting current economic growth. Meadows, Meadows, Randers and Behrens (1972) observed that there could be disappointments and dangers in limiting one's views to an area that is too small. Perhaps this should warn the intra-generational school not to limit themselves to the welfare of current generations; land must be cared for as it will be the same land future generations will be used to produce food. In order to achieve sustainable development in a healthy environment, especially in agriculture, education and social stability are needed (Club of Rome, 1972). This means supporting small-scale farmers by educating them on how to plan and implement the means of producing palm oil sustainably, without compromising the environment. Social stability means

establishing and maintaining peace. Lacombe (1975) identifies two views, optimist and pessimist, concerning these schools of thought. The optimist believes in the power of human inventiveness to solve whatever problems lie in its way, as would the intra-generational exponent, being concerned with dividing wealth among the present generation alone, without thinking of tomorrow. The pessimist sees the problems emerging from our past and present as intractable and harmful to future generations, especially when it comes to the use of the earth's ecosystem. In the next section, we will be presenting the theoretical framework as a tool used to illuminate our analysis of the socioeconomic impact of palm oil production by smallholder farmers in Rumonge, Burundi.

2.9 Palm oil farming and Environmental issues

Despite the benefit of palm oil in terms of poverty alleviation and economic growth, palm oil is linked to deforestation and the disappearance of Orangutans. Curran, Carlson, Rothnaseri, Pithman, Soeres, Asner, Triger, Gaveou, Lawrence and Rodriques (2012) emphasize that palm oil cultivation has taken place mostly in biodiversity-rich tropical rainforest areas. Despite the positive impact of palm oil towards poverty alleviations and economic growth, it impacts negatively the other species. Harvey and James (2005) note that in agriculture there are two competing approaches to sustainability, a strictly economic approach in which the market is the driving forces and a balanced approach between economic and environmental concerns, including social objectives. Stone (2007) looked at agriculture and related environmental issues and said that skills developed in farming influence both social and environmental learning processes. The World Commission on Environment and Development (WCED, 1987) suggests that sustainable development caters for this generation and future generations. Douglas (1984) viewed agricultural sustainability based on food production, economic growth and environmental stewardship, including the well-being of the community. Smallholder farmers of palm oil in Rumonge, therefore, need to recognise that the resources used to provide for their needs must be conserved for future generations. Harvey and James (2005) propose that sustainable agriculture must include a combination of economic, environmental and social objectives. Smith (1776), in his book *The Wealth of Nations*, linked the rural economy, namely agriculture, to the urban economy, emphasising the need to balance the interests of country and town (urban and rural)

because both contribute to the overall well-being of society. This requires linking agriculture to other sectors of the economy to advance economic growth. This study will draw from Smith in order to understand the impact of the palm oil industry for small-scale farmers. Evensky (1993:201) agrees with Smith: Smith sees each individual as being shaped by and in turn, given that person experience, shaping societies, the dynamic and continuity of human social evolution derive from this coevolution communities contribute the continuity as individuals come and go, and individuals contribute the dynamic to the degree that they draw on their different-community experience to act. Considering these issues, the present study argues that the pillars of sustainable development i.e. economic development, social development and environmental protection are critical in improving the quality of life in rural communities. Without a safe environment, social and economic development, all of which are interdependent, will not guarantee human well-being (Karina and Ryszard, 2009).

2.10 THEORETICAL FRAMEWORK

2.10.1 Introduction

This study aims to analyze the socioeconomic impact of the palm oil industry on smallholder farmers in Rumonge, against two significant schools of thought in sustainable development. In order to understand the role of agriculture in poverty alleviation and economic growth, there is a need to have an appropriate theoretical framework. A theoretical framework is an interpretive tool. The role and meaning of a theoretical framework are to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge, within the limits of the critical bounding assumptions (Asher, 1984:1). The theoretical framework is the structure that can hold or support the theory in a research study. It introduces and describes the theory which explains why the research problem under study exists. The selection of a theory should depend on its appropriateness, ease of application, and explanatory power. A theory in the social sciences is of value if it explains the meaning, nature, and challenges of a phenomenon. A theoretical framework becomes a guide through which a research problem is viewed and evaluated. Miles and Huberman (1994:18) quoted in (Jabareen, 2009) viewed a framework as a

visual or written product that explains, in narrative form, the main elements to be studied, the key concepts and the presumed relationships between them. This chapter explores the theoretical framework that will be used to underpin this study, specifically Amartya's theories for the analysis of the socioeconomic impact of the palm oil industry on small-scale farmers in Rumonge, Burundi. Dewbre and Cervantes-Godoy (2010) emphasize that understanding the economics of agriculture would shed light on the state of being poor. The study draws from Sen's capability approach. Inter and intra-generational schools of thought are also considered. Sen's focus is on human capital and opportunities and economic growth.

2.10.2 Sen's Economic Theory

Sen's capability theory builds on ethics and equality as well as human capabilities (Sen, 1992). This theory posits that an action is ethical if it promotes equality of human potentiality. Sen developed three pillars related to sustainable development: economic, social and environment. Thus, it implies that choice is built upon the capabilities a person has for achieving the kind of life they prefer (Sen, 1999). Capabilities mean the set of valuable functions that a person has adequate access to, together with the freedom of choice of actioning these functions as needed in various combinations (Internet Encyclopedia of Philosophy). According to Sen (1999:75) cited in Pfister (2012): Capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations (or less formally put, the freedom to achieve various lifestyles). Todaro and Smith (2012) believe that development and economic growth is complex and integrated. Rostow (1962), in his book *Stages of Economic Growth*, outlined five stages for economic growth. These are the stages the economy of any country needs to go through for achieving economic development and growth. A traditional society composed mainly by subsistence, barter, and agriculture. This stage is dependent on a rural economy; a transitional stage, named pre-conditional for industrial take-off, features the application of modern science to agriculture. This stage is characterized by new ideas, new production, infrastructures, organization and changes in attitudes. As infrastructure is improved, the transport of goods and agricultural products becomes cheaper, and business is expanded. These changes and new structures, however, happen at a slow pace. This stage also depends on the social appreciation and adoption of education; Take-off to industrialization, with investment based on regional as

well as political change. This stage depends on an urban economy; this stage represents the drive to maturity and improvements inefficiency. Economic growth is more significant than population growth, leading to rising capital income. This stage depends on growth and economic development and high mass consumption. This includes consumer-oriented durable goods and services and depends on a global economy.

Parris (2012) argues that this model “might be the case for some regions, but that the framework has to be modified or rendered more general in order to reflect the experience of other regions, particularly concerning the take-off stage”. Rostow’s economic model, it is claimed, was developed based on Western Europe and American culture and seemed less applicable in other regions or developing countries. The reasons for this model not working in developing countries such as Burundi is the lack of technological capacity to take-off for industrialization. Parris (2012) claimed that science and technology are ill-developed and that although innovation may occur, it is not a regular feature of the economy. Rostow (1962), quoted by Todoro and Smith (2012), further demonstrated that social, political, economic and technological changes lead to the development and economic growth and that developing countries pass through several distinct stages: traditional society, preconditions for take-off, drive to maturity and mass consumption. For this study, the interest is in the first stage (traditional society and agriculture) and the second stage (preconditions for takeoff), which deals with improvements and mechanization in agricultural activities, leading to economic surplus, savings and economic growth. Sen concludes that development in terms of human liberty takes the form of opportunities and capabilities being realized (Martins, 2009). Sen’s theories can help to analyze the socioeconomic impact of smallholder farmers and sustainable palm oil production in Rumonge, Burundi. The concepts of sustainable development, poverty alleviation, poverty measurement, economic growth, income generation, agriculture, palm oil plantation, smallholder farmers, socioeconomic development, and the inter-generational and intra-generational models will be used to analyze the role and possibilities of smallholder farmers in poverty alleviation and economic growth.

2.11 Definitions of the Concepts

Understanding the concepts is key to analyzing the socioeconomic impact of the palm oil industry. The concepts and terms to be defined include capability approach, poverty alleviation, poverty measurement, economic, agriculture development, palm oil plantation, smallholder farmers, socioeconomic and environmental issues, inter-generational, intra-generational and sustainable agriculture. Sen has understood the concept of the capability approach as a measurement of poverty. The capability approach is defined as an individual's capability of achieving the kind of life they value (Sen, 1985). The OECD (2013) draws from Amartya a description of human development as grounded on understanding what deprived communities' value and aspire to as individuals, families and as a collective.

Nussbaum (2015) understood the capability approach as freedom and choice rather than achievement. However, freedom and choice alone, without resources, will not end poverty. Stiglitz, Sen, Fitoussi (2009) emphasize that what matters are the capabilities of the people, the extent of their opportunities and freedom to choose. Choice and freedom must go hand in hand with resources. The absence of one will compromise the whole system. Based on these perspectives, the study aims to provide insights into the impact the palm oil industry would have on small-scale farming, on farmers, on land allocation and distribution and other social conflicts in Rumonge District. The study aims to reveal the multiple roles smallholder farmers can play in solving the problem of poverty and promoting economic growth by creating jobs for unskilled rural people.

To unpack the complex concept of poverty alleviation, four contributing concepts have to be understood: poverty measurement, poverty alleviation itself and finally human and resource capital. Suich, Howe and Mace (2015) understood poverty as multi-dimensional, covering food security, nutrition, health, income, access to land and assets including education and skills. The concept of poverty has been interpreted in different ways. Some institutions such as the United Nations Development Programme view poverty as a lack of well-being and as a multi-dimensional problem involving absolute poverty (UNDP, 2006). The World Bank (2007) defines

absolute poverty as existing on less than \$1/day. Smith (1776) viewed poverty as lacking the commodities which are necessary for the support of life. Sen (1983) understood poverty as a standard at which one cannot achieve adequate participation in communal activities and be free from public shame by failing to satisfy conventions and as having insufficient human capability to compensate for a lack of income or commodities. Suich et al (2015) viewed poverty alleviation as an act that improves a household's situation through a focus on knowledge as the mechanism to alleviate poverty.

Poverty measurement refers to a broad sense of society, this includes the income level related (Aldridge, Bushe, Kenway. and Tinson, 2013). Although Shillington, Lasota and Shantz (2009) measured poverty as a deprivation of economic, social, political and human capital resources, measures of poverty need to go beyond income and resources: one can have resources but fail to use them to alleviate poverty. This implies that resources without capabilities will impact little on poverty alleviation. Ayers and Collings (2008) viewed economics as examining how to make choices alongside the allocation of limited resources, in response to unlimited wants. Khumalo (2012) defined economics as human use of knowledge to identify and use resources to create knowledge and commodities and to distribute such among people. Economic development has been defined as activities that expand capacities to realize the potential of individuals, firms or communities who contribute to the advancement of society through the responsible production of goods and services (Feldman, Hadjimichael, Kemeny, and Lanahan, 2014). According to Martins (2013), economic growth is a process that starts with resources and ends with consumption.

According to Adam Smith (1776), economic growth is determined by the rate of capital formation. For Sen (1983), economic growth depends on investment in public institutions such as education, and the quality of human life based on freedom. Haller (2012) defined economic growth as a process of quantitative, qualitative and structural change with a positive impact on the economy and the population's standard of life, following a continuously ascendant trajectory. Scholars in different contexts have defined the term agriculture. According to the Oxford English Dictionary (1971) agriculture is the science and art of cultivating the soil, including the allied pursuits of gathering in the crops and rearing livestock. Hediger (2004) defines agriculture as an economic activity that, beyond its primary function of supplying food and fibre, provides various non-market outputs to society.

Agricultural development is defined as the process that creates the conditions for the fulfilment of agricultural potential (OECD, 2006b) including human capital development and access to natural resources. Smallholders are defined, and the term is interchangeably used alongside, small-scale farmers with meagre resources, or sometimes peasant farmers. Smallholder farmers often have limited resources relative to other farmers in the sector, certainly in South Africa (Department of Agriculture, Forestry and Fisheries, 2012). The term smallholder farmers also refer to farmers who own small plots of land on which they grow survival crops and some cash crops to depend on (Department of Agriculture Forestry and Fishery, 2012). Hendriks (2014) believes that small-scale or medium-sized farmers are not lifting people out of poverty, seeing smallholder farmers as unproductive and backward. Given these different views towards small-scale farmers, this study attempts to analyze the socio-economic impact of the palm oil industry and smallholder farmers in the reduction of poverty and the promotion of economic growth, compared to the industry's negative environmental effect.

The socioeconomic impact is defined as an entrepreneurial, not-for-profit activity that seeks to enhance the social, economic and environmental conditions of communities. The environment is defined as a complex of many variables surrounding man, as well as all other living organisms, and including land, water, air and the inter-relationships which exist (Kalavathy, 2004). The concept of sustainable agriculture is understood as agriculture with a positive impact on natural resources and social and human capital (Pretty and Bharucha, 2014). Velten, Leventon, Jager and Newig (2015), quoted in Goldman (1995), define sustainable agriculture as an integrated system of plant production and practice having a site-specific application that will, over the long term, enhance environmental quality. The study will attempt to demonstrate that smallholder farmers are part of the solution to poverty alleviation, on the condition that human capital and resources are available to them.

2.12 Discussions

This chapter presents the analysis of the socioeconomic impact on smallholder farmers and a theoretical framework for the study. By reviewing the literature, the appropriate theoretical framework of Sen's approach was selected alongside the two schools of thought: inter-generational and intra-generational. We argue that the socioeconomic impact of palm oil on smallholder farmers can be analysed by uncovering the different terms and concepts such as capability approach, poverty alleviation, poverty measurement, economics, agriculture development, palm oil plantation, smallholder farmers, socioeconomics, environmental issues, inter-generational and intra-generational schools of thought, sustainable agriculture. The theories of Sen help to analyse the socio-economic impact of the palm oil industry on smallholder farmers.

2.13 Conclusion

This chapter has provided a review of the literature around agriculture in general and the palm oil industry in particular. Mechanisms for poverty eradication, economic growth and job creation using palm oil were discussed. If small-scale farmers are to be able to achieve their objectives of bringing sustainable development to communities in rural areas, there is a need for peace and unity. The ethnic war was identified as a cause of poverty in Burundi, the setting for this case study, meaning that small-scale farmers can only fulfil their role as pillars of economic growth if unity and peace are given priority. The socioeconomic impact and the two schools of thought, inter-generational and intra-generational, were discussed. This research fills a gap by considering the benefits of sustainable palm oil production in the context of the socio-economic challenges facing Burundi. This study will impact on the ability of rural smallholder farmers to enact longer-term plans to improve their livelihoods, particularly concerning how palm oil production can influence the socioeconomic problems facing the people of Burundi, including poverty, unemployment and economic stagnation.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology used in this research, and it comprises the scope of the study, qualitative and quantitative methods, research design, case study design, participants and sampling procedures. Besides, the chapter also discusses the data collection techniques that were used and how data were analysed. Research principles, such as validity and ethical consideration of the research were also discussed.

3.2 Research design

A case study research design was used to investigate the status of the impact of the palm oil industry on the smallholder farmer in Rumonge, Burundi. A research design, as noted by Johnson (2002) and Usher (2000), is any kind of research that the researcher is dealing with and depends on the title of the research, the research questions, the theories, the methods and the type of data required. On the other hand, John (2008) states that the research design is a plan for research. It is a plan that specifies the selection of the research participants, the data-gathering techniques to be used, and research design is a plan or a strategy that is developed to seek and discover answers to research questions. It is the data analysis to be done (Maree, 2007). This is in line with Taylor (2005), who points out that a research design is a plan or a strategy that is developed to seek and discover answers to research questions. It is a systematic arrangement of procedures and methods of research in which the entire process of sampling, data collection, analysis and interpretation of the results are encompassed (Creswell, 2009). The research design adopted in this study is a case study narrative design as it assisted the researcher in getting

information of the socio-economic impact of the palm oil industry on smallholder farmer in Rumonge urban centre in the Republic of Burundi.

3.2.1 Research paradigm

This study adopted the qualitative and quantitative research methodology (mixed methods research) to investigate the impact of palm oil production on poverty alleviation and economic growth in Romonge. As highlighted in chapter 1, qualitative and quantitative research methodology is a method of inquiry that seeks to understand the social and economic aspects of people (Alasuutari, 2010; Flick et al., 2004). This means that qualitative and quantitative research provides understanding and descriptions of participants' perceptions of phenomena, and it describes rich information as situated and embedded in the local context (Kura, 2012).

In respect of the research paradigm, the study used the pragmatist approach because it was the most relevant and robust approach to answer both qualitative and quantitative research questions (Creswell, 2009) on how the production of palm oil can contribute to alleviate poverty and promote the economic growth in Romonge area. Qualitative and quantitative research is a fundamentally interpretative technique because the researcher has the privilege of collecting data within the natural setting and the researcher sought to record, transcribe, interpret and describe the data which addresses the meaning of naturally occurring phenomena (Tech, 1990). Further, Kura (2012) also points out that qualitative and quantitative research focuses on the analysis of the text to discover embedded meanings; how the production of palm oil is split between plantations and smallholders and how palm oil can be used to alleviate poverty and promote economic growth. The current research aims to understand the perceptions of the participants using interpretation as one of the techniques that can be used in qualitative and quantitative research. Kura (2012) states that qualitative and quantitative research methods are used in social sciences, and their usage is mainly determined by the nature of research phenomena. This study seeks to understand how the palm oil industry can impact on the smallholder farmer in the Rumonge area of Burundi.

According to Holliday (2002), qualitative and quantitative research methodology also sets up research opportunities designed to lead the researcher into the field where they can be in a

position to discover the participants they are dealing with. Maree (2007) supports the above view and adds that the researcher in qualitative and quantitative studies usually goes out into the field to investigate people in their natural setting such as families, schools, homes, communities and countries with the sole idea of collecting in-depth information that will help them record, present, analyse, interpret, encode, transcribe and describe data. Kura (2012) confirms that the researcher in qualitative and quantitative research usually collects data in natural surroundings. Thus, it may be argued that the data and the conclusions are not based on the statistical factors, but they are analysed thematically using descriptive analysis. The researcher interviewed participants on the socio-economic factors that determine dominance in Burundi, and on the status of the Rumonge economy. The researcher also collected written documents in the form of texts, which was written in Rumonge palm oil industry. These documents assisted the researcher in finding the similarities and differences between the socio-economy impact of the palm oil industry on smallholder farmer in Rumonge and elsewhere. Using the qualitative and quantitative approach also assisted the researcher in collecting data which provided a detailed description of events or phenomena (Carson, Gilmore, Perry & Gronhaug, 2001). The current research sought to find out the perceptions of the Burundian-Rumonge people in order to get data that would provide a detailed description on the issue of the socio-economic impact of the palm oil industry on the smallholder farmer in Burundi that is dominated by the elevation of poverty in Rumonge community (Austin, 2006). Qualitative and quantitative research methodology gives room for the researcher to analyse the socio-economic factors such as education power amongst other factors. It also investigated the relationship between the palm oil industry and the dominant smallholder farmer as well as the perceptions or attitudes of people in Rumonge community (ACAPS, 2012). The current study aimed at understanding the impact of socio-economic factors that affected the smallholder farmer in Rumonge community, which factors could be analysed qualitatively and quantitatively.

Furthermore, qualitative and quantitative research methodology often deals with a minimal number of participants, but is in-depth and describes complex phenomena (Boyce & Neale, 2006). The complexities of the real world are varied according to different factors such as political, socio-economic and cultural factors (Kura, 2012). To clarify this idea, Katalayi (2014) states that sometimes the complexities can be hierarchical in an economic situation. This means

that the complexities of phenomena are due to economic endangerment as well as what transpires within people's lives, their perceptions or attitudes, cultures, political, psychological and economic factors and how people make sense of their world through economic meaning (Gibbons & Sanderson, 2002). In qualitative and quantitative research, interpretive research minimises the weaknesses of the research approach via methodological triangulation of data collection (Yeasmin & Rahman, 2012). Triangulation is a process of verification that increases validity by incorporating several viewpoints and methods (Yeasmin & Rahman, 2012). In the social sciences, the term triangulation is defined by Yeasmin & Rahman (2012) as the combination of two or more theories, data sources and methods in one study of a single phenomenon. According to Creswell (2009), qualitative and quantitative research methods use different data collection techniques as a means to collect data such as; in-depth, semi-structured interviews, documents analysis, focus group discussions and narratives. It assists the researcher to describe the phenomena, actions and events in a more informed manner.

3.3.1 Advantages and Disadvantages

The advantage of qualitative and quantitative research is that the levels of descriptive needed in qualitative and quantitative research tend to be quite specific. Most qualitative and quantitative research studies focus only on one particular social phenomenon within a community in order to understand the phenomena under study (Atieno, 2009). In this study, the advantage of using the qualitative and quantitative method was to get in-depth information of one specific phenomenon, which is the Socio-economic impact of the palm oil industry on smallholder farmer in Rumonge urban centre in Burundi. The disadvantage of using qualitative and quantitative research methodology is that the researcher spends much time in the field to collect and record data. Transcribing, presenting, analysing, discussing and describing data is also time-consuming (Kura, 2012; Moriarty, 2011). Besides, it is challenging to use qualitative and quantitative methods to handle large sets of data since data analysis is often time-consuming (Kura, 2012; Moriarty, 2011). This was experienced in this study, especially in analysing, transcribing and recording data during interviews. These took time because most of the interviews were Kirundi languages, and had to be translated into English.

3.3 Data Required

The study sought to generate three sets of data. The first is qualitative data in the form of words or text was generated using interviews and focus groups. The second set of data was numeric data which was obtained through a survey questionnaire. The third set of data used in the study is secondary data or documentary evidence; which was used to substantiate and validate the findings of the study.

3.4 Study Area

This research took place in Rumonge District in the Republic of Burundi. This location was chosen for two reasons. Firstly, Burundi is a producer of palm oil, and secondly, it is also one of the poorest countries in the world where socioeconomic challenges are severe. The research data was gathered in the Republic of Burundi, particularly from Rumonge District, situated in the east of the Bujumbura province, the former capital of Burundi. The area was chosen as a research location based on the fact that palm oil plantations are found in this province, and the level of poverty is too high. The smallholder farmers were involved in palm oil production from the colonial era to the present. The area is located on the coast of Lake Tanganyika, which separates the Democratic Republic of Congo and Tanzania. Rumonge province was separated from the Province of Bururi, the province where all the presidents of Burundi from 1966 to 1993 originated. All of the organizations which deal with palm oil are also located in this area. In particular, seeds are selected, and the germination of small palm oil trees occurs in this location

In this research, the main focus was to investigate the socio-economic impact of the palm oil industry on smallholder farmer: a case of Rumonge environmental impact of palm oil, and its socio-economic benefits accruing from development in the Republic of Burundi. The scope covered the problem of the palm oil and the need to find a balanced approach that supports economic development at the same time as protecting the environment and the rights of local communities, workers and indigenous peoples like the Rumonge palm oil industry in Burundi. The scope is defined by Wehmeier et al. (2010) as the ability to research the purpose of achieving a goal. The scope also refers to the range of things that the subject deals with. The qualitative and quantitative methodology was adopted in this study. This chapter discusses how research participants' verbatim responses in face-to-face interactions on the socio-economic

nature of Rumonge, the socio-economic factors affecting the people of Rumonge, their perceptions towards the impact of socio-economic on palm oil and the strategies used to alleviate poverty in the area.

3.5 Target Population

Smallholders' farmers from Kizuka: Four smallholders farmers selected from kizuka area were interviewed. Smallholders provided information and clarified the issue on Burundi's economy like the Rumonge economy. Four smallholders from kizuka were interviewed to explain about the origins of the palm oil in Burundi. They were also interviewed on the economic factors that are affecting the smallholder farmer in Rumonge and the strategies they used to revitalise the status of the economy like the Rumonge economy in Burundi.

- a) Four smallholders from Busaga: As has been highlighted already, four smallholders from Busaga in District of Rumongewere were interviewed. They were asked to provide information and clarified the issue on why the palm oil in Burundi like the one in Rumonge became vital. This group of smallholders were also interviewed to explain the origins of the palm oil industry in Rumonge. They were also interviewed on the socio-economic factors that are affecting the Rumonge economy in Burundi and the strategies they used to maintain the status of the economy in Burundi

Another four smallholders from Dama in Rumonge District: Four smallholder farmers who originated from Dama area were interviewed on socio-economic factors that are affecting Burundian economy, particularly the Rumonge economy. Four smallholders' farmers from Dama area, who had settled in that area for more than 30 years, were also interviewed.

The Other groups from Birimba: The researcher interviewed four smallholders from Mulembwe on the status of the Rumonge palm oil industry; they provided information and clarity on the issue of how the Burundian's palm oil industry impact on smallholder farmer, like the Rumonge palm oil, the industry became important. In total sixteen smallholders selected from four areas of District of Rumonge were also interviewed to explain the origins of the palm oil industry in Burundi. They were interviewed on the economic factors that affected the status of the

smallholder farmer of the Rumonge in Burundi. The researcher asked them whether they used any strategies to revitalise the status of their economy.

Managers from the chamber of commerce: Eight (8) managers were interviewed individually and gave in-depth information on the socio-economic nature of the Rumonge in Burundi. They were asked to explain the economic factors affecting the smallholder farmer. The researcher also asked them whether or not they had used any strategies to revitalise their own economy.

Eight (8) Activists from Environmental affairs: All the eight activists from Environmental affairs were interviewed about in-depth information regarding the status of the Rumonge palm oil industry in Burundi. This was also a way for them to understand the issues of the impact of the palm oil industry on smallholder farmer, which were critical issues for this study. Interview questions explicitly focused on the socio-economic nature of the Rumonge. The Environmental affairs activist were also asked to explain the economic factors affecting the smallholder farmer and the impact of the palm oil industry on the smallholder farmer in Burundi, and the strategies that could be used to revitalise the status of the economy.

Note-taking and Recording: The researcher recorded the participants during the process of interviews, group discussions and also took notes. The researcher noticed that the participants were happy about being recorded and had no problem with his taking some notes since they were excited by the fact that what they were saying was accurate.

3.6 Sampling design

For this study, the target population were smallholder farmers, environmental activists, managers and key informants. The decision was made to select a sample of 400 smallholder and subsistence farmers of palm oil, of whom 300 responded. Many declined participation based on political fear, as Burundians fear that the information will end up being used for political reasons. Questionnaire A, consisting of 20 questions, was prepared and distributed to the 400 smallholder farmers, and 300 responded. Questionnaire B was also drawn up for the managers and environmental activists using convenience sampling methods. Twelve participants for

questionnaire B were targeted. However only eight completed the questionnaires, plus eight participants from the environmental side who accorded the oral researcher interviews. The qualitative aspect, it was decided to select a group of four small-scale farmers to be interviewed in each area from a hundred who completed the survey questionnaire. To spread across the region, purposive sampling was used to select farmers to participate in the interviews. The selection process ensured that farmers had an equal chance to be selected. The study used a sample size of (100) among that (4 smallholders farmers in each area of Rumonge District these include Kizuka, Busaga, Dama and Birimba, were selected. A total of (16) smallholders farmers) were selected of these were eight(8) female, and eight (8)) were male. According to Michael (2008), a sample is a group of people that the researcher uses as the participants to gain information for their studies. Four smallholders farmers from Kizuka between thirty (30) and fort five (45) years of age clarifies the issues of the palm oil industry to us, and how it benefits the household income generations. Four other smallholders farmers from Busaga, the ages between forty(40) and fifty(50) explain to us the challenges and benefit to the palm oil industry. Four other smallholders farmers from Dama twenty five(25) and thirty five(35) of age were in the position to be able to tell us the challenges of palm oil farming and market-related issues. The fourth group of smallholders farmers fifty-five (55) and Sixty five(65) from Birimba explain us with much confidence the joy they are raping in agriculture of palm oil and it benefits to them. In total sixteen (16) smallholders farmers from four (4) different area of Rumonge both female and male give us information around the palm oil industry

According to Rossouw (2003), sampling is the process of selecting a particular group under the research. Babbie (2010) states that a group of people that are chosen from the population of participants who provide the data to be analysed in the research, that group is known as a sample and the process sampling. Sampling is simply the selection of a part of the population or participants of the research area that will be a representation of the whole population (Michael, 2008). Bernard & Ryan (2010) confirm that there are two main kinds of sampling used to do research, which is probability and non-probability sampling. This study used the non-probability sampling method. Michael (2008) defines non-probability sampling as a sampling method focusing on different kinds of sampling designs which include convenience, quota, snowball and purposive sampling. In the same line of thinking, Kamwendo (2004) states that non-probability sampling derives from targeting a particular group of research participants. Non-probability

sampling has the same distribution of participants with similar characteristics, but it does not seem to have any statistical meaning (Michael, 2008). The current research used non-probability sampling because the smallholders and key informant were selected purposively as a group of participants to provide information on the impact of the palm oil industry on smallholder farmer and it is presented, analysed and interpreted in Chapter (5 and 6) of this research. As noted by Bryman (2012), purposive sampling is simply one of the non-probability sampling methods. It is a method where the researcher selects the participants they believe to be representative of the group they are investigating. This is because the researcher selects the case to be studied based on their judgement of the typicality (Cohen et al., 2006). In the current study, key informant was purposively selected based on their capacity to give the researcher in-depth and rich information on the impact of palm oil on the smallholder farmer in Rumonge, Burundi. In support of the above view, Michael (2008) points out that the selection of samples, such as purposive sampling, is often accomplished by applying knowledge of the participant to select in a non-random manner, a sample of elements that represents a cross-section of the participants. It is for this reason that ACAPS (2012) states that sampling is made by obtaining the original data to answer the research questions. The main objective of the purposive sampling method is to produce a sample that can be considered representative of the population (Michael, 2008). As stated above, the current study used the purposive sampling method by selecting the Burundian of Rumonge people in one community in Burundi. The Uresearcher chose the Rumonge urban centre in Burundi as the study area where he needed original data from this group of people.

3.7 Data collection Tools

Data collection involves using the measurement instruction on the sample or the case selected for the study (ACAPS 2012). This is described as a form of generating and recording data (David & Sutton, 2004). The qualitative and quantitative data collection procedure was used to investigate the socio-economic impact of the palm oil industry on smallholder farmer in Rumonge, Burundi. Qualitative and quantitative data collection answers the questions of why, how, what, where and when (ACAPS, 2012). For example, such questions as “why do palm oil industry impact on smallholder farmer in Burundi, like the palm oil in Rumong?” were asked from the participants. “What are the socio-economic factors affecting Rumonge urban centre in Burundi?” and “What

are the coping strategies used by Burundians of Rumonge people to revitalise their economy?” were also asked. In qualitative and quantitative research, the data is most often collected via face-to-face individual or focus group interviews with the speakers of the Rumonge community. However, the researcher also made an effort to physically contact Burundians of Rumonge in Burundi and explain to them the aims of the study, procedures, and processes to be followed when conducting the research. The Rumonge communities were more than willing to participate in the study as they saw it as an opportunity to talk (Ferreira, 2014; Rocca, 2010) about their situation. Therefore, the researcher collected data from the participants by using the relevant tools such as a tape recorder, individual interviews, focus group discussions or interviews and written documents. The researcher met (8 people who work with Ruzizi palm oil farming company and three people in Savorone one of the company who monopolises the whole market of palm oil in Burundi) in Burundi where he did personal and focus group interviews with (16 smallholders farmers). During each interview, the researcher used the services of an interpreter (if that was the case) to interpret for him as some participants were answering in their local languages. The researcher also took notes and recorded the dialogue, with the permission of the research participants. After the individual and focus group interviews, the researcher transcribed and typed information. He assured the participants of anonymity and confidentiality by giving them code names (Corneille, Lee, Britton & Barker, 2015; Mafora, 2013). The term code is defined by Wehmeier et al. (2010) as a word, letter, number or another symbol that represents a person who would have given information for recording information secretly. The participants of this study were selected purposively because they were the ones who could provide adequate and relevant information about the history of Rumonge in Burundi. The data collected provided the researcher with ideas on how the palm oil industry impact on smallholder farmer of the Burundians people. Thus, the data was collected by the researcher and analysis of in-depth interviews, that is individual and focus group interviews and documents, was manually carried out qualitatively and quantitatively. Instruments that were used to gather data for this study were as follows:

3.7.1 Individual Interviews

Individual interviews were utilised in this research. Interviews are defined as a way of asking interviewees, the Burundians of Rumonge people, in this case, oral questions to get answers about their perceptions on the subject of inquiry; in this case the impact of the palm oil industry on smallholder farmer in Rumonge (Moriarty, 2011). According to Bell (2005), an interview is an instrument used as a research technique that is generally considered as one of a range of methods in qualitative and quantitative research. An interview is viewed as a two-way conversation which is initiated by the interviewer for the specific purpose of obtaining research-relevant information (Creswell, 2007). As noted by Maree (2007), an interview is a method of data collection that helps the researcher to understand participants' knowledge and social reality. In this study, the speakers of Rumonge were interviewed so that the researcher could understand their perceptions about their situation. Individual interviews and group discussions with Burundians of Rumonge people were adopted to gather in-depth information on the socio-economic nature of the Rumonge in Burundi. The information was tape-recorded. According to Gomm (2008), qualitative interviews are used to paint a picture of the respondents as people with their ways of understanding the world. The researcher, in this study, used semi-structured interviews with open-ended questions (Al-Khasawneh, 2010; Sarma, 2010) because participants were bound to have their perceptions with regards to the subject of the contribution of the socio-economic factor in the impact of the palm oil industry on smallholder farmer of Rumonge in Burundi. In this study, the research questions that were used as the basis for the interview questions asked were as follows:

- What is the socio-economic nature of the Rumonge?
- What are those factors that are affecting the Rumonge economy?
- What are the perceptions of the Rumonge people in Burundi about the impact of the palm oil industry on smallholder farmer?
- What strategies can be used to revitalise the status of Rumonge economy?
- The interviews were semi-structured.

According to Hanock & Algozzine (2006), a semi-structured interview is significant in qualitative and quantitative research. In order to pose predetermined questions, the researcher used semi-structured interviews to ask questions and follow-up questions to investigate serious issues of interest from the participants (ACAPS, 2012). According to Moriarty (2011), qualitative and quantitative interviews are generally described as being both semi-structured and in-depth interviews. Semi-structured interviews focus on open-ended questions that guide the researcher to ask specific questions in different ways to collect data. In the same context, Moriarty (2011) also notes that semi-structured interviews assist the researcher in discovering hidden information on the issues that she or he may not have considered. In-depth interviews focus on one or two topics in detail. The advantages of in-depth interviews are that they provide more detailed information as compared to other data collection methods. They also provide a more relaxed atmosphere in which to collect information, where the participants feel comfortable having a conversation with the researcher (Boyce & Carolyn, 2006). Besides, using the interview is that it is flexible, and it can be interpreted differently but can give the same meaning of a phenomenon. One of the disadvantages of using interviews is that it is time-consuming in terms of travelling for fieldwork. That time is required for transcribing, presenting, analysing and interpreting data (Drew et al., 2008). The disadvantage of in-depth interviews is also that probing for information may lead to biased. For example, responses from the community members of Rumonge can be biased due to the risk they can face if they provided sensitive information (Boyce & Carolyn, 2006).

During interviews, the researcher tape-recorded the dialogues and took notes. After interviewing the Burundians of Rumonge people, the researcher typed and transcribed data (Kerr, Lupafya & Shumba, 2013). Therefore, each of the participants was given a new identification for purposes of anonymity and to easily keep the stories (Li, Fox & Almarza, 2007). As explained above, (example five (5) elders, eight (8) parents and two (2) chiefs) were interviewed in this study because they were useful and were the ones who had information on the Rumonge

economy under their age. On the other hand, (For Example five (5) PhD lecturers specialising in economy development) were interviewed because they possessed empirical evidence on the issues of the palm oil industry. Furthermore, (For example, ten (10) university students were also interviewed) because they had some ideas and gave their perceptions or opinions on the history of Rumonge and palm oil industry. The Burundians of Rumonge people provided first-hand information on the issues of the palm oil industry like the palm oil of Rumonge in Burundi.

3.7.2 Focus group discussions

A focus group is defined by Hennink, Hutter & Bailey (2011) as an interactive group discussion between selected participants and the researcher. Focus group discussions can be unstructured group interviews where the focus group leader actively encourages discussion among other participants and the researcher concerning the research matter of the investigation (Engel & Schutt, 2009). As noted by Creswell (2009), group interviews might be more likely to produce valid data than individual interviews. Drew et al. (2008) state that in focus group interviews, the researcher records information on tape or video camera in order to obtain an accurate data record of the discussion. Welman, Kruger & Mitchell (2005) state that, a research design guides the researchers in collecting data about research phenomena from the focus group participants. Qualitative research uses a small number like five to eight participants for a focus group interview or discussion as an instrument for collecting data (Hennink, Hutter & Bailey, 2011). In this study, four focus group discussions were held with four groups of four (4) selected smallholders farmers. Gender, different levels and other factors were considered in the selection of the participants for the focus groups. Therefore, focus group discussions, or interviews were used as complementary to other methods of data collection, such as individual interviews and document analysis. The four focus group interviews were conducted at the four areas of Rumonge

The advantages of using focus group discussions are that they help in gathering varied participants' views on the phenomenon in minimal time. Focus groups widen the range of responses (Maree, 2007; Krueger & Casey, 2009). Non-verbal data gathered through focus group discussion or interview processes provide other data insights such as participants' perceptions of the phenomenon under study. A focus group is a dynamic group where the researcher can even modify questions (Maree, 2007). The group dynamics generate new information about the topic;

hence the research objectives can generate valuable information for the study (Tichapondwa, 2013). Soklaridis (2009) confirms that in focus group discussions or interviews, similarities and differences in participants' perceptions and experiences are provided directly through group discussion rather than individual interviews. The disadvantages of using focus group discussions are that it is time-consuming and needs to be well planned (De Vos et al., 2011). Also, individual expression and perception or opinion can be influenced by the presence of others in the group, and as a result, artificial and biased responses can be received (Babbie, 2010). Focus groups may produce biased data. Some participants can dominate the group discussions by giving in-depth information, while others can be shy and reserved members, especially in a situation where power exists among the participants (Maree, 2007). This instrument was very relevant for the current study, which aimed at understanding the views of the people about palm oil industry

3.7.3 Document Analysis

As noted by Creswell (2009), qualitative research methods use document analysis as one of the main tools for data collection. The term document is defined by Wehmeier et al. (2010) as an official written record. Therefore, the documents that the researcher analysed provided vital information on the Rumonge people and palm oil farming.. ACAPS (2012) states that document analyses are a data-gathering method that uses all types of written documents to shed light on the phenomena under study. Written data sources may include primary and secondary sources of data collected through written documents.

On the other hand, Maree (2007) confirms that written data sources may include published and unpublished documents. Besides being a source of data, official written documents of the. According to ACAPS (2012) and Maree (2007), the primary sources of data are original. In addition to the primary documents, the secondary sources refer to the second-hand information that was previously published (Mertens, 2010; Maree, 2007). In the current study, the researcher used written comments on document analysis to get original information on the status of palm oil role in poverty alleviation

Also, document analysis has many varieties, for example; document study, content analysis and text or phrase analysis (Sarantakos, 2005). This study used a document study because it involves collecting data through socio-linguistic, linguistic and cultural data (Austin, 2006). The current

study sought to understand how the socioeconomic impact on smallholders farmers in Rumonge, Burundi. These documents shed light on the status of. The advantage of using documents analysis in research is that it helps the researcher to gather data for answering questions that interviewers cannot address and sheds light on the phenomena (Maree, 2007). For example, document analysis was used to find the similarities and the differences among the smallholders of Rumonge from four different area in this District, 2007). This is because data from the documents was analysed and could be served as written evidence from the sources, like interviews (Cohen, Manion& Morrison, 2007). Documents of all types under primary and secondary sources can help to gain information on feelings, culture, history, politics and economy palm oil brought to Rumonge People . According to ACAPS (2012) and Babbie (2010), document analysis requires less time for data collection when compared to other instruments due to the availability of information. The researcher used the following documents for document analysis: written document in the form of letters, related to the status of the the smallholders farmers of palm oil.

3.7.4 Questionnaire

According to Asika (2004), a questionnaire is a vital document constructed by the researcher as an instrument for gathering information from respondents. For this study, the researcher put together a set of close-ended and open-ended questions, to enable participants to give their views and feelings around palm oil farming freely. The combinations of questionnaires as quantitative data gathering tools alongside interviews as a means of qualitative investigation allowed triangulation. Schoonenboom and Johnson (2017) explain triangulation as mixing of data types so that diverse viewpoints can be brought together and tested for convergence. Denzin (1978) viewed triangulation as a combination of methodologies in the study of the same phenomenon. Jick (1979) underlined that triangulation strengthens researchers' confidence in their findings. Further, Jick (1979) noted that using a multi-method design helps in capturing the deeper problems of the research in which a blend of both qualitative and quantitative methods delivers testable results. Ngulube (2013) points out that triangulation brings out the complementary strengths of qualitative and quantitative methods. Strydom, Weyers and Huisamen (2008) note that triangulation increases the comprehensiveness and the ability to confirm trends and validity, but requires more data collectors and data

preparation. Denzin (1994) and Ellefsen and Foss (2002) indicate that using a combination of methods can lead to finding more accurate results. A combination of both quantitative and qualitative methods adds strength and width to the research (Denzin and Lincoln, 2001).

Furthermore, the complementary use of both questionnaires and interviews in this study was seen as a mechanism to prevent the loss of information from the participants. The concept of complementary qualitative and quantitative research is also harmonising. Maxuel (2016) points out the use of complementary qualitative investigation alongside statistical analysis.

Similarly, Jick (1979) notes that complementarity is where the notions emerging from both the qualitative and quantitative data need to be viewed as complementary instead of contradictory. Green (2007) categorised complementarity as the mechanism of creating an understanding of a complex subject by using different methods to gain insight, and complementarily combines quantitative, qualitative methods in order to gather the information from both methods (qualitative and quantitative) for having a clear understanding of the subject under study (Chen, 2006). Bryman (1992) views complementarity as a method used to respond to the problem. Pope and Mays (1995) indicated that qualitative methods could complement quantitative methods. Morse (2003) views complementarity as a feature of comparing two different types of the data set.

3.7.4.1 Administration of the questionnaire

This study used questionnaires distributed by hand, followed by a smaller number of face-to-face interviews. Vos, Strydom, Fouche and Delport (2002:198) classify questionnaires as telephonic, face to face or paper-based. In order to fulfil the objectives of this study, the questionnaires were prepared and delivered by hand to the target group. Before that, an explanation was passed on to inform participants that the questionnaires are for research purposes. The choice to participate is voluntary, which is particularly important as in Burundi, there is a political problem, and the researcher could not call a public meeting for smallholder farmers. The researcher, therefore, decided to go to the place where the farmers operate, such as at a milling station. On arrival, we asked permission of the head of the station to allow us to interact with the farmers and to give them the questionnaire to complete. For the managers and environmental representative, who gave oral interviews, we met them at their offices. After completing the questionnaires, purposive sampling was used to select participants for interviews.

3.8 Data Analysis procedure

In this study, data were analysed according to themes that emerged during data analysis. This was because categories and themes become apparent during the individual interviews, focus group discussions and document analysis (Tichapondwa, 2013). De Vos et al., (2005: 333) define data analysis as a process of bringing order, structure and meaning to a mass of data collected. As noted by Hancock & Algozzine (2006), a qualitative researcher understands the problem under investigation from the participants' perceptions, for example, about their views. It was an objective of this study to understand the perceptions of smallholders farmer about the economy of Burundi using palm oil crop to alleviate poverty about their . Onwuegbuzie, Leech & Collins (2012) define data analysis as the systematic process where the researcher analyses and arranges data from interviews and written documents, among other instruments, to enable them to increase the understanding of the phenomena under study and presents evidence to others on what the researcher has unravelled transparently.

Data is organised and transformed into manageable items, searching for patterns and deducing what is valuable and what is to be learnt. Data analysis can therefore be referred to as the process of bringing order, structure and interpretation to the mass of collected data in the generation of patterns, themes, constructs and inferences (Tichapondwa, 2013). It is for this reason that Maree (2007) concludes that data analysis in qualitative research establishes how participants make meaning of a specific phenomenon by analysing their perceptions, understanding and experiences in an attempt to approximate their construction of the phenomena. According to Bilatyi, Rembe & Shumba (2014) and Karanja (2006), in qualitative research, data from individual and focus group interviews, and written documents are grouped into themes according to the research objectives. The themes, however, were developed from the categories of emerging patterns of the transcribed and discussed data, objectives or questions, theoretical frameworks and literature review. In this study, the data from interviews, group discussions and written documents were grouped into themes according to the research questions. A study conducted by Lobe, Livingstone, Olafsson & Smões (2013) confirms that researchers in qualitative studies may analyse data by giving each participant a code name in focus group discussions or interviews' responses and are grouped into categories that bring together similar meaning, concepts and themes that emerged from the participants. This is because of the issue of

confidentiality and respect for the privacy of the participants (Lobe et al., 2013). Personal and group discussions were done in this study, and each participant was tape-recorded. Spoken and written answers were analysed by the researcher for what they could reveal about their farming mechanism towards palm oil .

The data collected from the survey was captured and analysed using both bivariate and multivariate methods via SPSS. The survey data were captured and coded, then entered into the SPSS software package. Factor analysis was adopted, and the results presented in tables, charts and are discussed accordingly. The study also utilised the literature reviews, articles and journals and in particular A Sen's theories in order to make sense of the findings.

3.9 Validity and Reliability

The researcher in this study ensured validity and reliability. The term validity is defined by Babbie (2010) concerning how accurate instruments reflect the concept to be measured to ensure that the results are meaningful and credible. Validity is the degree to which conclusions of the research are sound. To ensure validity, the researcher used, tried and tested measures to ensure that the results were meaningful and accurate conclusions could be drawn from results (Babbie, 2010). Validity is essential in the study because it informs people on whether an item describes what it should (Maxwell, 2008; Kasenga, 2007). In addition to validity, reliability is also another measuring instrument of concepts, and it refers to the degree to which the results are repeatable and consistent in producing similar data (Ayodele, 2012; Cohen, Manion, & Morrison, 2007). Both reliability and validity factors were paid attention to in this study since this was a qualitative and quantitative study. Also, this was because the researcher recorded and used data that was collected directly from the Rumonge people where he conducted personal interviews and focus group discussions by listening to their voices and also used data from written documents on the Rumonge palm oil industry in Burundi in order to ensure accurate results.

3.10 Ethical considerations

As explained in chapter 1, the researcher obtained ethical clearance from the Ethics Committee of the University of South Africa in South Africa utilizing a letter asking for permission to research Burundi (see Appendices A and B). The clearance was a written document from the

University of South Africa addressed to the speakers of the Rumonge palm oil industry in Burundi. This means that the document was addressed to the Burundians of Rumonge people, speakers of the Rumonge palm oil industry in Burundi. Many authors have written on the issue of the ethical consideration, for example, Hanock & Algazzine (2006) state that any kind of research that is dealing with people as research participants must adhere to legal and ethical requirements. The participants in that research should not be deceived and should be protected emotionally and mentally, among others, from whatever information they gave the researcher. This study used the Burundians of Rumonge people as the research participants, and ethical considerations were adhered to by the researcher before he conducted interviews with them. The researcher explained the objectives of the study and assured all the participants that the study's aim was not to criticise what was going on in palm oil industry and the smallholder farmer of Burundi, but the reason was to see how this study could inform decision-making processes to revitalise the socio-economy of the country (Maseko & Moyo, 2013; Sarivaara, Uusiautti & Maatta, 2013). In supporting the idea above, Olivier (2004) points out that research participants would want reassurance that they would not be mentioned in the study and that there would be no way in which the perceptions they expressed could be associated with their names. Therefore, one of the strategies to achieve this was to use code names rather than their real names. This was to ensure that anonymity as a requirement of ethical considerations was addressed. The researcher ensured that the participants were at ease, and they were not forced to take part in the research.

3.11 CONCLUSION

This chapter presented the qualitative and quantitative research methodology employed by the study, which used a case study design narrative. The various characteristics of qualitative and quantitative research methodology were explained to justify its relevance to this research. Semi-structured interviews, focus group discussions or interviews, and document analysis were discussed as the data collection instruments of this study. The chapter also discussed the ethical considerations and other important key features of this study. Data presentation, analysis and interpretation, are the focus of the next chapter.

CHAPTER 4

THE HISTORICAL OVERVIEW OF BURUNDI AND DATA PRESENTATION

4.1 Introduction

This chapter presents the data collected for this study. First, we will understand the history of Burundi, analyse the economic situation and take a historical look at palm oil production in Burundi. The review of palm oil production and processing, specifically by small-scale farmers, will cover costs, harvesting, selling, organisation, government role, challenges, income generation, poverty alleviation and economic growth, about the Rumonge District of Burundi. The main research question of this study was: “To what extent the palm oil industry can promote the quality of life both currently and in the future?” Furthermore, the subquestions were:

- What is the socio-economic nature of the Rumonge District?
- What are the factors affecting the socio-economic of Rumonge?
- What are the benefits of palm oil in Rumonge, Burundi?
- What is the role played by the palm oil farming on poverty alleviation in Rumonge, Burundi?
- What are the challenges experienced by small-scale farmers of palm oil in Rumonge?

4.2 Understanding the history of Burundi

Before we proceed the divide struggle of Burundi, let us first see how it got independence. Burundi had struggled as any other African country to achieve independence in 1962. The optimism of having gained independence quickly disappeared with the assassination of Prime Minister Prince Louis Rwagasore in 1961, who had managed to unite the Tutsi and Hutus (Nkurunziza, 2017). The assassination was carried out by “one of his opponents who seemed to

have acted with the tacit approval of Belgian authority” (Stapleton, 2017:67) to put an end to the unity. Political splits and ongoing fights characterised the period after Independence (Nkurunziza, 2017). Manirakiza and Harroy (1990) highlight that Burundi was divided into two large groups, one named Casablanca in favour of pan-Africanism and the integration of the continent as the best way forward, and a second named Monrovia, also favouring pan-Africanism but based on statehood rather than federalism. In that period, Burundi was characterised by political fighting, plotting, and counterplotting (Nkurunziza, 2017). The Government was unstable. From independence until the end of 1966, there was no government in place, resulting in large-scale political violence in 1965 (Nkurunziza, 2017). Economic development and poverty alleviation were not addressed by the leadership of that time, the Tutsi minority.

From that period up until 2005, power was in Tutsi hands. Little was done for economic development, the focus is on buying heavy weapons to maintain power. However, in 2005 the power transferred to the Hutus after the lengthy Arusha negotiations. The Hutu government have done little to advance economic development, continuing to buy weapons to keep them in power. Similar politics had replaced the politics of the former elite but of a different elite. The problem of Burundi is that the ones who have power control the economy. All the leaders who ruled Burundi, Tutsi or Hutu, have a pre-occupation control the state as their road to wealth and authority.

Burundi did not encounter ethnic violence before colonisation at the end of the 19th Century. The country enjoyed good governance, centralised and resilient under a monarchy which was uncontested (Nkurunziza, 2017). Burundi was structured in leadership with Hutu and Tutsi united. Gahama (2001) confirms that Burundi was powerful among the African kingdoms in the Great Lakes region in the 19th century. Burundi was organised and militarily strong, defeating the Arabs. No slaves were trafficked from Burundi at the end of the 19th Century.

Burundi was a German colony from the late 19th century up to the end of the First World War, then being transferred to Belgium who tried to subjugate the Burundian populations, with little success (Gahamanyi, 2001). According to Bonneau (1949), the first Europeans who penetrated Burundi as missionaries were killed. Consequently, Belgium used different methods to stamp its

authority to undermine the unity and structures of Burundi in order to control the country (Bonneau, 1949). Belgium used the system of dividing the population ethnically based on dissimilarity where the people with long noses were Tutsi.

This division empowered the Tutsi minority in terms of economics, education and military control, at the expense of the Hutu majority who were considered as slaves (Chretien, 2000). Sandra (1953) notes that Belgium considered the Tutsi as superior and born to rule over the Hutus who were considered as backward peasants. This left Burundi as one of the poorest countries in the world, beleaguered by chronic poverty. Small-scale farmers dispersed, neglecting their agricultural activities, while government focused again on buying heavy weapons to keep them in power. Lautze, Raven-Robert, Sontomayor, Seid, Greentree (2012) contend that security is an outcome of the improved livelihood of individuals, households and communities based on crop production, livestock, fish, forests and other natural resources.

4.3 Analysis of Burundi's economy 2004-2018

Following independence in 1962, Burundi experienced incidences of civil war in 1965, 1972, 1988, 1991 and 1993. According to Nkurunziza and Ngaruko (2005), the civil war of 1993 to 2003 killed half a million people and caused one million to become refugees, while banks were paralysed, and the economy stalled. Bank credit was not issued on merit but political affiliation. Nkurunziza, Ndikumana and Nyamoya (2016) note that mismanagement led to the collapse of several financial institutions and high inflation.

From 1985 to 2009, inflation reached over 10% per year, and the average lending rate was 19%, while GDP per capita declined from \$150 to \$101 by 2007 (Nkurunziza, Ndikumana and Nyamoya, 2016). GDP growth was negative for large parts of the 1990s. From 2000, GDP growth was positive but low. Poverty alleviation and economic development were stunted. Borro (1991) stresses that sustainable and robust investment is key to long-term economic growth. Nkurunziza, Ndikumana and Nyamoya (2011) emphasise that Burundi, has remained below 15%

of GDP, and between 1994 and 2003 GDP dropped 5%. Thus, it implies that the economy of Burundi has experienced significantly lousy performance.

According to the African Development Bank (AFDB, 2016), the protracted conflict of 1993-2003 weakened the capacity of the leadership of Burundi to focus on economic development and policies for social welfare. Nkurunziza and Ngaruko (2002) highlight that this period of high instability negatively affected productivity growth which sat at about -5.25% annually, while economic growth ran at a rate of -2.8% per year. Burundi, since independence, never enjoyed the sustainable peace necessary to prevent economic damage.

After 2005 Burundi's government reformed and created a programme to improve the economy (AFDB, 2016). This demonstrates that the economy of Burundi depends on the government to stabilise peace and focus on economic growth. If Burundi can be secure and stable, there is no doubt that economic development can take place, because it has potential in its agricultural sector (coffee, tea and palm oil) and mining (cobalt and nickel) (AFDB, 2016). During the period 2004-2013, the economy of Burundi grew about 4% annually (AFDB, 2016). This allowed Burundi to improve its world 'doing business' ranking from 169 to 117 in 2014. AFDB (2009) predicts that the country could achieve a real GDP growth rate of 7.4% annually throughout 2010-2030 if implementing an infrastructure investment program alongside the development of nickel mines.

4.4 Historical overview of palm oil in Burundi

Agriculture remains the core of the economy of Burundi and is an integral part of the African economy. It has been said that agriculture employs 60 percent of the whole African continent (AFDB, 2016). Palm oil farming existed in Burundi in the 18th century. Ngiye (2017) notes that palm oil trees were found by the explorer Burton (1862), who described the long leaves of the palm oil tree. However, in this period, palm oil was not developed as an important crop except in the Imbo region.

According to Ndayikengurukiye (1986), palm oil was sold in the 18th century in local Swahili markets such as Buyenzi before the arrival of the Europeans, while the Arabs had also

established a centre for palm oil trade in Ujiji. Ngiye (2017) confirms that palm oil trade developed more in the 19th century on the corridor of Lake Tanganyika. Palm oil farming was not immediately established in rural Burundi, only in urban parts such as Usumbura where palm oil was used for cooking. In contrast, in rural areas palm oil was utilised more as medicine (Ndayikengurukiye, 1986). The Arabs taught locals how to make soap, motivating the peasant community to produce palm oil.

According to Ndayikengurukiye (1986) before German colonisation, palm oil was not regarded as an official or nationally coordinated agriculture of Burundi, with only local and traditional methods of production and processing. With the arrival of the Germans in 1910, palm oil became cultivated on a national level. In 1913 sleeping diseases affected the region of Imbo, and it was assumed that the cause was palm oil crops which attracted the small insects considered to be the cause of sping disease. The Germans decided to destroy the palm oil crops of Usumbura and Ruzizi (Ndayikengurukiye, 1986). However, the population were not in agreement as they understood and depended on palm oil.

From 1919 to 1962 Burundi was under Belgian colonial rule. The Belgians were interested in promoting the development of palm oil agriculture along the border of Lake Tanganyika (Nyanza-lac, Rumonge and North of Usumbura), encouraging the population to plant palm oil trees each year (Ngiye, 2015). The Belgians realised that palm oil development was promising and profitable, creating the Society of Agriculture of Rumonge (SOCARU) charged with selecting good nuts for germination to produce young seedlings for replanting, with over half a million trees planted from 1932 to 1948 (Ngiye, 2015).

By 1949 Burundi produced 635 tonnes of palm oil and 250 tonnes of palm kernel, with 565 tonnes of palm oil and 226 tonnes of palm kernel produced by small and subsistence farmers (Ngiye, 2015). Another project was initiated in 1951 to plant 1 million trees for palm oil in the decade to 1962, aiming to reach 18,000 tonnes of palm oil and 7,000 tonnes of palmist by 1954 (Ngiye, 2015).

4.5 The development of palm oil farming after independence.

It has been said that new plan for economic development and social of Burundi (1968-1972) was developed for palm oil farming, particularly to mobilise the farming of palm oil in the region of Imbo (Ngiye, 2017). The government of Burundi realised the potential for palm oil production and intensified production. Despite the profitability of palm oil, the government added initiatives to develop other crops such as rice and cotton in the region of Nyanza-Lac and Rumonge. However, all these plans were disrupted by the civil and ethnic violence of 1972. Although after the violence, the government of that time did not entirely drop the project of developing palm oil farming.

According to Ngiye (2015), another plan was developed for the period 1973-1977 named the quinquennial plan, designed to accelerate the production of palm oil. The government set a target to rehabilitate existing palm oil plantations and added irrigation, where the techniques and conditions were favourable, and this produced 2000 tonnes of palm oil per year. The target was to have 2,000 hectares of plantation in order to produce 4,000 tonnes of palm oil per year (Ngiye, 2017). For this to be realised, the government tried to support the creation of small cooperatives to intensify the growth of palm oil production (Ngiye, 2015). Despite the supportive efforts of the government of that time, these plans failed.

Ngiye (2015) describes the 1978 further quinquennial plan, the Project of Development of Rural Integration of Community of Rumonge (PDRIR) later becoming the Societe Regional de Development Rumonge (SRDR) in order to fit with the objectives of Government to create regional development societies throughout the country. Palm oil production in Rumonge increased to approximately 16,000 hectares producing 18,000 to 20,000 tonnes of palm oil per year (Cazenave-Plarrot, 2004).

4.6 Common challenges of palm oil production

Palm oil helps in responding to social challenges such as poverty, inequality and household income, as well as economic development. Despite the positive contributions of the palm oil industry, there are several short-term and long-term challenges, including critical environmental issues. Aubert, Chakiba and Raurans (2017) assert that the environmental and social impacts of palm oil production have raised concern about deforestation and harsh working conditions.

One of the short-term challenges is economic. For example, other oils such as sunflower and canola are putting the industry under pressure about price and quantity, according to Fry (2009:1), supply and demand present short-term challenges related to the economic cycle movement and long-term challenges related to competition from other oils.

In terms of short-term, Fry (2009) emphasises the fall in the price of palm oil, while in the long-term four challenges facing the industry (1) low yields compared to other sources of vegetable oils (this may be due to inadequate skills in developing productive seeds); (2) labour productivity (related to the mechanisation of harvesting FFB (fresh fruit bunch)); (3) climate; (4) barriers to the use of palm oil (this involves non-tariff barriers against palm oil in export markets).

4.6.1 General constraints of smallholders in Rumonge community

In general smallholder farmers, all face similar problems: access to land, markets and economic know-how. Van Rooyen, Vink and Christodoulou (1987) indicated that smallholder farmers would be able to make economic decisions if the technical and economic constraints they face are removed. Smallholder farmers also face strategic and infrastructure challenges, including transportation and human capital.

The empirical study by Delgado and Siamwalla (1997) asserted that smallholder farmers in Africa face a lack of access to the market and banking transaction mechanisms. Apart from these challenges, the smallholders in Rumonge have additional challenges of conflict. Apart from these challenges mentioned earlier, the challenges in the palm oil industry differ from place to place. In a study in Nigeria related to challenges of palm oil production, farmers of palm oil complained of planting seedlings not treated with pesticides and seedlings less than ten months of age (Ibitoye, Akinsorotan, Meludu and Ibitoye, 2011). Ongoing conflict and environmental issues remain a concern also.

4.7 Nature of palm oil production and processing in Rumonge

The farming of palm oil is seen to be progressing in Rumonge. Palm oil production starts in the nursery for 13 months; then it is passed to the stage of planting in the prepared field. In this stage, water and fertiliser are needed. After two to three years, the first harvest start is done

manually to harvest the fresh fruit bunches. USAID (2010) note that production and farming method is done manually in Burundi.

Smallholder farmers of palm oil either belong to a cooperative or to contract farming schemes with little organisation. In general, they are not well organised and remain removed from market information (USAID, 2010). In Rumonge, there are two kinds of palm oil crops: tenera (which can be harvested within three years of planting) and dura (can be harvested after 5-7 years). Most small-scale farmers have dura palm oil trees. The Government of Burundi through SRDR and OHP are helping small-scale farmers to replace dura crops palm oil with tenera. In most African countries, the farming of palm oil is in the hands of small-scale and subsistence farmers and this is true in Burundi where traditional and subsistence methods still prevail.

In Rumonge, small-scale farmers organised as families, plant their palm oil in their plot. In most cases, each family can have 30 to 50 palm oil trees alongside beans, cassava bread and rice. Gary (2014) added that smallholders produce a diverse range of products in small quantities as a means of managing risks for households, with food supplies balancing cash crop production like palm oil, fruit and vegetable. Because of land problems, large scale farming does not exist in Rumonge. However, two large enterprises are engaging in palm oil farming and processing, Ruzizi, Tanganyika Business Company (BTC) and Sosumo (Society of Sugar Cane of Moso) (Bamber, Abdulsamad and Muhimpundu, 2013).

Ruzizi has forged strong linkages with downstream processing operations in the cane sugar industry, such that the palm oil value chain has emerged as the most critical agri-business in Burundi (Bamber, Abdulsamad and Muhimpundu, 2013). Before relations between Rwanda and Burundi went sour, Rwanda was also getting edible vegetable oils from Burundi, mainly provided by small-scale and subsistence palm oil farming.

Gary (2014) emphasises that palm oil production in Burundi remains primarily a subsistence activity, dominated by smallholders with little knowledge of modern agricultural practices and weak connections to the formal economy. Palm oil is an essential player in supplying the needs

of many families by supporting their livelihoods financially and with food, employing most of the entire rural workforce (Gary, 2014).

There is one large scale company, Savoror, with an industrial size palm oil processing plant in Bujumbura, including vertically integrated business functions such as production, processing, packaging, marketing and distribution (Pandey, 2013). According to Carrere (2010) and the Burundian Ministry of Agriculture (MinAgri, 2011), Savoror has invested heavily to train a large number of smallholder farmer cooperatives, encouraging them to deliver their palm oil fruit to their extraction plants. To date, there are almost 10,000 smallholder producers growing palm oil trees. From 2005 to 2011, palm oil production almost tripled from 5 million to 14 million USD (German, Sconevelde and Pacheco, 2011).

Despite Savoror organising smallholder farmers in cooperatives, Savoror has shifted to form a partnership with Ruzizi to focus on large scale palm oil cultivation, with 700 ha under cultivation belonging to these two companies (Muheto, 2013). This suggests that smallholder farmers could be out of business soon. Smallholder farmers of Burundi cannot compete with these big companies due to their inability to access credit and markets. Gray (2014) notes increasing challenges for locals to remain in business unless they invest in marketing, which is very difficult for smallholder farmers. Besides, Savoror has established kiosks throughout the country to supply anything from the palm oil industry, including cooking oil as there is a high demand for palm oil consumables, locally and internationally (Pandey, 2013).

4.7.1 The cost of palm oil tree plantation in Rumonge District

The development of palm oil in Burundi involves nurseries, producers, plantation and maintenance and the final phase of harvesting. There are more than 10,000 smallholder farmers plus large scale farmers such as Savoror and Ruzizi, owned by a private family, the two have joined together to become the largest producer and processor of palm oil. As elsewhere, palm oil has been grown as plantation crops based on a plentiful supply of low-cost labour (Corley, Wood and Hardon, 1976). In the case of Burundi, the estimation of palm oil grower cost is difficult as smallholder farmers do not have a budget for developing their plots. The mechanisation of labour varies from one smallholder farmer to another. Corley (1976) notes that mechanisation is

necessary where labour costs have increased, although in Burundi, the agriculture sector has no fixed labour cost as it depends on the employees and employer. Smallholders have no options due to the persistence of chronic poverty. Nevertheless, an attempt will be made to estimate costs.

Typically, a palm oil development project starts with the preparation of the field; which includes clearance and ploughing. Second is the preparation of seeds and planting seedlings, always at the beginning of the rainy season in September, unless climate change does not perturb the calendar. The life cycle of seedlings depends on the country. In some countries, for example in Liberia, seedlings are planted out at six months, but in Malaysia, it is 13 to 18 months. Let us take a pilot project of one hectare with 148 seedlings each costing about \$4 about 9500FB (Burundian Francs). The cost of land clearing and ploughing, taking out grasses and weeding depends on whether the farmer pays for this or does it himself.

Baumann (2000) indicated that contract farming could be arranged in advance. In Rumonge, the cost of clearing one hectare for ploughing, planting and post-planting is estimated at 675,000FB to 710,000FB. Owolarafe and Arumughan (2007) indicated that the cost of plantation establishment depends on location, which influences labour availability. For this thesis, we will consider 710,000FB as the cost of preparing one hectare of palm oil plantation in the first phase, including clearing, ploughing, seedlings and post-planting activities.

Table 4.1 Cost of the establishment of palm oil farm/ in Burundi

C=clearance,P=plowing,S=seedlings,pp=post planting

Size of plantation (ha)	Cost of establishment (000FB)					Total
	C,p,s,pp	p.total	seedlings		petit. total	
1	710FBx1	710FB	9500FBx148	1406000FB	1406000FB	2,116,000
Grand Total						2,116,000FB

This cost is for the first year. For maintenance, irrigation and fertiliser, there are other costs. However most smallholder farmers do not perform irrigation. The fertiliser is applied perhaps

once every three months or not at all. This implies that maintenance in Rumonge is based on practical manual work and occasionally hired labour. To my knowledge, there is no mechanized system in Burundi for palm oil production.

Table 4.2 Cost of palm oil Farm maintenance/3 years

Size of the plantation (1 ha)	Cost of Maintenance (FB '000s)	
Pruning	300-500	500 000FB
Weeding	500-700	700 000FB
Harvesting	300x10x148	444 000FB
Total cost		1 644 000FB

Pruning one hectare alone can take around 300,000 to 500,000 FB (we will take the higher number). For weeding the cost is 700,000 FB and for harvesting to cut one bunch of fresh fruit costs 300FB at the time the author conducted the fieldwork. To harvest 148 trees in one hectare, assume that each tree contains 10 bunches of fresh fruit palm oil. This means that harvesting from one tree costs 3,000FB and from 148 trees 444,000FB.

Maintenance activities are done manually. The workers are generally underpaid as the agriculture sector employs unskilled rural people who cannot obtain other work. Approximately 90% of the owners of palm oil plantations are smallholder farmers whom themselves have little money. To establish and maintain one hectare of palm oil plantation in Rumonge costs (first phase) 2,116,000FB plus (second phase) 1,644,000FB. Note the margin of maintenance considered 4 years plus one year of the first phase. The cost to fertilise and irrigate was not calculated because smallholders in Rumonge cannot afford such. In reality, most smallscale farmers have fewer trees, perhaps 40 to 50 palm oil trees.

4.7.2 Palm Oil Production Process

Palm oil has been seen to be the most productive and economical compared to other vegetable oils like sunflower oil. Anyawu, Anyawu and Anyawu (1982) found that palm oil was the most important source of oil and produced more oil per hectare than any of the producing crops. Palm oil production processes involve mainly traditional, small-scale milling using artisanal methods such as boiling and pounding in a mortar by hand. Lynn (1991) demonstrates how peasant

households in the nineteenth century used mortar and pestle to produce palm oil, which was then used for cooking and for selling at local markets. This continues to be the practice of local people in Rumonge and Nyanza-Lac. It was in the 1980s when semi-traditional techniques were introduced into Rumonge.

Kwaski (2002) indicates that small-scale processing of palm oil demands intensive labour to boil the fresh fruits, pound them in wooden mortars and soak them in large vessels with cold water to start extracting oil (Adeniyi, Ogunsola and Oluwusi, 2014). Poku (1998) adds that traditional methods continue by removing fibre and nuts in small baskets, squeezing and filtering out the residual fibre from the oil. To get the final oil, the boiled mixture is allowed to cool to about 98.6°F, then put in a shallow bowl to skim off the palm oil (Adeneyi, Ogunsola and Oluwusi, 2014). This process is still used extensively by smallholder producers of palm oil in Rumonge, demands much labour and is not efficient. It can take more than three weeks from the time of cutting the fresh bunches of fruits to obtain the final product (Adeneyi, Ogunsola and Oluwusi, 2014) often involving members of the household and extended family.

4.7.3 Planting of palm oil mechanism

Tangas and Sveden (2002) explain how to prepare seed by drying the seed under warm conditions for 40 days. Uguru (1996) confirms that it is necessary to expose the seeds to the heat of the sun in open sand. When the young plants are matured, they will be moved from the plastic-covered germination area and replanted. Johansson (2008) mentioned that after the young plants are between 13 to 18 months, they are moved into the plantation field and reseeded 8m to 9m apart during the rainy season. The process takes 3-4 years, during which weeding, pesticide and herbicide spraying, fertilizing and pruning are carried out until the fruit bunches are ready for harvesting. Most smallholder and subsistence farmers get young plants from government organisations such as OHP and SRD Rumonge. For the first and second year, the smallholder farmers mix their plantation with other crops such as cassava, rice, beans and clove.

4.7.4 Palm oil harvesting

The harvesting of palm oil in Rumonge is done manually, every two to four weeks. Each tree can produce from 6-10 bunches of fresh fruit. The harvesting of palm oil can be categorised according to the tools used in two stages: first is when the trees are from 3 to 4 years old, where harvesting is done manually; second from 6 years and upwards (Ng, Bahri, Syah, Mori and Hashim, 2013). The tools used are the machete and a chisel attached to a hollow metal pole, which is estimated to weigh 2-3kg depending on the length. While harvesting, pruning is done. While the head of the family is busy cutting and perform the pruning, the children and wife collect the fruit which is left for some days to ferment before extracting the oil. Ng et al. (2013) explained how the collector will pick up the detached fresh fruit bunch (FFB) from the ground using a hooked metal pole to pierce and load them into a wheelbarrow. According to Bahri, Syah, Aini, Ng and Mori (2015), harvesting is physically demanding.

4.7.5 Palm oil selling

Palm oil selling in Burundi involves many businesswomen and men. The palm oil business is an enterprise which creates jobs in marketing and selling products related to palm oil such as plastic containers. Nwauwa (2011) indicated that palm oil marketing is concerned with all stages of operation that aid movement from the producer to the final consumer.

4.7.6 Organisations of palm oil in Burundi

The palm oil industry in Burundi is divided into three organisations.

There are two big companies, Savoror and Ruzizi, which joined together to become the largest producer of palm oil in Burundi. They monopolise the market and do everything related to palm oil, including cultivation, milling and nut-crushing and make products from palm oil found in the markets of Burundi. Then, there are smallholder farmers who own medium-sized plantations and try to organise in cooperatives, although with little chance of success to compete with large companies. There are also subsistence farmers who own plots of farms, with perhaps 20-50 trees. Some of the smallholder farmers sell their fruit to Savoror at an exploitative price. The women in Burundi are involved in palm oil nuts selling on a small-scale. Organisations such as SRD and OHP, are involved in supervising the activities of palm oil, including seed production and germination to give to independent smallholders. Because there is a problem of land availability,

the government has not established a large-scale plantation for palm oil. The price of palm oil in Burundi is guided by the laws of demand and supply with no fixed price; this means small-scale producers are exploited by large companies such as Savoror.

4.7.7 Government and palm oil

Teoh (2010) highlighted that the Government is critical in the advancement of the palm oil industry. The dynamic palm oil industry in Burundi depends on government in developing the agriculture sector, including the palm oil industry. Humphrey and Schmitz (2002) identified a government framework with strategies for improving the performance of the agriculture of palm oil in Burundi. Such plans were seen in the 1968 pilot project to expand palm oil cultivation in other provinces such as Rutana, Bubanza and Ruyigi, Kirundo including Cankuzo. Despite its failure, the government used the same plan again in 1973. The objectives of the second plan were to sustain and improve the existence of palm oil trees and expand irrigation. The result was better, and by 1978 a third quinquennial plan for the development and integration of palm oil for the Rumonge District (PDRIR) was in place, which, in the 1980s became the Society Regional of Development of Rumonge (SRDR). The objective was to intensify the study related to the development of palm oil. The SRDR divided into two organisations, while SRDR remained to promote and put in place all the measurements to improve palm oil production, a second organisation HPB (Oil of Palm of Burundi) was formed. PLA-RUBUBU (Project intensification Agricole Rumonge, Burambi, Buyengero) was charged to develop other agricultural programmes in the municipalities of Burambi, Buyengero and Rumonge. In 1999 the Government decided to create an organisation named the Office of Palm Oil (OHP) in place of SRDR, tasked with promoting palm oil farming and development.

4.8 QUALITATIVE DATA PRESENTATION

4.8.1 Interviews Responses

The schedule was organised to select four participants from the area where the questionnaires were completed, for interviews and the focus group exercise. The participating villages included Kizuka, Dama, Busaga and Birimba. Besides, eight key informants, such as managers and environmental activists, were interviewed. The interviews followed the completion of structured questionnaires. The interviews differed substantially from the questionnaires. Confidentiality and the names of the participants were protected in line with the protocol of ethical considerations agreed in the participants' consent document. The researcher used symbols to represent participants such as Xsf1...Xsf4 (participants from smallholders' farmers), while Xm1...Xm4 (key informants - managers).

Table 4.3 Interview responses from smallholders from Kizuka

Question		Small-scale farmers Respondents from Rumonge			
		Xsf1	Xsf2	Xsf3	Xsf4
1	Please tell me something about yourself (where you come from, academic level etc.).	My name Xsf1, I am a small-scale farmer from Dama-Rumonge, born in Bururi province.	My name Xsf2, a small-scale farmer from Busaga-Rumonge, my grand parents originated in Gitega.	My name Xsf3, a small-scale farmer from Kigwena Rumonge.	My name is Xsf4, from Kirama-Rumonge. I am also a smallholder farmer.
2	How would you describe the role of palm oil farming in poverty alleviation	Palm oil is a good instrument in poverty alleviation	. Palm oil is a wonder crop for responding to the well-being of rural communities	Palm oil is the cornerstone in the economy of Burundi	Palm oil is the best crop to respond to the fats the world needs to survive.
3	How has palm oil farming contributed to poverty alleviation in the Rumonge communities	palm oil crops are contributing to the alleviation of poverty by injecting cash into households	Palm oil creates jobs for rural people in Rumonge	Palm oil generate capital to start other project for the development	Palm oil increase education for the children and create good shelter for the farmer's communities
4	How is palm oil farming is promoting economic growth in the Rumonge District of Burundi?	Increases tax and the government find money to do other projects	Through the palm oil other, business are created like rice farming	Palm oil increase cash to invest in other development projects	Palm oil attracts foreigner's currency to boost the local economy
5	What is the minimum size of palm oil plantation that you need to alleviate poverty in your family?	50palm oil trees are enough to satisfies the needs of my family	One hectare is good to reduce poverty among my families	Skills are the best numbers of palm oil need it to alleviate poverty	Knowledge and freedom are useful tools in palm oil farming to alleviate poverty.
6	What size of palm oil trees plantation do you need to promote economic growth and poverty alleviation	The size is not important; only capabilities need it to grow the economy and reduce poverty	For me, skills are important than numbers of palm oil trees	I need five hectares of palm oil trees, to promote economy	Yes, palm oil does not only reduce poverty, but it also makes people and country to be rich. One hectare is fine.
7	What are the challenges of conflicts to the farmers of small-scale farming of palm oil in Rumonge community?	To overcome poverty. The challenges of natural disaster	Losing our land, and not having access to market	Abandoned our plot for the security reasons.	Lack of credit and access to resources. Poor decision making and capabilities.

8	How has the civil war affected the small-scale farmers to access the capital for palm oil development	The farmers of palm oil dispersed and abandoned their plot	The conflict disturbs the smallholders to think for next projects	When there is a conflict, there no time of planning	The conflicts stop us from thinking ahead
9	What do you understand as sustainable development?	To manage both environmental affairs is a key	If you stop, how we will educate our children	There is no problem of farming palm oil, only politics	Training will be a solution than to stop.
10	How can the palm oil industry provide sustainable development in the rural area of Rumonge?	The infrastructure is builds	The building of schools and hospital	Transport and communication are provided	New roads and schools are made available
11	To what extend did you understand poverty	Poverty is an African disease.	Poverty is not having basics needs like food and shelter.	Poverty is a tool to slavery	Poverty is not having tv, car and expensive clothes
12	How can the palm oil industry provide sustainable development in the rural area of Rumonge?	To change the status, from poor to well-being	To bring changes in infrastructures.	To benefit communities.	To create worth for rural area people

Irrespective of their villages, farmers across the board, collectively affirmed the social and economic value of palm oil. Palm oil supported the education of farmers' children; brought much-needed income to the rural household; generated income for the government; cash injection into the economy and other investment projects such as infrastructure development.

Notwithstanding these gains, there were also significant challenges confronting small farmers; including natural disasters; dissipation of farms due to civil conflict and limited farming capabilities. Farmers had different interpretations of what poverty means, including lack of material possessions such as TV and cars; and poverty as a form of slavery.

Table 4.4 Interview responses for smallholders from Dama

Question		Small-scale farmers Respondents from Rumonge			
		Xsf1	Xsf2	Xsf3	Xsf4
1	Please tell me something about yourself (where you come from, academic level etc.).	My name Xsf1, I am a small-scale farmer from Dama-Rumonge, born in Bururi province.	My name Xsf2, a small-scale farmer from Busaga-Rumonge, my grandparents originated in Gitega.	My name Xsf3, a small-scale farmer from Kigwena Rumonge.	My name is Xsf4, from Kirama-Rumonge. I am also a smallholder farmer.
2	How would you describe the role of palm oil farming in poverty alleviation	Palm oil creates wealth	Palm oil is a bridge to the well-being	Palm oil is a start to other projects for alleviating poverty	Palm oil crops are the road to prosperity
3	How has palm oil farming contributed to poverty alleviation in the Rumonge communities	Palm oil created sustainable infrastructure, and it increases cash into the households	Palm oil attract big companies to invest in palm oil to other projects	Palm oil increases food intake and creates other business like rice packaging.	Palm oil creates many jobs in a rural area.
4	How does palm oil farming promote economic growth in the Rumonge District	Yes, palm oil is wonder miracle to poverty alleviation like creates jobs	It is a way to economic growth and lifts people from poverty in increasing capital	Yes, palm oil is a tool to poverty alleviation like creation to other industry like soap making	It promotes economy in increasingly skills among the young generation
5	To what extend did you understand poverty?	Poverty is a chronic disease	Poverty is human-made, it is also luck of skills and capabilities	Poverty is not doing anything to generate income	Poverty is not owning things like Tv, radio
6	What size of palm oil trees plantation do you need to promote economic growth and poverty alleviation	100 palm oil trees are good to alleviate poverty	For me what is the most number of palm oil is capabilities to turn what I got into a profitable business	One hectare is a good start For promoting economic growth	Yes, palm oil do not only reduce poverty, but it also makes people and country to be rich, 5 hectare is fine.
7	What are the challenges of conflicts to the farmers of small-scale farming of palm oil in Rumonge community?	Loss of plot	Not to be stable and concentrate on our farming	Challenges of not access to the credit	Information and market are a significant challenges.

8	How has the civil war affected the small-scale farmers to access the capital for palm oil development	Civil war affects us in accessing capital like credit	Losing thinking ahead of how to move to the next projects	Civil war affects us in planning	No other crops can promote economy like the palm oil industry.
9	Do you think to stop palm oil farming can stop climate change issues?	To manage both environmental affairs is a key	If you stop, how we will educate our children	There is no problem of farming palm oil, only politics	Training will be a solution than to stop.
10	What are the negative impacts of palm oil plantation towards the environment?	Deforestation	Animals on risk like Orangutans	Water crisis	degradation
11	To what extend the conflicts of civil war affect palm oil farming?	The farmers of palm oil pay taxes and other contributors to the government.	The palm oil industry creates another business project to promote worth.	Palm oil industry creates employment for the poor.	Supporting another project for the country like education and training.
12	How palm oil farming can sustain development in a rural area	To change the status, from poor to well-being	To bring changes in infrastructures.	To benefit communities.	To create worth for rural area people

Small farmers from Dama were optimistic about the role of palm oil in the socio-economic development of the country as it generates employment opportunities for locals. Palm oil attracts big companies which increases investment in infrastructure development. Palm oil was seen as a significant contributor to wealth creation in rural areas. In addition to wealth creation, small palm oil farming also contributed to youth empowerment through skills development. Conversely, there were concerns about perennial water shortages arising from over-cultivation of land and severe climate change conditions and political dynamics that often led to civil conflict.

4.5 Interview Responses from Busoga

Question		Small-scale farmers Respondents from Rumonge			
		Xsf1	Xsf2	Xsf3	Xsf4
1	Please tell me something about yourself (where you come from, academic level etc).	My name Xsf1, I am a small-scale farmer from Dama-Rumonge, born in Bururi province.	My name Xsf2, a small-scale farmer from Busaga-Rumonge, my grandparents originated in Gitega.	My name Xsf3, a small-scale farmer from Kigwena Rumonge.	My name is Xsf4, from Kirama-Rumonge. I am also a smallholder farmer.
2	How would you describe the role of palm oil farming in poverty alleviation?	I came to the knowledge of palm oil trees through my neighbours.	No-one told me about palm oil trees. I saw business opportunities.	My family introduced me to the crops of palm oil trees.	I learned from my parents' business.
3	How has palm oil farming contributed to poverty alleviation in the Rumonge communities	Yes, palm oil crops are sustainable.	If you got capital, it is an excellent business to go in.	I believe the palm is a business for the big company like Savoron.	Yes, it is sustainable.
4	How is palm oil farming is promoting economic growth in the Rumonge District of Burundi?	It was a business opportunity.	It was transferred to me from my parents.	I attended a workshop, then grasped the opportunities.	My neighbours teach me how to farm palm oil.
5	To what extent did you understand poverty?	Because palm oil got profit.	Because it easy crops to farm.	I chose palm oil crops because I need to come out of poverty.	I thought it is viable agri-business crops to grow economy.
6	What size of palm oil trees plantation do you need to promote economic growth and poverty alleviation	Yes, palm oil has helped a lot to overcome poverty.50 palm trees are enough	Yes, if you got capital to start this farming, poverty will be history. I need 70 palm trees	Yes, only five-hectare palm oil trees, you can educate your children and satisfies other needs.	Yes, palm oil does not only reduce poverty, but it also makes people and country to be rich. 1 hectare is fine.
7	What are the socioeconomic impacts of palm oil farming	To overcome poverty.	To benefit from it.	To grow our economy.	It was only crops require, small capital.

8	Is palm oil viable product for promoting economic growth?	Yes, it is.	Strongly believe in palm oil to grow economy.	Yes.	No other crops can promote economy like the palm oil industry.
9	Do you think to stop palm oil farming can stop climate change issues?	To manage both environmental affairs is a key	If you stop, how we will educate our children	There is no problem of farming palm oil, only politics	Training will be a solution than to stop.
10	How did you understand poverty?	Poverty is an African disease.	Poverty is not having basics needs like food and shelter.	Poverty is a tool to slavery.	Poverty is not having tv, car and expensive clothes
11	To what extend the conflicts of civil war affect palm oil farming?	The farmers of palm oil pay taxes and other contributors to the government.	The palm oil industry creates another business project to promote worth.	Palm oil industry creates employment for the poor.	Supporting another project for the country like education and training.
12	How palm oil farming can sustain development in a rural area	To change the status, from poor to well-being	To bring changes in infrastructures.	To benefit communities.	To create worth for rural area people

One of the participants from Busaga somewhat sceptical about palm oil farming, saying that only big businesses benefit from palm oil cultivation. However, other participants felt that the benefits of palm oil far outweigh the risks, as palm oil venture creation required small portions of capital; and facilitated skills transfer from one generation to another. On how palm oil farming can sustain development in a rural area, it was felt that palm oil could be used as a tool to bring about agrarian transformation in rural areas; gradually changing the status quo from poverty to well-being.

Table 4.6 Interview Responses for Smallholders from Birimba

Question		Small-scale farmers Respondents from Rumonge			
		Xsf1	Xsf2	Xsf3	Xsf4
1	Please tell me something about yourself (where you come from, academic level etc.).	My name Xsf1, I am a small-scale farmer from Dama-Rumonge, born in Bururi province.	My name Xsf2, a small-scale farmer from Busaga-Rumonge, my grandparents originated in Gitega.	My name Xsf3, a small-scale farmer from Kigwena Rumonge.	My name is Xsf4, from Kirama-Rumonge. I am also a smallholder farmer.
2	How would you describe the role of palm oil farming in poverty alleviation?	Palm oil increase cash in households	Creation of jobs for youth	Palm promote health	Sustainable of infrastructure
3	How has palm oil farming contributed to poverty alleviation in the Rumonge communities	Generate cash for other projects	Promoting the education of children	Palm oil helps to get foreigner currency like dollars	Palm oil enables smallholders to generate income. Palm oil industry creates employment for the poor.
4	How is palm oil farming is promoting economic growth in the Rumonge D	It creates a business opportunity.	Generation of cash	It increases GDP through taxes.	Other projects of development achieved through palm oil production like increasing food to eliminate hunger and mal nu
5	To what extend did you understand poverty?	Poverty is man-made	Poverty is lacking basics needs, and not having skills	Poverty is not owing to Tv, Radion and car	Poverty is not accessing credit and natural resources
6	What size of palm oil trees plantation do you need to promote economic growth and poverty alleviation	Yes, palm oil has helped a lot to overcome poverty.50 palm trees are enough	Yes, if you got capital to start this farming, poverty will be history. I need 70 palm trees	Yes, only five-hectare palm oil trees, you can educate your children and satisfies other needs.	Yes, palm oil does not only reduce poverty, but it also makes people and country to be rich.1 hectare is fine.
7	What are the challenges of conflicts to the farmers of small-scale farming of palm oil in Rumonge community?	Losing land, and the farmers of palm oil pay taxes and other contributors to the government are lost	Civil war prevents to have tools like pesticide	Civil war effects to grow our economy among the smallholder's farmers	Civil war prevents to acquire tools like machines to improve productions.

8	How has the civil war affected the small-scale farmers to access the capital for palm oil development	Dispersement, and losing of an asset like the plot	Loss of focus to think ahead	Losing of capital like materials to use for production of palm oil	Trust for acquiring credit is no more there, because of changing the location.
9	Do you think to stop palm oil farming can stop climate change issues?	To manage both environmental affairs is a key	If stop, how we will educate our children	There is no problem of farming palm oil, only politics	Training will be a solution than to stop.
10	What are the negative impacts of palm oil plantation towards environment?	Air pollution	Deforestation	Water crisis	Affecting aquatic life like fish in Tanganyika Lacs
11	How can the palm oil farming and environmental issues be balanced for sustainable development?	Training for smallholders' farmers	Workshops from both activist of environment and poverty alleviation	Manage both production of palm oil and protection of environment	Sustainable development training for smallholders farmers
12	How palm oil farming can sustain development in rural area	To change the status, from poor to well-being	To bring changes in infrastructures.	To benefit communities.	To create worth for rural area people like creation of other industry such as milling of nuts.

All the respondents from Kizuka were from Rumonge District except one. This suggests the respondents would be knowledgeable about local subsistence and smallholders farming conditions. Most respondents mentioned that palm oil production increases cash in households in the sense that it creates jobs, promotes health and increases sustainable development infrastructures. The common understanding was that palm oil is an instrument to eliminate poverty and to grow the economy in Rumonge District. Challenges included limited access to markets and resources to improve palm oil production are also lost because of civil war conflicts. In respect of climate change impacts, some participants suggested that instead of stopping the production of palm oil farming, rather manage both environmental affairs and the production of palm oil, including training to smallholder farmers. . One of the Kizuka respondents indicated that palm oil does have some negatives impacts, such as degradation and deforestation, including air pollution against this it is the solution to poverty alleviation. Palm oil can bring value to rural

areas and can improve well-being on whether palm oil can sustain development in rural areas. The response was that palm oil can bring value to rural areas and can improve well-being. Others claimed that, through palm oil farming, infrastructures were established around their areas.

Table 4.7 Interview Responses for Key Informants (Managers)

Question		Interviews Schedule for Key informant			
		Xm1	Xm2	Xm3	Xm4
1	Tell me something about yourself	My name Xm1,I am currently a manager for palm oil products export and import	I am Xm2 working as a manager for palm oil commerce.	I am Xm3,I am a manager	I am Xm4 for procurement manager for palm oil
2	In which other way do you use palm oil except exporting?	Palm oil used as cooking oil	Palm oil is sold in local market	Palm oil is a magic business for our people	Palm oil is used to cook for food
3	How much palm oil do you harvest per Year?	Harvesting is about 10000T per Year	Harvested palm oil is about 4millions Tones Per Year	Palm oil harvested is 18000Tones per Year	Palm harvested per year is 100000 tonnes per year
4	How much of that volume is from sustainable source	Palm oil we harvest is sustainable	Palm oil in produced hire in Burundi is sustainable	Palm oil from smallholders' farmers is sustainable in the way	Palm oil is not sustainable, but it is safe to consume
5	Where are the export markets for your palm oil?	We do not export palm oil	We used to export to Rwanda, but not now	We sell our palm oil in local market	We do not meet the quantity to export
6	Do you export palm oil to any neighbouring Country?	Not now	It was exported to Rwanda	Not	We supply local market
7	Are other countries that you would wish to export palm oil to apart from the above?	We wish to export in African market	If we get oversees market like the Netherlands.	South Africa is our expectation	If peace restores, we are looking Rwanda
8	Do you sell your palm oil via a middle trader or directly to palm oil company's import?	We sell to Savoror	We do not have one company, only Savoror, everyone sell to	We sell no company, only local market	I am not aware of other company except Savoror
9	What are the challenges of exporting palm oil far distance?	Shipping	High cost for taxes	Long time in the port	No guarantee for safety

10	Are you aware that if you export the palm oil to South Africa companies, it could profit you more than to export to a distant country like Netherlands?	South Africa is good market	We wish South Africa to buy our oil	Yes, South Africa is near market	Yes, I am aware, but seems South Africa not wanting our oil
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From the perspective of managers of palm oil commercial businesses (Table 4.7), smallholder farming is not sustainable due to the monopolistic nature of the industry where only one company, Savoror controls the market. On the positive side, it was reported that small scale farming activities contribute to employment creation for the people of Rumonge, although this was not sustainable across the villages.

Regarding marketing opportunities, it was suggested that although South Africa is the nearest market for palm oil; however, this has not translated into a viable market for smallholder farmers. Consequently, smallholder farmers are compelled to look into the local market for opportunities. There was a feeling that palm oil farmers needed a substantial global market like South Africa or the Netherlands. Given the demand for palm oil in South Africa, there are market opportunities that small holder farmers in Burundi can explore. However, this requires the support of the government in terms of logistics, funding and market survey.

Table 4.7 (continued) Interview Responses for Key Informants (Managers)

Question		Interviews Schedule for Key informant			
		Xm5	Xm6	Xm7	Xm8
1	Tell me something about yourself	I am Xm1 procurement manager	Xm6, I am general manager	I am xm7, I am sales manager	I am Xm8, a manager of import export
2	In which other way do you use palm oil except exporting?	We use palm oil to make soap	We use palm oil as ingredient	Palm oil is used to cook	Selling in local market
3	How much palm oil do you harvest per Year?	18000 Tones	4 million Tones	100000 Tones	Many smallholders oil is not recorded
4	How much of that volume is from sustainable source	All smallholders do not use any certification	All our oil is assumed to be originated to sustainable	Not known	Our oil is organic, not polluted
5	Where are the export markets for your palm oil?	We do sell to our local people	Our palm oil sold local	Our market is our communities	Some individual business export outside, but not known exactly where
6	Do you export palm oil to any neighbouring Country?	Officially, we do not export	We use to export in Rwanda but stopped.	Our palm oil some time enter Rwanda via Congo	I am not aware of any country we export our palm oil
7	Are other countries that you would wish to export palm oil to apart from the above?	We to export to South Africa	We wish to export to the Netherlands.	South Africa is a good country we wish to sell our palm oil	If the peace is restored Rwanda is a big market to our palm oil
8	Do you sell your palm oil via a middle trader or directly to palm oil company's import?	Some of our smallholder sell to middleman like Savonor	We sell directly to our people	Savonor is a big buyer of our palm oil on less price	We use our palm oil to manufacture soap
9	What are the challenges of exporting palm oil far distance?	High tax related	Long time to arrive to destination	Shipment take long time	Paper work is a challenge
10	Are you aware that if you export the palm oil to South Africa companies, it could profit you more than to export to a distant country	Near market like South Africa is profitable	We know South Africa buys palm oil, but prefer not to buy our palm oil	If we managed to the bilateral agreement, to sell to south Africa our palm oil would profit more	To export palm oil to South Africa, can benefit and enhance the relationship

	like the Netherlands?				
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The key informants included procurement managers and other key players in the palm oil industry, such as agriculture instructors. The questionnaires examined the managers and instructors collect information related to the market and harvesting of palm oil. In question 2, participants were asked how they used palm oil, except for exporting. The responses were as follows: Xm1 indicated that palm oil is used for cooking, Xm2 said that palm oil is traded among local markets, Xm3 mentioned that palm oil is considered as magic. However, it was not clear what magic is referred to (medical or economic) while Xm4 said that palm oil products are used to manufacture detergents and soap. Question 3 sought to determine the volume of palm oil harvested per year in tonnes.

The responses varied, from 10,000 tonnes of palm oil being harvested per year by small-scale farmers to one participant's suggestion that 4 million tonnes are harvested per year. During interviews, the managers were also prompted how much palm oil was harvested sustainably. The participants indicated that all the palm oil harvested were done sustainably while others did not know if it was the case.. Besides, the question about the export market for palm was put to the key informants. Some confirmed they do not export to outside markets but instead sell to local markets. Other respondents revealed that they sell palm oil to an international agent-based in Burundi, which would be Savoror, which monopolises the palm oil market in Burundi, including the military, universities and other large organisations. Smallholder farmers consequently have no access to the market either locally or internationally but only sell to Savoror at exploitation prices.

The managers were also asked if they export palm oil to neighbouring countries. The respondents confirmed having exported palm oil in the past to Rwanda, however, after the relationship between these two countries became sour, the exports stopped. There was no indication from the key informants to have exported to other countries. One respondent denied exporting to neighbouring countries. Participants were also prompted about exports for the future. The respondents indicated their wish export palm oil to other countries such as South Africa. Some felt it necessary to satisfy local markets first. Asked if they sell using

intermediaries or directly to palm oil companies. The respondents confirmed selling to middlemen such as Savoror. The participants did not believe there was any middleman who bought palm oil from smallholder farmers. In terms of the challenges of exporting palm oil, respondents mentioned high costs including taxes, transport and time. Question 9 asked if the procurement managers were aware that if they export their palm oil to South African companies they could achieve a better margin than if they exported to more distant countries. Some but not all respondents confirmed a wish to export to South Africa.

Table 4.8 Interview responses from environmental activists

Question		Interviews Schedule for Environmental activist			
		Xe1	Xe2	Xe3	Xe4
1	Tell me something about yourself	My name Xm1, I am currently an environmental activist	I am Xm2 working as an environmental coordinator	I am Xm3, I am a manager	I am Xm4 for environmental management
2	To what extent palm oil affect our ecology?	Water crisis	Climate change	deforestation	Disappearing of Orangutans
3	What is the negative effect of palm oil towards Environment	The roots of palm oil prevent water	Degradation	Degradation	
4	Is the disappearing of orangutan's contributed to the palm oil farming?	Yes, palm oil causes Orangutans to disappear	Palm oil take away the abri of Orangutans, then orangutans disappear	Yes	Yes
5	What are the negative impacts of palm oil production to the disappearing of forest in Rumonge	Water crisis, shortage of rain	degradation	Loss of soil	Degradation, carbon emissions
6	How would like the problem of environmental degradation and palm oil production to be solved to be solved	Training of smallholder farmers	Manage both cultivation of palm oil and environmental affairs	Stop mass cultivation of palm oil	Manage both palm oil and environmental affairs
7	Do you think palm oil production must stope because it causes carbon emissions?	No, palm oil alleviate poverty	Not stopping, but manage both palm oil and environment	It must not stop, because of it is role in reducing poverty	All cultivations have something with carbon emissions; therefore, palm oil production must not stop
8	What is the socio -economic impact of palm oil farming?	Negative impacts, like air pollution	Water crisis	Positive impact like well-being in households	Promoting food security is positive impact
9	How would like the conflict between poverty alleviation and environmental issues to be solved?	Manage both palm oil farming and environmental affairs	Training of small-scale farming to exercise sustainable	Workshop from both activist of environmental affairs and economic	Put aside the part of palm oil cultivation, other part for environmental

			development	growth	
10	To what extent palm oil farming cause climate change?	Palm oil cause carbon emission	Degradation	Water crisis	deforestation

Table 4.8 (continued) Interview responses from environmental activists

Question		Interviews Schedule for Environmental activist			
		Xe5	Xe6	Xe7	Xe8
1	Tell me something about yourself	I am Xm5, environmental activist	Xm6, I am general overseer of environmental affairs	I am xm7, I am sales manager	I am Xm8,an activist for air quality in our area of Rumonge District
2	To what extent palm oil affect our ecology?	Degradation	Climate change	deforestation	Orangutan disappearing
3	What is the negative effect of palm oil towards Environment	Water crisis	Climate change	Carbon emission	Deforestation
4	Is the disappearing of orangutan's contributed to the palm oil farming?	Yes, palm oil affect Orangutans	Yes	Yes	Yes
5	What are the negative impacts of palm oil production to the disappearing of forest in Rumonge	Degradation	Loss of soil	Water scarcity	Rain problem, which leads to food shortages
6	How would like the problem of environmental degradation and palm oil production to be solved	Workshop	Training of small-scale farmers	Managing both farming of palm oil and protection of environment	Reserve part of cultivation and the conservation
7	Do you think palm oil production must stope because it causes carbon emissions?	Not	It must not stop because of poverty reduce	It must be sustainable farming	No, only cautious farming
8	What is the socio -economic impact of palm oil farming?	Negative is water crisis	pollutions	Well-being in households	Encouraging food security
9	How would like the conflict between poverty alleviation and environmental issues to be solved?	Intensifying workshop	Training among small-scale farming	Manage both enviro and palm oil farming	Reserve for environment
10	To what extent palm oil farming cause climate change?	Forest disappear	Degradation occur	Carbon emission	Rain shortages

Overall, environmental activists expressed negative views on the impact of palm oil on the environment. To understand better the feelings and views about the palm oil production for

poverty alleviation. The researcher asked questions related to conflicts between the production of palm oil and saving the environment for future generations. Xe1 believed that palm oil contributes to deforestation. Xe2 raised a concern about the black smoke originating from the clearance of fields for planting palm oil seedlings. Participant Xe3 said that palm oil production is the reason for the disappearance of Orangutans and chimpanzees. Participant Xe4 viewed palm oil as the cause of the water crisis. Participant Xe5 indicated that the chemicals used to manufacture palm oil products such as soaps and detergent are bad for the fish in Lake Tanganyika, and this explains the scarcity of fish. Participant Xe6 and Xe7 mentioned the problem of water shortage and blamed the disappearance of Orangutans on palm oil farming. Xe8 believed that palm oil, like other crops, affects forests. Question 3 explored the effects of palm oil on water supplies. There were mixed reactions to this question; some environmental activists defended palm oil cultivation while others blamed it for air pollution and environmental degradation.

CONCLUSION

Having presented the results from qualitative and quantitative study, the next step is to analyse these findings to address the research questions. Overall, findings of the quantitative study suggest that palm oil had a positive impact on social and economic lives of rural communities in Rumonge District; although challenges remained in capacity, farming skills and resources. Results from qualitative interviews and focus groups confirmed that earnings from palm oil could be used to support education, skills transfer through family ties; and employment of local people. These findings necessitate more government support for the sector in ways that can ensure balance between economic development and environmental sustainability.

CHAPTER 5

PRESENTATION AND DISCUSSION OF FINDINGS

5.1 Introduction

The purpose of this chapter is to present the results of the quantitative study done using the questionnaire. The main research question was to determine the extent to which the palm oil industry can promote quality of life at present and in the future. Both the quantitative and qualitative data sets are used to address four specific research questions: (a) How can the potential economic benefits of palm oil farming, relating to poverty alleviation, be realised in Rumonge, Burundi? (b) What are the roles and minimum size of palm tree plantation required to alleviate poverty? (c) What are the challenges of conflict to the farmers of small-scale farming of the palm oil tree in Rumonge Community? (d) What are the costs and timescale for planting palm oil tree plantations in Rumonge and how long will it be before the poor can benefit?

The chapter starts with a presentation of the reliability of the instrument using Cronbach's alpha, followed by a description of the sample. The respondents' views on farming palm oil and reasons for farming palm oil are presented, followed by a summary of responses using frequencies, proportions, means and standard deviation. The relationships between the socio-demographic characteristics of the participants is then investigated using t-tests and one-way analysis of variance. In this case composite variables were created by averaging items, as proposed by Boone and Boone (2012).

The composite variables created were *types of oils reasons for preference of palm oil, social economic benefit and growth, description of poverty, poverty alleviation, negative effects of farming palm oil, challenges of farming palm oil, strategies for solving problems of*

environmental degradation marketing channels, issues contributing to cost of farming palm oil and advantages of farming palm oil.

The data was captured in Microsoft Excel 16 and analysed using the Statistical Packages of the Social Science (SPSS) version 25. The data management was done first by performing a missing value analysis. Variables and cases with more than 10% missing values were removed from the analysis as proposed by Hair, Black, Babin and Anderson (2019). No variables and cases were removed from the analysis since all the variables and cases had less than 5% of missing information.

5.2 Measuring internal consistency: the reliability of the instrument

Cronbach's alpha was used to test the internal consistency of the instrument. The information is shown in Table 5.1.

Table 5.1 Internal consistency reliability

Construct	No. of items	Cronbach's alpha	Acceptable level
Types of oils	19	.852	Good
Reasons for preference for palm oil	19	.808	Good
Social economic benefit and growth	23	.826	Good
Description of poverty	21	.815	Good
Poverty alleviation	17	.846	Good
Negative effects of farming palm oil	15	.826	Good
Challenges of farming palm oil	22	.872	Good
Strategies for solving problems of environmental degradation	12	.742	Good
Marketing channels	16	.830	Good
Issues contributing to cost of farming palm oil	12	.840	Good
Advantages of farming palm oil	14	.775	Good
Overall (all items)	190	.970	Excellent

All the constructs had reliabilities above .7 indicating good reliability (low-stakes testing), as proposed by Manerikar and Manerikar (2015). The overall reliability was excellent, as evidenced by a Cronbach alpha of 0.970. It can be concluded that the data collected were appropriate to be used for further data analysis.

5.3 Characteristics of the respondents

5.3.1 Socio-demographic characteristics of the respondents

Table 5.2 Socio-demographic characteristics of the respondents

Variable	Category	Frequency	%
Gender	Male	167	55.7%
	Female	133	44.3%
	Total	300	100.0%
Age	Below 30 years	56	18.7%
	30 – 39 years	32	10.7%
	40 – 49 years	72	24.0%
	50 – 59 years	50	16.7%
	60 years and above	90	30.0%
	Total	300	100.0%
Marital status	Never married	74	24.7%
	Married	122	40.7%
	Divorced	27	9.0%
	Separated	19	6.3%
	Widowed	42	14.0%
	Cohabiting	16	5.3%
	Total	300	100.0%
Area	Rumonge	179	59.7%
	Bururi	53	17.7%
	Gitega	31	10.3%
	Bujumbura	37	12.3%
	Total	300	100.0%
Highest level of education	Never attended school	92	30.7%
	Grade 1 - 9	24	8.0%

	Grade 10 - 12	89	29.7%
	Diploma/certificate (vocational training)	62	20.7%
	University degree	22	7.3%
	Post graduate degree	6	2.0%
	Other	5	1.7%
	Total	300	100.0%

Table 5.3 Gender profile of palm oil farmers

Q 1: Gender				
Participants	Frequency	Percent	Valid Percent	Cumulative Percent
Male	167	55.7	55.7	55.7
Female	133	44.3	44.3	100.0
Total	300	100.0	100.0	

Table 5.3 reports that the gender composition of the participants was slightly biased towards men. These figures suggest that women also had a strong presence in the palm oil farming sector in Rumonge district.

5.3.2 The age range of palm oil farmers

One question sought to ascertain the ages of the small-scale palm oil farmers in Rumonge District. The study established the following ages of the respondents:

Table 5.4 Age distribution

Q 2: Age Range				
Age range	Frequency	Percent	Valid Percent	Cumulative Percent
Below 30 years	56	18.7	18.7	18.7
30-39 years	32	10.7	10.7	29.3
40-49 years	72	24.0	24.0	53.3
50-59 years	50	16.7	16.7	70.0
60 and above	90	30.0	30.0	100.0
Total	300	100.0	100.0	

From these results, it can be seen that many of the small-scale palm oil farmers were between 40-49 years and above 60. Encouragingly, 18.7% of the farmers were young people below the age

of 30. This shows that palm oil farming holds promise for youth development in Rumonge District. Thus, this in agreement to the study done in Peruvian Amazon by scholars such as Bennett, Ravikumar, McDermott, and Malhi (2019) that smallholders, young and old, hold meaningful production decision and can benefit economically from palm oil.

5.3.3 Marital status

The aim of this question was to establish the marital status of the small-scale palm oil farmers in Rumonge community. The study established the following (table 6.5):

Table 5.5 Marital status

(Q 3) Table 3:Marital Status				
	Frequency	Percent	Valid Percent	Cumulative Percent
Never married	74	24.7	24.7	24.7
Married	122	40.7	40.7	65.3
Divorce	27	9.0	9.0	74.3
Separated	19	6.3	6.3	80.7
Widow	42	14.0	14.0	94.7
Cohabiting	16	5.3	5.3	100.0
Total	300	100.0	100.0	

These results suggest that the respondents had different experiences when it comes to social relationships. On the other hand, these results also indicate that there were more married farmers in palm oil farming than single people, suggesting that many of the palm oil farms may have been owned by household heads.

5.3.4 Area of birth

Participants were asked to specify the specific areas or villages in which they lived. The results on participants' residential areas are summarised in Table 6.6 below.

Table 5.6 Area of birth

(Q 4) Area of Birth					
Regions		Frequency	Percent	Valid Percent	Cumulative Percent
Rumonge		179	59.7	59.7	59.7
Bururi		53	17.7	17.7	77.3
Gitega		31	10.3	10.3	87.7
Bujumbura		37	12.3	12.3	100.0
Total		300	100.0	100.0	

Rumonge had the highest number of palm oil farmers compared to other districts, followed by Bururi. Of these four districts, Gitega had the lowest number, suggesting that those community members may have had difficulty accessing palm oil farming opportunities in the area of their birth.

5.3.5 Highest level of education

The focus of question 5 was to determine literacy levels and/or qualifications, given the importance of education and skills in business success.

Table 5.7: Level of Education

Q 5) Table 6.7 Level of Education					
Level of schooling		Frequency	Percent	Valid Percent	Cumulative Percent
Never attended school		92	30.7	30.7	30.7
Grade 1-9		24	8.0	8.0	38.7
Grade 10-12		89	29.7	29.7	68.3
Diploma /Vocational training		62	20.7	20.7	89.0
University degree		22	7.3	7.3	96.3
Postgraduate degree		6	2.0	2.0	98.3
Other (Specify)		5	1.7	1.7	100.0
Total		300	100.0	100.0	

Approximately 30% never attended school, another 30% reached grades 10 to 12 and about 20% had post-secondary education qualifications ranging from diploma to vocational training. Very few had post-graduate qualifications. These results show that the respondents had quite different

educational backgrounds. Of great concern is that over 30% of these farmers had not attended school in their areas. This highlights a need for targeted adult basic education literacy projects to promote skills development in the palm oil farming community.

5.3.6 Information on farming palm oil

Question 6: From which of the following sources did you come to know about the palm oil farming role for poverty alleviation?

Table 5.8 Posters

Q6 (a) Table Posters				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	85	28.3	28.3	28.3
No	215	71.7	71.7	100.0
Total	300	100.0	100.0	

The majority of participants did not access posters for such information. In summary, these results suggest that posters were not effectively disseminating information to small-scale farmers in Rumonge community.

Table 5.9 Pamphlets

Q6(b) Pamphlets				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	15	5.0	5.0	5.0
No	285	95.0	95.0	100.0
Total	300	100.0	100.0	

As was the case with posters, only a very few of the farmers saw pamphlets as a source of information. Most reported that they did not get such information from pamphlets, suggesting that pamphlets were either inaccessible or not very useful for many of these farmers.

Table 5.10 Magazines

Q6(c) Magazines					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	12	4.0	4.0	4.0
	No	288	96.0	96.0	100.0
	Total	300	100.0	100.0	

Again, very few of the small-scale farmers accessed information on palm oil farming from magazines. This shows that magazines were not an effective communication tool among small-scale farmers in Rumonge.

Table 5.11 External physical notice boards

Q6(d) External Physical notice boards					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	80	26.7	26.7	26.7
	No	220	73.3	73.3	100.0
	Total	300	100.0	100.0	

About a quarter of the small-scale farmers sourced palm oil information from external physical notice boards. External billboards were not commonly used by farmers to solicit palm oil information.

Table 5.12 Websites

Q6(e) Websites					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	23	7.7	7.7	7.7
	No	275	91.7	92.3	100.0
	Total	298	99.3	100.0	
Missing	Missing System	2	.7		
Total		300	100.0		

Table 5.12 shows that the number of farmers who accessed palm oil information through the internet was significantly low. The majority did not access internet or websites for palm oil information. In part, this can be attributed to the fact that rural communities in many developing countries generally do not have full access to information and communications technology resources and infrastructure.

Table 5.13 Social Media

Q6(f) Social Media					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	30	10.0	10.0	10.0
	No	270	90.0	90.0	100.0
	Total	300	100.0	100.0	

Ten per cent of the small-scale farmers accessed information about palm oil through social media. The others indicated that they did not access such information via social media. Social media was not a common mode of business communication.

Table 5.14 Non-Governmental Organisations

Q6(g) Non-Governmental Organisations					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	13	4.3	4.3	4.3
	No	287	95.7	95.7	100.0
	Total	300	100.0	100.0	

Only 4.3% received information about palm oil from NGOs, suggesting that, these institutions were a source of agricultural information for only a few farmers. Most indicated that they did not get information from NGOs.

Table 5.15 United Nations personnel

Q6(h) United Nations personnel					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	7	2.3	2.3	2.3
	No	293	97.7	97.7	100.0
	Total	300	100.0	100.0	

Very few farmers obtained information about palm oil from United Nations personnel.

Table 5.16 Family members and friends

Q6(i) Family members and Friends					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	32	10.7	10.7	10.7
	No	266	88.7	89.3	100.0
	Total	298	99.3	100.0	
Missing		2	.7		
Total		300	100.0		

Only 10% of small-scale farmers received palm oil information from family and friends.

Table 5.17 Workshops and seminars for farmers

Q6(j) Workshops and seminars for farmers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	4.7	4.7	4.7
	No	286	95.3	95.3	100.0
	Total	300	100.0	100.0	

Only 4.7% of the small-scale farmers surveyed confirmed using workshops and seminars as a source of information. This finding could be an indication that agricultural workshops and seminars were not accessible to many of these small-scale farmers, either because of costs or geographical constraints.

Table 5.18 Palm trees needed for economic growth and poverty alleviation

Q7. What number of palm oil trees do you need to promote economic growth and poverty alleviation?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30 palm oil trees	18	6.0	6.0	6.0
	50 palm oil trees	73	24.2	24.2	30.2
	100 palm oil trees	100	36.5	36.5	60.7
	1 hectare of palm oil trees	108	36.0	39.3	100.0
	Total	300	100.0	100.0	

Very few respondents thought that 30 trees were sufficient to promote economic growth and poverty alleviation in their villages. A quarter felt that 50 trees would be enough, while the most common suggestions were to have 100 trees or a 1-hectare plantation. On the whole, these results suggest that farmers were uncertain about the exact number of trees required to promote economic growth and poverty alleviation. This also shows that many of the farmers' ventures were survivalist in nature as many of them had small-scale palm oil fields.

Table 5.19 Minimum size of palm tree plantation required to alleviate poverty

Q 8. Minimum size of palm tree plantation required to alleviate poverty					
Palm oil plantation size	Frequency	Percent	Valid Percent	Cumulative Percent	
2 hectares	18	6.0	6.0	6.0	
At least 3 hectares	8	2.7	2.7	8.7	
Minimum size depend on plot	21	7.0	7.0	15.7	
200 palm oil trees	68	22.7	22.7	38.3	
Depend on knowledge	65	21.7	21.7	60.0	
500 palm oil trees give good income	76	25.3	25.3	85.3	
Total	300	100.0	100.0		

These results suggest that farmers had different views about the minimum area of plantation required to alleviate poverty.

5.3.7 Reason for farming palm oil

The objective of question 9 was to establish what motivated small-scale farmers to use palm oil farming as a tool for alleviating poverty.

Table 5.20 Reasons for starting a palm oil farming venture

Q9 Why did you start palm oil trees farming as means of fostering poverty alleviations?				
	Frequency	Percent	Valid Percent	Cumulative Percent
1. Due to attendance in agriculture training workshops	24	8.0	8.1	8.1
2. Business agricultural mindset	58	19.3	19.5	27.5
3. Learned from my neighbour	56	18.7	18.8	46.3
4. Inherited from family	20	6.7	6.7	53.0
5. Availability of a ready market to sell the product	57	19.0	19.1	72.1
6. Due to climate, which is suitable to grow trees	47	15.7	15.8	87.9
7. Availability of funding agencies to start-up income	23	7.7	7.7	95.6
8. Knowledge on palm tree growth easily accessed	13	4.3	4.4	100.0
Total	298	99.3	100.0	
Missing system	2	.7		
Total	300	100.0		

5.3.8. To what extent can the palm oil tree be best?

Through this question, the researcher wanted to find out from the farmers how palm oil fared against the other oil seeds such as rapeseed, canola, avocado and sunflower oil.

Table 5.21 How palm oil compares to the other oils: Rapeseed oil

Q10a To what extent are the following oils the best.					
Rapeseed oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Not to any extend at all	144	48.0	48.2	48.2
	2. To a little extent	95	31.7	31.8	79.9
	3.To some extent	36	12.0	12.0	92.0
	4.To large extent	9	3.0	3.0	95.0
	5.To very large extent	15	5.0	5.0	100.0

	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

From these results it can be seen that farmers had mixed feelings.

Table 5.22 How palm oil compares to the other oils: Canola oil

Q10b To what extent are the following oils the best.					
Canola oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Not to any extend at all	22	7.3	7.4	7.4
	2. To a little extent	36	12.0	12.1	19.5
	3. To some extent	72	24.0	24.2	43.6
	4. To large extent	150	50.0	50.3	94.0
	5. To very large extent	18	6.0	6.0	100.0
	Total	298	99.3	100.0	
Missing	System	2	.7		
Total		300	100.0		

According to some of the farmers surveyed canola oil did not compare to palm oil at all (7.3%). Others differed, saying that it compared to a little extent (12.0%); to some extent (24.0), to large extent (50.0%) and to very large extent (6.0%). These results indicate that most farmers trusted palm oil over canola oil.

Table 5.23 How palm oil compares to the other oils: Sunflower oil

Q10c To what extent are the following oils the best.					
Sunflower oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Not to any extend at all	18	6.0	6.0	6.0
	2. To a little extent.	38	12.7	12.7	18.7
	3. To some extent	41	13.7	13.7	32.4
	4. To large extent	86	28.7	28.8	61.2
	5. To very large extent	116	38.7	38.8	100.0
	Total	299	99.7	100.0	

Missing	System	1	.3		
Total		300	100.0		

Collectively, these results suggest that some farmers in Rumonge District were more comfortable with sunflower oil than palm oil.

Table 5.24 How palm oil is rated

Q10d To what extent are the following oils the best.					
Palm oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Not to any extent at all	30	10.0	10.0	10.0
	2. To a little extent	31	10.3	10.4	20.4
	3. To some extent	70	23.3	23.4	43.8
	4. To large extent	111	37.0	37.1	80.9
	5. To very large extent	56	18.7	18.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Overall, these results show that the majority of farmers were interested in palm oil farming.

Table 5.25 How palm oil compares to the other oils: Avocado oil

Q10e To what extent are the following oils the best.					
Avocado oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Not to any extent at all	44	14.7	14.7	14.7
	2. To a little extend	38	12.7	12.7	27.4
	3. To some extend	78	26.0	26.1	53.5
	4. To large extend	81	27.0	27.1	80.6
	5. To very large extend	56	18.7	18.7	100.0
	Total	299	99.7	100.0	

Missing	System	1	.3		
Total		300	100.0		

Table 5.26 How palm oil compares to the other oils: Olive oil

Q10g To what extent are the following oils the best.					
Olive oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	124	41.3	41.5	41.5
	To little extent	39	13.0	13.0	54.5
	To some extent	57	19.0	19.1	73.6
	To a large extent	51	17.0	17.1	90.6
	To a very large extent	28	9.3	9.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

5.3.9. Reasons for picking palm oil instead of sunflower

In this question, respondents indicated why they specifically chose palm oil over the other oils.

Table 5.27 Palm oil is easy to farm and manage

Q11.To what extent are the following issues for picking palm oil instead of sunflower?					
Q11(a)					
(a) It is easy to farm and manage		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not any extent at all	69	23.0	23.1	23.1
	To a little extent	32	10.7	10.7	33.8
	To some extent	71	23.7	23.7	57.5
	To a large extent	100	33.3	33.4	91.0
	To a very large extent	27	9.0	9.0	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Judging by these data sets, it is clear that the majority of farmers in Rumonge were generally content with palm oil as a simple and manageable agricultural crop.

Table 5.28 Palm oil is sustainable

		Q11b			
(b) It is sustainable		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not any extent at all	23	7.7	7.7	7.7
	To a little extent	35	11.7	11.7	19.4
	To some extent	78	26.0	26.1	45.5
	To a large extent	108	36.0	36.1	81.6
	To a very large extent	55	18.3	18.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

In summary, these results show that most farmers had a strong preference for palm oil as a more sustainable crop than sunflower.

Table 5.29 Palm oil requires only small space

		Q11(c)			
(c) It requires only small space		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not any extent at all	26	8.7	8.7	8.7
	To a little extent	91	30.3	30.4	39.1
	To some extent	95	31.7	31.8	70.9
	To a large extent	51	17.0	17.1	88.0
	To a very large extent	36	12.0	12.0	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.30 Low level of cholesterol

Q11(d)					
(d) Low level of cholesterol		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not any extent at all	29	9.7	9.7	9.7
	To a little extent	52	17.3	17.4	27.1
	To some extent	60	20.0	20.1	47.2
	To a large extent	123	41.0	41.1	88.3
	To a very large extent	35	11.7	11.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

The data shows that a majority of farmers chose palm oil because it has lower levels of cholesterol than sunflower oil: to a little extent (17.3%); to some extent (20.0%); to a large extent (41.0%); and to a very large extent (11.7%). The only exception was the 9.7% who disagreed with this statement implying that low cholesterol levels were not their reason for choosing palm oil over sunflower oil. These farmers probably had other valid reasons for choosing palm oil.

Table 5.31 Palm oil protects against heart disease

Q11(k)					
(k) Palm oil has been credited with providing protection against heart disease		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	22	7.3	7.4	7.4
	To little extent	57	19.0	19.1	26.4
	To some extent	106	35.3	35.5	61.9
	To a large extent	72	24.0	24.1	86.0
	To a very large extent	42	14.0	14.0	100.0
	Total	299	99.7	100.0	
Missing system	System	1	.3		
Total		300	100.0		

Table 5.32 Palm oil is cheaper than sunflower oil

Q11(o)					
(o) It is cheaper than sunflower oil		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	18	6.0	6.0	6.0
	To little extent	34	11.3	11.4	17.4
	To some extent	121	40.3	40.5	57.9
	To a large extent	76	25.3	25.4	83.3
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing system	System	1	.3		
Total		300	100.0		

Only 6.0% of the farmers believed that palm oil was more expensive than sunflower oil, while most believed it was between a little and a lot more expensive.

Table 5.33 Palm oil is more profitable than sunflower

Q11(s)					
(s) It is more profitable than sunflower		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	75	25.0	25.1	25.1
	To little extent	47	15.7	15.7	40.8
	To some extent	55	18.3	18.4	59.2
	To large extent	60	20.0	20.1	79.3
	To a very large extent	60	20.0	20.1	100.0
	Total	299	99.7	100.0	
Missing system	System	1	.3		
Total		300	100.0		

A quarter of the respondents disputed the idea that that palm oil is more profitable than sunflower oil, suggesting that farmers may derive revenue from sunflower oil. Meanwhile 34.0% of the farmers agreed that palm oil was to some or a little extent more profitable than

sunflower oil. The remaining 40.0% believed that palm oil exceeded sunflower oil in terms of revenue generation.

5.3.10. Socioeconomic benefits and growth

Table 6.34 Availability of partnerships to improve smallholder income

Q12(a) The availability of partnerships with corporate to improves the smallholder's income					
Reasons		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	32	10.7	10.7	10.7
	To little extent	38	12.7	12.7	23.4
	To some extent	82	27.3	27.4	50.8
	To large extent	74	24.7	24.7	75.6
	To very large extent	73	24.3	24.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.35 Government & NGOs have policy initiatives for smallholders

Q12(b) Government and NGOs have designed policy to interventions in sustainable of oil palm production					
Reasons		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	32	10.7	10.7	10.7
	To little extent	24	8.0	8.0	18.7
	To some extent	68	22.7	22.7	41.5
	To large extent	114	38.0	38.1	79.6
	To very large extent	61	20.3	20.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

On the whole, these results show that efforts had been made by the government and community-based organisations to promote small-scale palm oil production.

Table 5.36 Small-scale farmers assisted to improve livelihoods in the community

Q12(c) Assisted in improving the livelihoods of the community					
Reasons		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	56	18.7	18.7	18.7
	To little extent	33	11.0	11.0	29.8
	To some extent	89	29.7	29.8	59.5
	To large extent	69	23.0	23.1	82.6
	To very large extent	52	17.3	17.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 6.36 shows that small-scale farmers had different perceptions about the role of palm oil in improving the livelihoods of the community.

Table 5.37 Availability of smallholder farmers insurance

Q12(h) Availability of smallholder farmers insurance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	23	7.7	7.7	7.7
	To little extent	69	23.0	23.1	30.8
	To some extent	88	29.3	29.4	60.2
	To large extent	73	24.3	24.4	84.6
	To very large extent	45	15.0	15.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

From these results, it can be seen that insurance services were not easily accessible to all palm oil farmers in Rumonge Village.

Table 5.38 Availability of market to sell product

Q12(i) Availability of market to sell product					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	29	9.7	9.7	9.7
	To little extent	55	18.3	18.4	28.1
	To some extent	85	28.3	28.4	56.5
	To large extent	74	24.7	24.7	81.3
	To very large extent	56	18.7	18.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.39 Availability of information on farming palm oil

Q12(j) Availability of information on farming palm oil					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	12	4.0	4.0	4.0
	To little extent	55	18.3	18.4	22.4
	To some extent	112	37.3	37.5	59.9
	To large extent	77	25.7	25.8	85.6
	To very large extent	43	14.3	14.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

It is apparent that the majority of farmers in Rumonge knew about availability of information, although its supply and adequacy seems to differ between areas, creating. This implies that some farmers have made an effort to get information concerning palm oil and how to expand their crops. Others farm without adequate information and may be underperforming. Alwarrtizi, Nanseki and Chomei (2016) confirm, in Indonesia, that having information about palm oil assists expansion, human resources development and marketing. While some farmers are in full understanding of the benefits of palm oil farming in improving livelihoods, others are still to learn.

Table 5.40 Organisations promoting land rights for smallholders

Q12(k) Availability of organisations that assist in helping smallholders to secure legal land ownership rights					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	16	5.3	5.4	5.4
	To little extent	64	21.3	21.4	26.8
	To some extent	72	24.0	24.1	50.8
	To large extent	107	35.7	35.8	86.6
	To very large extent	40	13.3	13.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Roughly 5% of the farmers were unaware of organisations that assist in helping smallholders to secure legal land ownership rights in their areas, however the majority seemed to know about these services. This suggests that some smallholder farmers are in a stage of survival and not able to contribute to economic growth. Those with an awareness are in a position to help in poverty alleviation and economic growth based on expansion of their plantation. As highlighted in the literature review, access to natural resources like land and knowing information on how and when to plant and harvest is crucial in making the most of the opportunity to farm palm oil.

Table 5.41 Availability of capital for plantation development

Q12(n) Availability of capital for plantation development					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	26	8.7	8.7	8.7
	To little extent	41	13.7	13.7	22.4
	To some extent	103	34.3	34.4	56.9
	To large extent	76	25.3	25.4	82.3
	To very large extent	53	17.7	17.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.41 shows that 8.7% were unaware of any financial capital available for plantation development, suggesting they may not have access to small business funding opportunities at all. Most respondents indicated the availability of capital, some to a large extent. Farmers appear to be in two categories, those determined to exploit every opportunity to change and improve and those who are stuck as they are, with little likelihood of bringing change to their communities.

Table 5.42 Access to technical advice

Q12(p) Access to technical advice					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	15	5.0	5.0	5.0
	To little extent	54	18.0	18.1	23.1
	To some extent	93	31.0	31.1	54.2
	To large extent	87	29.0	29.1	83.3
	To very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

About 5.0% reported they did not have access to technical support services, while 18.0% had limited access. However, 31.0% confirmed that to some extent they were able to get these services in their villages and the remaining 45.7% had access to a large or very large extent.

Table 5.43 Palm oil is productive year-round

Q12(q) It is perennial plant that is productive year-round and has useful life of 20-30 years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	21	7.0	7.0	7.0
	To little extent	32	10.7	10.7	17.7
	To some extent	96	32.0	32.1	49.8
	To large extent	99	33.0	33.1	82.9
	To very large extent	51	17.0	17.1	100.0
	Total	299	99.7	100.0	

Missing	System	1	.3		
Total		300	100.0		

Of the 300 farmers surveyed, 7.0% did not see palm oil as a crop that was productive throughout the farming season and was durable for 20-30 years. On the positive side, it was reported by 42.7% that palm oil was to a little or some extent productive year-round and lasted many years. Half felt strongly that palm oil was a very productive crop that could last for 20-30 years.

Table 5.44 Partnership between Palm companies and community joint ventures

Q12(r) Presence of oil palm company-community joint ventures					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	18	6.0	6.0	6.0
	To petite extent	34	11.3	11.4	17.4
	To some extent	96	32.0	32.1	49.5
	To large extent	109	36.3	36.5	86.0
	To very large extent	42	14.0	14.0	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

6.0% of the farmers reported that there were no palm company-community joint ventures, suggesting that the level of cooperation between small-scale farmers and established palm oil production companies was probably weak or non-existent in these areas. Meanwhile 11.3% said they had some knowledge of this while the vast majority had full knowledge of these partnerships.

Table 5.45 Palm oil is cheaper to produce

Q12(s) It is cheaper to produce					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	33	11.0	11.0	11.0
	To little extent	81	27.0	27.1	38.1
	To some extent	44	14.7	14.7	52.8
	To large extent	88	29.3	29.4	82.3
	To very large extent	53	17.7	17.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.45 suggests that 11.0% of the farmers did not believe that palm oil was cheaper to produce; an indication that these farmers probably had another valid reason for choosing palm oil rather than affordability. At the same time 27.0% of the respondents highlighted that to a little extent palm oil was cheaper than the other crops. This statement was supported more strongly by the other members of the farming community (61.7%).

Table 5.46 Palm oil promotes well being

Q12(u) Promotion of well being					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	6	2.0	2.0	2.0
	To little extent	51	17.0	17.1	19.1
	To some extent	61	20.3	20.4	39.5
	To large extent	110	36.7	36.8	76.3
	To very large extent	71	23.7	23.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Only 2.0% felt palm oil does not promote well-being, while 17.0% believed to a little extent that palm oil had the power to promote well-being in households. The vast majority believed that to some, large or a very large extent that palm oil was good for well-being.

5.3.11 Description of poverty and the role of palm oil plantation on poverty alleviation

In this section, small palm farmers were asked to define the meaning of poverty from their own perspective as members of the Rumonge community. As shown below (table 5.47), the results revealed wide-ranging interpretations of poverty among the farmers.

Table 5.47 Poverty is man made

Q13(a) Poverty is man made					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	10	3.3	3.3	3.3
	To little extent	51	17.0	17.1	20.4
	To some extent	77	25.7	25.8	46.2
	To a large extent	79	26.3	26.4	72.6
	To a very large extent	81	27.0	27.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Nearly 3.3% of the respondents disagreed with the statement that poverty is manmade while 17.0% that agreed to a little extent. The vast majority believed that poverty is man made to some, a large or very large extent.

Table 5.48 Poverty is a chronic disease

Q13(b) Poverty is a chronic disease					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	21	7.0	7.0	7.0
	To little extent	35	11.7	11.7	18.7
	To some extent	112	37.3	37.5	56.2
	To a large extent	90	30.0	30.1	86.3
	To a very large extent	41	13.7	13.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.48 suggests that 7.0% of the respondents did not accept the notion that poverty is a chronic disease. Many indicated that poverty is a chronic disease to some or a large extent.

Table 5.49 Poverty is classified by not owning material things

Q13(c) Poverty is classified by not owning items such as car, TV, radio or stylish clothes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	19	6.3	6.4	6.4
	To little extent	54	18.0	18.1	24.4
	To some extent	58	19.3	19.4	43.8
	To a large extent	99	33.0	33.1	76.9
	To a very large extent	69	23.0	23.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Only 6.3% of the farmers surveyed did not view poverty as being classified by not owning items such as car, TV, radio or stylish clothes. For many, poverty is indeed about material things.

Table 5.50 Poverty is deprivation from access to resources

Q13(k) Poverty is deprivation from access to resources such land credit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	33	11.0	11.0	11.0
	To little extent	47	15.7	15.7	26.8
	To some extent	96	32.0	32.1	58.9
	To a large extent	71	23.7	23.7	82.6
	To a very large extent	51	17.0	17.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

11.0% of the farmers did not agree with the view that poverty is deprivation from access to resources such as land and credit. These farmers probably understood poverty in a different context. While 15.7% agreed to a little extent that poverty amounted to deprivation from access to resources such as land and credit, over 70% agreed to some, a large or very large extent.

Table 5.51 Income from palm oil improves health conditions

Q14c Income from palm oil growth has assisted in improving health conditions					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	16	5.3	5.4	5.4
	To little extent	38	12.7	12.7	18.1
	To some extent	122	40.7	40.8	58.9
	To a large extent	70	23.3	23.4	82.3
	To a very large extent	53	17.7	17.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Nearly 5.3% of the respondents disagreed with the view that income from palm oil growth has assisted in improving health conditions. Most small-scale farmers agreed that palm oil helps to improve health conditions for individuals and households in Rumonge.

Table 5.52 Cash transfer programmes for smallholders

Q14d There are programs on cash transfers to cover interim periods when income streams are affected					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	4	1.3	1.3	1.3
	To little extent	74	24.7	24.7	26.1
	To some extent	68	22.7	22.7	48.8
	To a large extent	101	33.7	33.8	82.6
	To a very large extent	52	17.3	17.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

About 1.3% of the palm oil farmers indicated that there were no specific programmes on cash transfers to cover interim periods when cash streams are affected, while 24.7% claimed that such programmes were sometimes available in their areas. The remaining three quarters validated the existence of such programmes to some, a large or very large extent.

Table 5.53 Palm oil increases employment for the community

Q14e Increased employment for the community					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	32	10.7	10.7	10.7
	To little extent	46	15.3	15.4	26.1
	To some extent	97	32.3	32.4	58.5
	To a large extent	81	27.0	27.1	85.6
	To a very large extent	42	14.0	14.0	99.7
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

In terms of Table 5.53, 10.7% of the farmers did not believe that palm oil farming increased employment for the community, while 15.3% believed this to be true to a little extent. The majority of farmers realised the important role that palm oil farming play in creating jobs for community members in their villages.

Table 5.54 Small-scale farmers' ability to satisfy statutory obligations

Q14i Ability to satisfy statutory obligations					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	11	3.7	3.7	3.7
	To little extent	21	7.0	7.0	10.7
	To some extent	116	38.7	38.8	49.5
	To a large extent	106	35.3	35.5	84.9
	To a very large extent	45	15.0	15.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Roughly 3.7% of the respondents indicated that they were completely unable to satisfy statutory obligations, suggesting perhaps that compliance costs were probably high for these farmers. 7.0% felt able to meet these legal requirements to a little exten. Almost two thirds felt able to meet these requirements to some extent or a large extent. 15.0% felt able to do so to a very large

extent, implying that their palm oil ventures complied with government regulations in the palm oil sector.

Table 5.55 Availability of education on sustainable oil palm production

Q14k Availability of education on sustainable oil palm production					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	22	7.3	7.4	7.4
	To little extent	32	10.7	10.7	18.1
	To some extent	129	43.0	43.1	61.2
	To a large extent	75	25.0	25.1	86.3
	To a very large extent	41	13.7	13.7	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

Only 7.3% of the respondents indicated that education was not available to help understand and apply sustainable palm oil farming methods. 10.7% agreed that a little education was available, with 43.0% feeling some agreement. 25.0% agreed to a large extent and the remaining 13.7% agreed to a very large extent.

Table 5.56 Affordability as a means of living

Q14p Affordability as a means of living					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	19	6.3	6.4	6.4
	To little extent	40	13.3	13.4	19.7
	To some extent	117	39.0	39.1	58.9
	To a large extent	87	29.0	29.1	88.0
	To a very large extent	36	12.0	12.0	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

Almost 6.3% of the farmers denied that palm oil was affordable as a means of living in their communities. On the contrary, 13.3% indicated that palm oil only provides a means of living for community members to a little extent, 39.0% to some extent and a total of 41.0% to a large or very large extent.

5.3.12. Negative effects experienced by small-scale palm oil farmers

Table 5.57 Palm oil causes air pollutions from the forest's fires

Q15a Causes air pollutions from the forest's fires					
Negative effect		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	35	11.7	11.7	11.7
	To little extent	42	14.0	14.0	25.8
	To some extent	82	27.3	27.4	53.2
	To a large extent	99	33.0	33.1	86.3
	To a very large extent	41	13.7	13.7	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

Only 11.7% did not believe that palm oil fires caused air pollution. Others acknowledged air pollution to a little extent (14.0%) or some extent (27.3%), and almost half to a large or very large extent. Most realised the negative impact of palm oil production on the natural environment.

Table 5.58 Palm oil affects wildlife

Q15b Disappearing of Orangutans (It affects animals like Orangutans)					
Negative effect		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	34	11.3	11.4	11.4
	To little extent	73	24.3	24.4	35.8
	To some extent	93	31.0	31.1	66.9
	To a large extent	44	14.7	14.7	81.6
	To a very large extent	55	18.3	18.4	100.0
	Total	299	99.7	100.0	

Missing system	1	.3		
Total	300	100.0		

11.3% of the respondents disputed the claim that palm oil farming led to disappearance of animals like Orangutans, while 24.3% felt that palm oil farming was only to a little extent responsible for the depletion of wild species in their areas. Almost one third of the farmers acknowledged this problem to a large or very large extent.

Table 5.59 Palm oil cultivation contributes to deforestation

Q15c Disappearing of forests					
Negative effect		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	12	4.0	4.0	4.0
	To little extent	31	10.3	10.4	14.4
	To some extent	110	36.7	36.8	51.2
	To a large extent	106	35.3	35.5	86.6
	To a very large extent	40	13.3	13.4	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

According to table 5.59, only a very small number of the farmers (4.0%) denied that farming activities led to deforestation. Almost a half of the respondents acknowledged this to a little or some extent. Significantly, almost half confirmed this to a large or very large extent.

Table 5.60 Water pollutions from fertilizers

Q15d Water pollutions from fertilizers					
Negative effect		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	26	8.7	8.7	8.7
	To little extent	53	17.7	17.7	26.4
	To some extent	74	24.7	24.7	51.2
	To a large extent	103	34.3	34.4	85.6
	To a very large extent	43	14.3	14.4	100.0

	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

8.7% of the farmers indicated that there was no water pollution from palm oil fertilisers in their farming projects, while 17.7% conceded that this happened to a little extent. 24.7% admitted that fertilisers did to some extent cause water pollution and the remaining almost 50% agreed to a large or very large extent.

Table 5.61 Palm oil causes carbon emissions

Q15e It causes carbon emissions					
Negative effect		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	12	4.0	4.0	4.0
	To little extent	46	15.3	15.4	19.4
	To some extent	116	38.7	38.8	58.2
	To a large extent	77	25.7	25.8	83.9
	To a very large extent	48	16.0	16.1	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

Only 4.0% of the respondents did not think that palm oil farming led to carbon emissions at all. 15.3% felt that to a little extent, these activities did cause carbon emissions. However, most of these farmers admitted that palm oil farming was responsible for carbon emissions to some, a large or very large extent. In summary, these data show that most farmers realised that their farming activities were harming the natural environment.

Table 5.62 Palm oil requires a large-scale land clearing

Q15g Required a large-scale land clearing					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	8	2.7	2.7	2.7
	To little extent	37	12.3	12.4	15.1
	To some extent	79	26.3	26.4	41.5
	To a large extent	124	41.3	41.5	82.9
	To a very large extent	51	17.0	17.1	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

Only 2.7% of the respondents disagreed with the claim that palm oil farming required large scale land clearing, while 12.3% agreed to a little extent that their farming activities required large-scale land clearing. The vast majority agreed to some, a large or a very large extent.

Table 5.63 Palm oil causes water crisis

Q15j Causes water crisis					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	21	7.0	7.0	7.0
	To little extent	64	21.3	21.4	28.4
	To some extent	75	25.0	25.1	53.5
	To a large extent	66	22.0	22.1	75.6
	To a very large extent	72	24.0	24.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Table 5.63 reports that 7.0% of the farmers were not convinced that their farming activities caused water shortages. 21.3% did accept responsibility for this problem to a little extent and 25.0% to some extent. Almost half acknowledged to a large or very large extent that palm oil production contributed to the water crisis. The data confirms that most farmers were fully aware of the fact that high water usage in palm oil farming contributes to frequent water crises due to unsustainable farming methods.

Table 5.64 Climate change

Q15n Climate change					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	39	13.0	13.0	13.0
	To little extent	27	9.0	9.0	22.1
	To some extent	72	24.0	24.1	46.2
	To a large extent	89	29.7	29.8	75.9
	To a very large extent	72	24.0	24.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

13.0% of the farmers surveyed indicated that palm oil did not have any negative impact on climate change, while 9.0% argued that it did but only to a little extent. 24.0% affirmed that palm oil farming contributed to some extent to climate change. Over half agreed to a large or

very large extent. It is evident that most small-scale farmers understood the fact that palm oil farming was partly responsible for climate change in their respective areas.

5.3.13. Challenges facing small-scale farmers in palm oil farming

Table 5.65 Lack of funds

Q16a Lack of funds					
Challenges		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	11	3.7	3.7	3.7
	To little extent	25	8.3	8.4	12.0
	To some extent	97	32.3	32.4	44.5
	To a large extent	84	28.0	28.1	72.6
	To a very large extent	82	27.3	27.4	100.0
	Total	299	99.7	100.0	
Missing System		1	.3		
Total		300	100.0		

Only 3.7% of the respondents indicated that they did not experience funding constraints at all and 8.3% to a little extent. 32.3% were concerned about funding to some extent, while over half were very worried about the shortage of funds.

Table 5.66 Lack of skills on palm oil farming

Q16b Not having skills for farm palm oil trees					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	11	3.7	3.7	3.7
	To little extent	54	18.0	18.1	21.7
	To some extent	74	24.7	24.7	46.5
	To a large extent	110	36.7	36.8	83.3
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Nearly 3.7% of the farmers surveyed were not concerned about skills while 18.0% were concerned to a little extent. 24.7% agreed with this statement to some extent and the remainder agreed to a large or very large extent.

Table 5.67 Lack of information about the value chain of the palm oil industry

Q16c Lack of information about palm oil value chain of the palm oil industry					
Challenges		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	27	9.0	9.0	9.0
	To little extent	36	12.0	12.0	21.1
	To some extent	83	27.7	27.8	48.8
	To a large extent	101	33.7	33.8	82.6
	To a very large extent	52	17.3	17.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

9.0% had no difficulty accessing palm oil information, 12.0% said they experienced little problems in accessing this information, while 27.7% encountered some. However, half of the farmers reported that accessing palm oil information was a problem that hampered growth.

Table 5.68 Conflicts causes palm oil farmers to desert their plantations

Q16e War/conflicts causes palm oil farmers to desert their plantations					
Challenges		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	46	15.3	15.4	15.4
	To little extent	25	8.3	8.4	23.7
	To some extent	44	14.7	14.7	38.5
	To a large extent	101	33.7	33.8	72.2
	To a very large extent	83	27.7	27.8	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

15.3% of the farmers did not believe that war/conflict caused palm oil farmers to desert their plantations. This group believed that this statement was a result of those who supported political interference in palm oil farming activities. 8.3% of the respondents agreed that conflict

had a little effect on palm oil farming and 14.7% who also agreed some effect. Over 60% said that to a large or very large extent the political conflict in the country was responsible for displacement of some farmers in certain villages.

Table 5.69 Poor marketing network

Q16h Poor marketing network					
Challenges		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	33	11.0	11.1	11.1
	To little extent	42	14.0	14.1	25.3
	To some extent	75	25.0	25.3	50.5
	To a large extent	104	34.7	35.0	85.5
	To a very large extent	43	14.3	14.5	100.0
	Total	297	99.0	100.0	
Missing	System	3	1.0		
Total		300	100.0		

11% of the farmers surveyed did not have problems with the marketing network, suggesting that these farmers probably had effective marketing relationships with their distributors or agents. 14.0% of the farmers said that their marketing network was poor, followed 25.0% who experienced similar problems and 34.7% who had serious problems with their marketing network. 14.3% of the farmers said that the marketing network was worse in their areas than the rest of the group.

Table 5.70 Lack of storage facilities and infrastructure

Q16i Lack of storage facilities and infrastructure					
Challenges		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	34	11.3	11.4	11.4
	To little extent	44	14.7	14.7	26.1
	To some extent	97	32.3	32.4	58.5
	To a large extent	64	21.3	21.4	79.9
	To a very large extent	60	20.0	20.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		

Total	300	100.0		
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Only 11.3% of the farmers believed that lack of facilities and infrastructure was not a real problem in their farms; while 14.7% conceded that it was to a little extent. Other farmers affirmed that facilitates and infrastructure for palm oil production was a big problem in their farms: 32.3% to some extent; 21.3% to a large extent and 20.0% to a very large extent.

Table 5.71 Poor market price

Q16k Poor market price					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	11	3.7	3.7	3.7
	To little extent	41	13.7	13.7	17.4
	To some extent	112	37.3	37.5	54.8
	To a large extent	97	32.3	32.4	87.3
	To a very large extent	38	12.7	12.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

3.7% of the farmers indicated that market price was insignificant while 13.7% said that to a little extent market price was a barrier to palm oil farming activities. This view received overwhelming support from the other farmers: to some extent (37.3%); to a large extent (32.3%) and to a very large extent (12.7%). Most farmers seem concerned about market prices. This point was later validated by the interviews which showed that farmers sold at a loss.

Table 5.72 High costs of milling machine

Q16p High costs of milling machine					
Challenge		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	43	14.3	14.5	14.5
	To little extent	70	23.3	23.6	38.0
	To some extent	50	16.7	16.8	54.9
	To a large extent	75	25.0	25.3	80.1
	To a very large extent	59	19.7	19.9	100.0
	Total	297	99.0	100.0	
Missing	System	3	1.0		

Total	300	100.0		
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Approximately 14.3% of the small-scale farmers did not think that the high cost of milling machine was a major problem in their farms, while 23.3% did to a little extent. A further 16.7% indicated that milling machines were expensive to some extent. 25.0% felt this to a large extent and 19.7% to a very large extent.

Table 5.73 Investment opportunities for small-scale palm oil farmers

Q14b Small-scale farmers are limited to the investment of palm oil agriculture					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	15	5.0	5.0	5.0
	To little extent	38	12.7	12.7	17.7
	To some extent	81	27.0	27.1	44.8
	To a large extent	120	40.0	40.1	84.9
	To a very large extent	44	14.7	14.7	99.7
	32	1	.3	.3	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

5.0% of the respondents disagreed with the explanation that small-scale farmers are limited by a lack of investment in palm oil, while 12.7% felt a little limitation. 27.0% felt some limitation but almost half reported that to a large or very large extent, which limited investment options in the agricultural sector.

5.3.14. Strategies used to ensure sustainable palm oil farming

The primary aim of this question was to establish whether there were any useful strategies that small-scale farmers used to deal with the challenges that prevented growth of their palm oil ventures. The data sets in table 5.74 confirm these farmers used a wide range of strategies to mitigate challenges in their farms.

Table 5.74 Training of small-scale farmers on sustainable farming

Q17b Training a small-scale farmer how to exercise a sustainable farming					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	18	6.0	6.0	6.0
	To little extent	24	8.0	8.0	14.0
	To some extent	69	23.0	23.1	37.1
	To a large extent	144	48.0	48.2	85.3
	To a very large extent	44	14.7	14.7	100.0
	Total	299	99.7	100.0	
Missing System		1	.3		
Total		300	100.0		

6.0% felt that training of small-scale farmers would not lead to sustainable farming of palm oil at all while 8.0% indicated this to a little extent. 23.0% also supported this view to some extent while 48.0% that if trained, farmers would be able to manage problems in their farms. This statement received very strong backing from a further 14.7% of the farmers.

Table 5.75 Manage both cultivating of palm oil and environmental affairs

Q17c Manage both cultivating of palm oil and environmental affairs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	22	7.3	7.4	7.4
	To little extent	78	26.0	26.1	33.4
	To some extent	85	28.3	28.4	61.9
	To a large extent	49	16.3	16.4	78.3
	To a very large extent	65	21.7	21.7	100.0
	Total	299	99.7	100.0	
Missing System		1	.3		
Total		300	100.0		

7.3% of the farmers said that managing both cultivation of palm oil and nature conservation would not reduce the environmental challenges arising from palm oil farming at all, while

26.0% agreed that to a little extent managing both activities would reduce these problems. The remaining two thirds agreed to some, a large or very large extent.

Table 5.76 Ecosystem services are maintained

Q17e Ecosystem services are maintained					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	36	12.0	12.0	12.0
	To little extent	30	10.0	10.0	22.1
	To some extent	89	29.7	29.8	51.8
	To a large extent	95	31.7	31.8	83.6
	To a very large extent	49	16.3	16.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

12.0% of the farmers indicated that maintaining ecosystem services would not reduce the environmental challenges linked to palm oil farming, whereas 10.0% argued that this would help to a little extent. The other members of the group felt that proper management of ecosystem resources would reduce environmental problems: 29.7% to some extent; 31.7% to a large extent; and 16.3% to a very large extent. Judging by these responses, farmers saw ecosystems maintenance services as the answer to the environmental challenges emanating from palm oil farming activities.

Table 5.77 Community use is respected

Q17f Community use is respected					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	51	17.0	17.1	17.1
	To little extent	57	19.0	19.1	36.1
	To some extent	75	25.0	25.1	61.2
	To a large extent	74	24.7	24.7	86.0
	To a very large extent	42	14.0	14.0	100.0

	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

17.0% of the farmers indicated that respecting community use of the land would not reduce the problems that farmers faced in land right issues. On the contrary, the other farmers said that respecting community use would help their members resolve land issues, which prevented them from expanding their palm oil ventures. In sum, their responses were as follows: 19.0% to little extent; 25.0% to some extent; 24.7% to a large extent and 14.0% to a very large extent.

Table 5.78 Financial incentives for companies and the community

Q17g Develop a financial incentive (e.g. via funds, low interest loans or other mechanisms) for companies, community.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	7.3	.3	.3
	No to any extent at all	10	3.3	3.3	3.7
	To little extent	26	8.7	8.7	12.3
	To some extent	112	37.3	37.3	49.7
	To a large extent	97	32.3	32.3	82.0
	To a very large extent	52	17.3	17.3	99.7
	Missing system	1	.3	.3	100.0
	Total	300	100.0	100.0	

3.3% of the respondents were not convinced that providing financial incentives for good palm oil farming practices would help reduce environmental problems caused by some of their members. On the other hand, 8.7% accepted that this strategy, to a limited extent, would reduce the perceived ecological problems. 37.3% agreed to some extent and 32.3% were also in large agreement.

Table 5.79 Use of social media

Q18d Using social media such as internet, Facebook, Twitter, WhatsApp, etc.					
Marketing channel		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	29	9.7	9.7	9.7
	To little extent	58	19.3	19.4	29.1
	To some extent	47	15.7	15.7	44.8
	To a large extent	115	38.3	38.5	83.3
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

9.7% of the respondents were of the view that using social media such as internet, Facebook, Twitter, WhatsApp, etc. would not reduce environmental challenges, suggesting some of this group either did not have a full grasp of the benefits of social media or that they were not adept at using it as a marketing tool. For other participants, social media helped to a little extent (9.7%); to some extent (15.7%); to a large extent (38.3%) and to a very large extent (16.7%).

Table 5.80 Using sales Agents

Q18f Using sales Agents					
Marketing channel		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	10	3.3	3.3	3.3
	To little extent	41	13.7	13.7	17.1
	To some extent	59	19.7	19.7	36.8
	To a large extent	138	46.0	46.2	82.9
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

3.3% of the farmers did not use sales agents to get their produce to the market, while 3.3% confirmed that they had used these services to a little extent, 19.7% to some extent, 46.0% to a

large extent and 16.7% to a very large extent. What is apparent from these data is that many farmers reported positive experiences in using sales agents to market their products.

Table 5.81 Selling to national markets

Q18n Selling to national markets					
Marketing channel		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	43	14.3	14.4	14.4
	To little extent	21	7.0	7.0	21.4
	To some extent	95	31.7	31.8	53.2
	To a large extent	79	26.3	26.4	79.6
	To a very large extent	60	20.0	20.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

14.3% of the farmers did not have access to national markets, and 7.0% had access to a little extent. 31.7% confirmed that to some extent they were able to sell to national markets while 26.3% could to a large extent. The remaining 20.0% indicated that to a very large extent, they were able to sell to the national market.

Table 5.82 Selling to international to international markets

Q18o Selling to international agency (exporting)					
Marketing channel		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	10	3.3	3.3	3.3
	To little extent	45	15.0	15.1	18.4
	To some extent	81	27.0	27.1	45.5
	To a large extent	114	38.0	38.1	83.6
	To a very large extent	49	16.3	16.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

3.3% of the small-scale farmers could not sell their products to international markets because there were no suitable marketing channels. 15.0% reported that to a little extent they could sell, with 27.0%, 38.0% and 16.3% able to sell to some, a large or very large extent.

Table 5.83 Selling to local markets

Q18p Selling to local markets					
Marketing channel		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	8	2.7	2.7	2.7
	To little extent	40	13.3	13.4	16.1
	To some extent	122	40.7	40.8	56.9
	To a large extent	94	31.3	31.4	88.3
	To a very large extent	35	11.7	11.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

2.7% of the farmers reported that opportunities to sell in the local market were severely limited; 13.3% did to a little extent and 40.7% to some extent. A further 31.3% said that selling to the local market was possible to a large extent, and 11.7% agreeing to a very large extent.

5.3.15. The cost of palm oil production for small-scale farmers

Table 5.84 High costs in farming implement

Q19a High costs in farming implement					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	22	7.3	7.4	7.4
	To a little extent	22	7.3	7.4	14.7
	To some extent	79	26.3	26.4	41.1
	To a large extent	140	46.7	46.8	88.0
	To a very large extent	35	11.7	11.7	100.0
	Total	299	99.7	100.0	
Missing system		1	.3		
Total		300	100.0		

7.3% of the farmers were not concerned about the cost of farming implements at all; meaning that they probably managed to acquire this equipment at a relatively cheaper price in their areas. At the same time a further 7.3% conceded that to at least a little extent farming equipment was costly for them. 26.3% reported that to some extent such equipment was expensive, followed by 46.7% who affirmed this point as well and 11.7% who validated it strongly.

Table 5.85 High interest rate in loans

Q19b High interest rate in loans					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	35	11.7	11.7	11.7
	To a little extent	29	9.7	9.7	21.4
	To some extent	104	34.7	34.8	56.2
	To a large extent	81	27.0	27.1	83.3
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

11.7% did not identify high interest rates loans at all but the rest of the group was concerned with the rising cost of loans. Their responses can be summed up as follows: 9.7% to a little extent; 34.7% to some extent; 27.0% to a large extent and 16.7% to a very large extent.

Table 5.86 High cost of hiring labour

Q19c High cost of hiring labour					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	16	5.3	5.4	5.4
	To a little extent	39	13.0	13.0	18.4
	To some extent	75	25.0	25.1	43.5
	To a large extent	113	37.7	37.8	81.3
	To a very large extent	56	18.7	18.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		

Total	300	100.0		
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5.3% of the respondents indicated that the labour costs were not a problem to any extent, suggesting they either relied on families for labour or could afford these costs. 13.0% found it difficult to a little extent to finance their labour costs. The remaining 80% or so confirmed high labour costs were a problem to some, a large or very large extent.

Table 5.87 High advertising cost of products

Q19d High advertising cost of products					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	36	12.0	12.0	12.0
	To a little extent	22	7.3	7.4	19.4
	To some extent	128	42.7	42.8	62.2
	To a large extent	65	21.7	21.7	83.9
	To a very large extent	47	15.7	15.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

12.0% of the farmers did not experience high costs in advertising; while 7.3% felt these costs to a little extent. A significant number (42.7%) of these farmers conceded that advertising costs were relatively high in their ventures. The other farmers indicated that these costs were high to a large or very large extent in their palm oil ventures (21.7% and 15.7% respectively).

Table 5.88 High storage facilities costs

Q19e High storage facilities costs					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	33	11.0	11.0	11.0
	To a little extent	29	9.7	9.7	20.7
	To some extent	78	26.0	26.1	46.8
	To a large extent	103	34.3	34.4	81.3
	To a very large extent	56	18.7	18.7	100.0

	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

11.0% indicated that they did not experience high costs in storage facilities, while 9.7% said these costs were evident to a little extent in their ventures. A further 26.0% said these costs were of some significance in their business. Many however (34.3%) affirmed that storage costs were high and 18.7% felt very high.

Table 5.89 High production costs

Q19f High production costs					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	8	2.7	2.7	2.7
	To a little extent	39	13.0	13.0	15.7
	To some extent	104	34.7	34.8	50.5
	To a large extent	98	32.7	32.8	83.3
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

2.7% of the farmers did not experience high costs in the production of palm oil at all, while 13.0% did to a little extent; 34.7% to some extent; 32.7% to a large extent and 16.7% to a very large extent.

Table 5.90 High start-up costs for palm oil trees

Q19j High start –up costs for palm oil trees					
Costs		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	52	17.3	17.4	17.4
	To little extent	28	9.3	9.4	26.8
	To some extent	92	30.7	30.8	57.5
	To a large extent	75	25.0	25.1	82.6
	To a very large extent	52	17.3	17.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

17.3% of the farmers did not have problems with start-up costs for palm oil trees, while 9.3% found these costs to be a little cumbersome in their businesses. A significant number (30.7%) found the costs something of a factor, 25.0% a large factor and 17.3% a very large factor.

5.3.16. Advantages / benefits of farming palm oil

Table 5.91 Palm oil create worth income

Q20. To what extent are the following factors advantages of farming palm oil?					
(a) Create worth income		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	7	2.3	2.3	2.3
	To a little extent	34	11.3	11.4	13.7
	To some extent	65	21.7	21.7	35.5
	To a large extent	137	45.7	45.8	81.3
	To a very large extent	56	18.7	18.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

2.3% of the farmers surveyed thought that palm oil did not lead to wealth creation, while 11.3% felt that it helps to a little extent. 21.7% admitted that palm oil farming helped them create wealth, 45.7% agreed that palm oil farming was an alrge contributor to wealth creation and 18.7% affirmed that palm oil farming was instrumental to wealth creation to a large extent.

Table 5.92 To promote education

Q20b					
(b) To promote education		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	51	17.0	17.1	17.1
	To a little extent	30	10.0	10.0	27.1
	To some extent	116	38.7	38.8	65.9
	To a large extent	65	21.7	21.7	87.6
	To a very large extent	37	12.3	12.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		

Total	300	100.0		
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17% of the respondents agreed that palm oil helped to promote education in their areas, while 10% felt this was only true to a little extent. A significant number of the respondents (38.7%) confirmed that palm oil played a role in promoting education, followed by 21.7% who shared similar views about the large positive role of palm oil in education. Only 12.3% of the respondents felt that palm oil had a large role to play in education.

Table 5.93 Lift up the poor to prosperity

Q20c					
(c) Lift up the poor to prosperity		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	33	11.0	11.0	11.0
	To little extent	32	10.7	10.7	21.7
	To some extent	128	42.7	42.8	64.5
	To a large extent	70	23.3	23.4	88.0
	To a very large extent	36	12.0	12.0	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

For some respondents (11%), palm oil did not lift poor people to prosperity. Other respondents said that to a little extent (10%), palm oil helps to lift poor communities to prosperity in their villages, followed by 42.7% who also agreed with this statement. 23.3% said that palm oil is central to ending for poor households. 12% also concurred with this statement, saying that to a very large extent, palm oil lifts up the poor to prosperity.

Table 5.94 To promote food security

Q20d					
(d) To promote food security		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	32	10.7	10.7	10.7
	To a little extent	54	18.0	18.1	28.8
	To some extent	63	21.0	21.1	49.8
	To a large extent	97	32.3	32.4	82.3
	To a very large extent	52	17.3	17.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

10.7% of the respondents said that palm oil did not promote food security at all. 18% said palm oil helped to a little extent; to some extent (17.3%); to a larger extent (32.3%) and to a very large extent (17.3%). On the whole, these results show that participants had mixed feelings about the role of palm oil in promoting food security.

Table 5.95 Palm oil decreases cholesterol levels

Q20e					
(e) It decreases cholesterol levels		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	11	3.7	3.7	3.7
	To a little extent	46	15.3	15.5	19.2
	To some extent	96	32.0	32.3	51.5
	To a large extent	97	32.3	32.7	84.2
	To a very large extent	45	15.0	15.2	99.3
	Total	297	99.0	100.0	
Missing	System	3	1.0		
Total		300	100.0		

3.7% of the respondents rejected the idea that palm reduces cholesterol levels, while 15.3% said that said to a little extent palm oil did. Meanwhile, 32.3% of the respondents added that to a large extent palm oil is positively associated with cholesterol reduction, while 15% more supported this view to a very large extent.

Table 5.96 Palm oil reduces oxidative stress

Q20f					
(f) It reduce oxidative stress		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	17	5.7	5.7	5.7
	To a little extent	70	23.3	23.4	29.1
	To some extent	112	37.3	37.5	66.6
	To a large extent	52	17.3	17.4	83.9
	To a very large extent	48	16.0	16.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

15.7% of the respondents did not believe that palm oil reduces oxidative stress, while 23.3 were a little more upbeat about its positive in this regard. A significant number (37.3% and 17.3%) of the respondents affirmed that palm oil helps to reduce oxidative stress to some or a large extent, followed by 16% who agreed to a very large extent. In summary, the majority of participants generally accepted that palm oil contributed to the reduction of oxidative stress in their lives.

Table 5.97 Increases Vitamin A

Q20g It increases Vitamin A					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	10	3.3	3.3	3.3
	To a little extent	51	17.0	17.1	20.4
	To some extent	83	27.7	27.8	48.2
	To a large extent	120	40.0	40.1	88.3
	To a very large extent	35	11.7	11.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Only 3.3% of the respondents believed palm oil did not increase vitamin A. It was believed that palm oil helps to increase vitamin A to a little extent (17%), to some extent (27.7%), to a large extent (40%) and to a very large extent (11.7%). These results show that palm oil is believed to play a vital role in increasing vitamin A, adding to its importance for the community of Rumonge.

Table 5.98 Palm oil slows progression of heart disease

Q20h It slow the progression of heart disease					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	18	6.0	6.0	6.0
	To a little extent	54	18.0	18.1	24.1
	To some extent	99	33.0	33.1	57.2
	To a large extent	78	26.0	26.1	83.3
	To a very large extent	50	16.7	16.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Very few (6%) of the respondents agreed that palm oil slows down progression of heart disease. Other respondents thought that palm oil does reduce progression of heart disease to a little extent (18%), to some extent (33%), to a large extent (26%) and to a very large extent (16.7%).

Table 5.99 Palm oil boots the brain health

Q20i It boots the brain health					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	38	12.7	12.7	12.7
	To a little extent	24	8.0	8.0	20.7
	To some extent	92	30.7	30.8	51.5
	To a large extent	107	35.7	35.8	87.3
	To a very large extent	35	11.7	11.7	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

12.7% of the small-scale palm oil farmers did not believe that palm oil boosts brain health, while 8% that said palm oil does to a little extent. Significantly, 30.7% of these respondents affirmed that palm oil improves brain health to some extent, a further 35% that it does to a large extent and 11.7% certain that palm oil contributes significantly to brain health. Once again, these results validate the notion that palm oil plays an important role in enhancing health and well-being.

Table 5.100 Palm oil improves the skin and hair health

Q20j It improves the skin and hair health					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	13	4.3	4.3	4.3
	To a little extent	53	17.7	17.7	22.1
	To some extent	89	29.7	29.8	51.8
	To a large extent	56	18.7	18.7	70.6
	To a very large extent	88	29.3	29.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

4.3% of the small-scale farmers did not share the view that palm improves the skin and hair health while 17.7% indicated that palm oil was good to a little extent. 29.7% confirmed this statement. Other respondents concurred with this view by stating that to a large extent (18.7%), or to a very large extent (29.3%), palm oil contributed to improvement of skin and hair health.

Table 5.101 The association is credited to build infrastructure

Q20k Association has been credited with building roads, schools and health care centres					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	7	2.3	2.3	2.3
	To a little extent	25	8.3	8.4	10.7
	To some extent	115	38.3	38.5	49.2
	To a large extent	118	39.3	39.5	88.6
	To a very large extent	34	11.3	11.4	100.0
	Total	299	99.7	100.0	

Missing	System	1	.3		
Total		300	100.0		

2.3% of the respondents disputed the idea that the Association has been credited with building roads, schools and health care centres, while 8.3% were somewhat skeptical about this view. However, 38.3% of the respondents confirmed that the Association, to some extent, had been credited to provide these services in their areas. 11.3% also agreed, saying that to a very large extent the association had been accredited to offer these services.

Table 5.102 Reserve funds to cover the smallholder's expenses

Q201 Farmers are able to maintain a reserve funds to cover the smallholder's expenses					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not to any extent at all	6	2.0	2.0	2.0
	To a little extent	43	14.3	14.4	16.4
	To some extent	75	25.0	25.1	41.5
	To a large extent	94	31.3	31.4	72.9
	To a very large extent	80	26.7	26.8	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

Very few of the respondents disagreed totally with the view that farmers might be able to access reserve funds to cover expenses. 14.3% indicated that this was possible to a little extent, 25% to some extent, 31.3% to a large extent and 26.7% to a very large extent. Judging by these results, many of the farmers did feel they could access the designated reserve fund in their respective villages.

Table 5.103 Palm is productive year round

Q20m It is a perennial plant that is productive year-round and has a useful life of between 20-25 years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	35	11.7	11.7	11.7
	To a little extent	40	13.3	13.4	25.1
	To some extent	80	26.7	26.8	51.8
	To a large extent	91	30.3	30.4	82.3
	To a very large extent	52	17.3	17.4	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

11.7% of the respondents did not believe that palm oil is a perennial plant that is productive year-round and has a useful life of between 20-25 years, while 13.3% believed this a little. However 26.7% of the respondents affirmed that it was true to some extent that palm oil was a durable crop that lasted throughout the season, followed by 30.3% who felt this to a large extent and 17.3% believed strongly that palm oil is a perennial plant that is productive year-round. What is evident from these data sets is that most farmers trusted palm oil as a commercially viable crop to alleviate poverty and promote socioeconomic development in Rumonge District.

Table 5.104 Palm is cheaper to produce

Q20n It is cheaper to produce					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No to any extent at all	19	6.3	6.4	6.4
	To a little extent	59	19.7	19.7	26.1
	To some extent	51	17.0	17.1	43.1
	To a large extent	116	38.7	38.8	81.9
	To a very large extent	54	18.0	18.1	100.0
	Total	299	99.7	100.0	
Missing	System	1	.3		
Total		300	100.0		

6.3% of the respondents did not share the view that palm oil was cheaper to produce than any other crop, suggesting that these farmers probably had a negative experience of palm oil farming in Rumonge district. 19.7% of the farmers reported that palm oil was to a little extent cheaper to produce. This view was further supported by almost three quarters of the respondents who were convinced to a more or less large extent that palm oil was relatively cheaper and more affordable to produce than the other crops.

The findings of the study on the role of palm oil in poverty alleviation and socioeconomic development have now been presented. In the next subsection, these findings are analysed to address the research objectives and attendant research questions

5.4 DISCUSSION OF FINDINGS

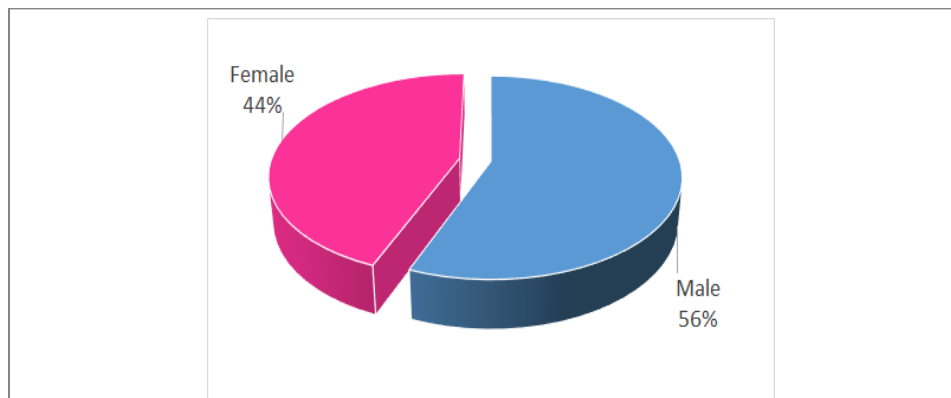
The analysis in this section is carried out in accordance with the research objectives and the accompanying research questions; which are as follows:

- To investigate the socioeconomic benefits and growth of the palm oil production in rural areas in Rumonge. The related research question is: How can the potential economic benefits of palm oil farming, relating to poverty alleviation, be realised in Rumonge, Burundi?
- To assess the role played by palm oil farming on poverty alleviation. This research objective is addressed by the second research question: What are the roles and minimum size of palm tree plantation required to alleviate poverty?
- To assess the challenges experience in small-scale farming of the palm oil tree by famers in Rumonge community. This objective is addressed by the question: What are the challenges of conflict to the farmers of small-scale farming of the palm oil tree in Rumonge Community?
- To study the sustainability aspect of palm oil farming in the rural areas of Burundi. The related question is: How can the palm oil industry provide sustainable developmental in rural areas? What are the costs and timescale for planting palm oil tree plantations in Rumonge and how long will it be before the poor can benefit?

The analysis in this chapter is accomplished through the application of various methods to integrate qualitative and quantitative data; including triangulation, complementarity, initiation and expansion and development (Bryman, 2008). The results reflect the views and experiences of smallholder farmers, management and environmentalists who had an interest in the use and preservation of natural resources in palm oil farming.

5.4.1. Demographic analysis

Figure 5.4.1 Analysis of gender

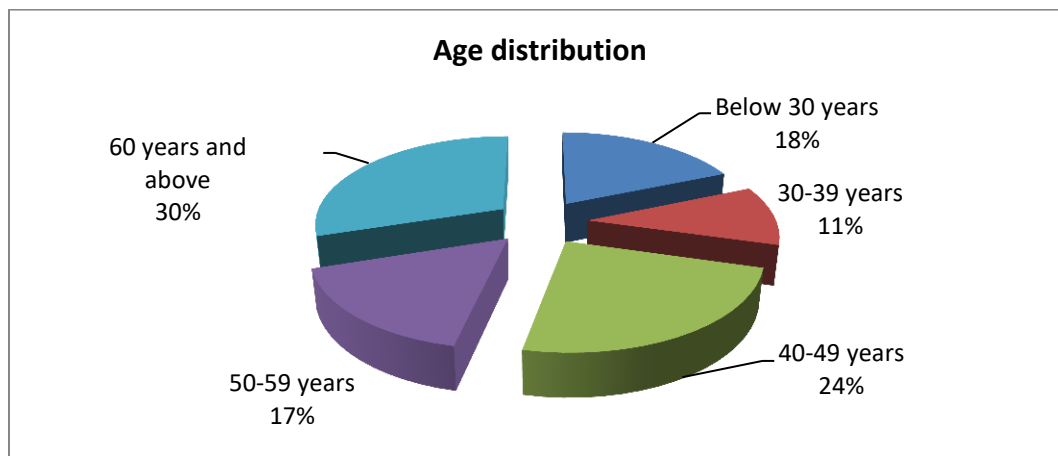


Women participation in small-scale palm oil farming stands at an impressive 44%. This figure is commendable, given the socioeconomic barriers that women face in rural settings generally. This finding also means that more and more women are involved to a significant extent in palm oil farming as a source of livelihood in rural areas. These findings were corroborated by interviews which showed that:

- *Many of the small-scale farmers started palm oil farms to support their families*
- *Palm oil did not require a lot of money to start*
- *Some NGOs encouraged women participation*
- *United Nations staff encouraged women to participate in palm oil farming as part of the sustainable development goals*

These findings on the participation of women in palm oil farming activities are empirically supported by other researchers. For example, Gollin (2014) notes that small-scale farming has been and continues to be a major source of livelihood for many women in rural areas in Africa. His study further noted that although women are generally under-represented in agricultural employment, agriculture remains the major source of employment for 65% of economically active women in Africa.

Figure 5.4.2 Analysis of age range



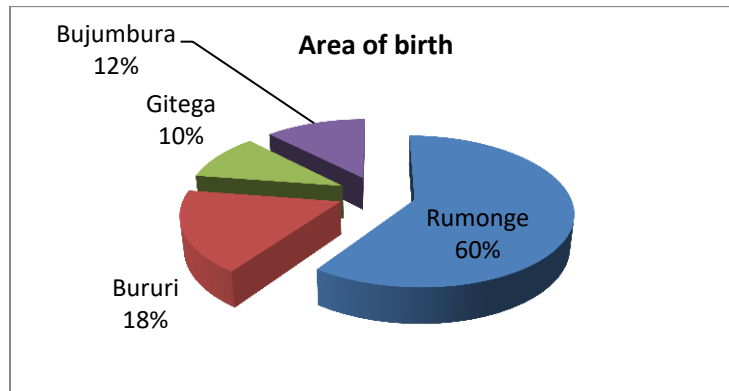
Of significance in these results is the involvement of young people in palm oil farming (for example 18% below the age of 30 and 11% from 30 to 39 years). Worldwide, young people have been sceptical about agricultural activities. This finding is a positive sign not just for the community of Rumonge but for the country as whole. Active involvement and participation of young people in agriculture is central to unlocking young talent and tackling the scourge of poverty and unemployment among the youth, particularly in rural areas where training and job opportunities are generally scarce. From the interviews, the issue of youth and community participation was confirmed by some farmers who indicated the following:

- *Palm oil is a source of income for the community*
- *The youth also work in palm oil plantations*
- *Palm oil is a source of livelihoods for households*
- *Palm oil business is easy to start*

- *It is easy to sell palm oil in the local market*
- *Palm is a means to alleviate poverty*

These findings on the participation of young people in small-scale palm oil farming can be viewed alongside other empirical studies (Abdullah, 2016 and Saad 2016) which have shown that young people’s knowledge and attitudes have a significant influence on their involvement in the oil palm sector. Therefore, efforts to increase the knowledge of youth are important in establishing a positive attitude to bring about involvement in the oil palm sector. Amiz (2015) concluded that youth participation in palm oil farming should be actively encouraged because many young people generally have negative attitudes towards agriculture.

Figure 5.4.3 Analysis of area of birth



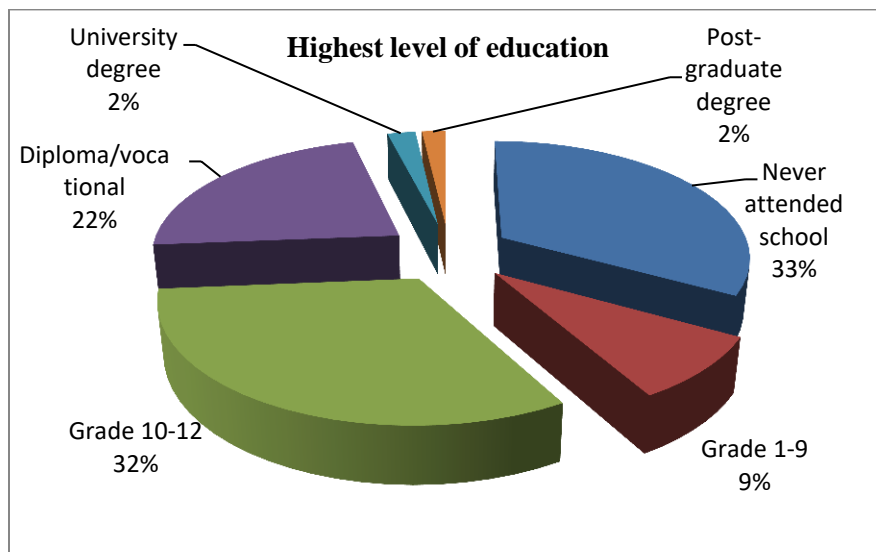
While these data (Figure 5.4.3) confirms Rumonge’s dominance in small-scale palm oil farming activities, people in other areas also responded to these opportunities. This shows that if supported well, palm oil farming could spread to other area of Rumonge. The uneven spread of palm oil activities could be an indication that there are barriers to accessing palm oil farming opportunities. From the interviews, the barriers were summed up as follows:

- *The cost of farming palm oil is high because the farmers have to pay extra money to keep their licenses.”*

- *“The palm oil farming is not sustainable because there is not enough support from the association.*
- *“There is only one seller who controls prices.”*
- *“The farmers have no control over the market.*
- *There are no programmes to support small-scale farmers when their cash flows dry up*

To some extent, these findings confirm some of the challenges that were highlighted in the literature review (Chapter 2). In retrospect, the literature review showed that small-scale farmers are struggling due to the fact that more attention is given to established palm oil producers.

Figure 5.4.4 Analysis of highest level of education



While the data shows a general spread of educational achievements across the different categories, the reality is that many of the small-scale palm oil farmers surveyed were generally illiterate and unskilled. Therefore the 33% who did not attend school is an issue that requires urgent policy intervention to empower small-scale palm oil farmers with basic functional literacy skills and life skills to be able to pursue their farming ventures more constructively and productively. Inputs from the interviews corroborated these results:

- *Many of the farmers enter palm oil farming just to support their families with little support from big business. (Participant 1)*
- *Many of the farmers do not have the necessary skills and experience to be able to run a palm oil farming enterprise successfully. (Participant 2)*
- *Due to lack of knowledge about the palm oil business, many farmers were exploited; receiving low revenue margins for their produce. (Participant 3)*
- *Some palm oil farmers failed dismally because they did not get enough financial and technical support in their palm oil ventures. (Participant G)*

Taken together, these results confirm that education or lack thereof, was one of the major determinants of success or failure in small-scale palm oil farming in Rumonge

5.4.2 The socioeconomic benefits and growth of palm oil production in rural areas

This theme derives from the first objective of the study which was to investigate the socioeconomic benefits and growth of palm oil production in rural areas in Rumonge. This objective is addressed by the first research question: How can the potential economic benefits of palm oil farming, relating to poverty alleviation, be realised in Rumonge, Burundi?

5.4.3 Sources of information on palm oil

Figure 5.4.5 Key sources of information on palm oil

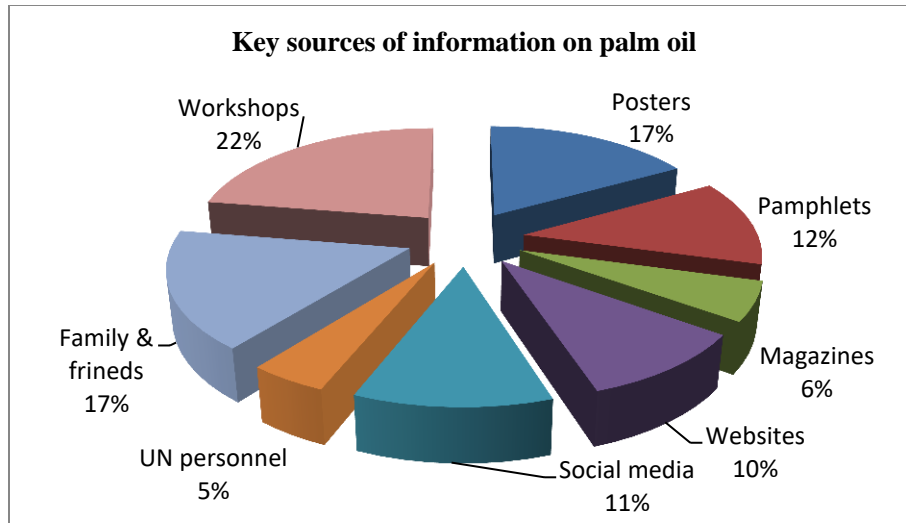


Figure 5.4.5 reveals that small-scale farmers sourced palm oil information from a wide range of media platforms. These included posters (17%); pamphlets (12%); magazines (6%); websites (10%); social media (11%); United Nations staff (5%); family and friends (17%) and workshops (22%). From these results, it can be seen that small-scale farmers' media preferences varied rather than relying on one source. The interviews revealed why farmers used different sources of information:

- *Support for small-scale farmers is limited in rural areas*
- *Some areas have no NGOs that can supply palm oil information advice to small-scale farmers*
- *Most small-scale farmers lacked the knowledge necessary to start palm oil farming ventures*
- *Companies did not form strong partnerships with the community to facilitate information-sharing*

Musungwini (2018) established that small-scale farmers in Zimbabwe who have access to adequate and relevant information, technological support, credit facilities and fair pricing practices tend to be more productive than those who lack access to these resources. Thus, limited access to information is a major barrier to the growth and sustainability of palm oil farming

activities, which in turn hampers small-scale farmers' abilities to contribute meaningfully to poverty alleviation in rural areas.

5.4.4 The advantages / benefits of palm oil farming

The aim of this question is to elicit from small-scale farmers what the positive and negative impacts of palm oil farming were. All agreed that palm oil farming activities had both positive and negative impacts on the Rumonge community. The results were as follows (figure 6.6):

Figure 5.4.6 Positive impacts of palm oil farming

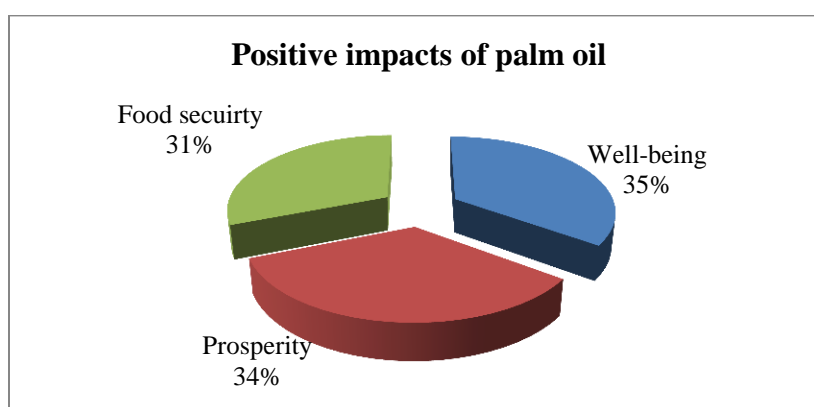


Figure 5.4.6 reveals three key areas in which palm oil had a positive impact. 35% of the small-scale farmer respondents thought that palm oil farming was best for the well-being of households as it provided opportunities for them to earn income through palm oil activities. After well-being, 34% indicated that palm oil production played its key role in fostering socioeconomic development through poverty alleviation and employment creation. A further 31% were of the view that palm oil was most important as a source of food for most households. In this way, palm oil contributed to strengthening food security systems in Rumonge. It is evident from their comments that palm oil farming benefited not just the farmers and their families but the entire community of Rumonge:

- *Palm oil production promoted food security not just for the smallholder famers but also for the community at large.*

- *Palm cultivation also created opportunities for the Rumonge people and vulnerable groups such as youth and women to engage in self-employment opportunities to support their families.*
- *Palm oil boosted the income generation capacity of households through both formal and informal employment opportunities.*
- *Palm oil creates jobs for the people and their families*
- *Palm oil is a source of life*
- *Palm oil is good for health and well-being*

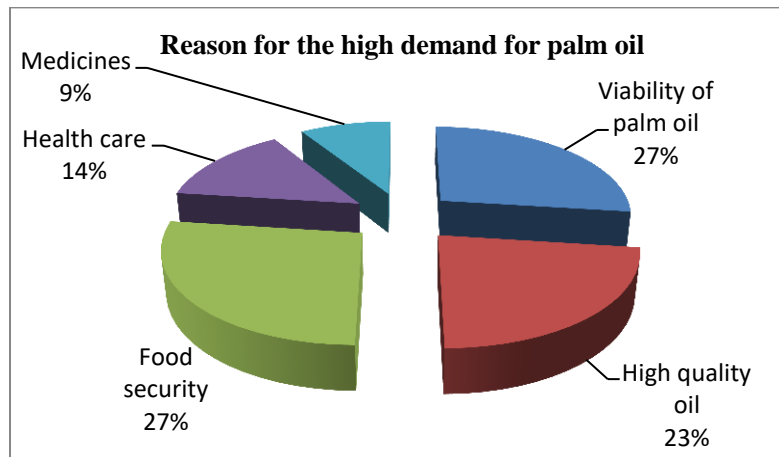
According to the World Food Summit (1996), food security prevails when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. Food security also implies the ability of a community to demonstrate resilience to future disruptions or scarcity of vital food supplies as a result of problems such as droughts, inconsistent supplies, fuel shortages, civil conflicts and economic instability.

These findings (Figure 5.4.6) on the socioeconomic benefits of palm oil are line with the theories discussed in Chapter 3 (Ekins, 1992) that human development includes three dimensions namely a long and healthy life (health), access to knowledge (education) and a decent standard of living (income). In order to achieve these three dimensions of human development among rural people, there is a need for sustainable development, a green economy. Very few of the small-scale farmers surveyed denied the critical role that palm oil plays in poverty alleviation within the community of Rumonge.

5.4.5 What makes palm oil to be in high demand?

This question was aimed at establishing the underlying factors that led to high demand for palm oil in Rumonge District. The respondents provided many reasons to justify the surging demand for palm oil in this area. Their responses are given in figure 6.4.7 below.

Figure 5.4.7 Reasons for the high demand for palm oil



Roughly 27% of the respondents indicated that the high demand for palm oil was because it was the most viable crop to farm, with very low start-up costs; while others (23%) liked it because it yielded high quality oil products. Other respondents said that palm oil was a major source of food for many households which in turn promoted food security (27%). Besides food security, palm oil also played a major role in supporting healthcare (14%) and medicines (9%). These findings are supported by the interview data which showed that:

- *The local market is good for palm oil*
- *Some farmers use agents to sell to the national market*
- *Some farmers export their produce to international markets through agents*
- *Palm oil is a source of food and health*
- *Palm oil is relatively cheaper to produce than other crops*
- *Palm oil does not need a lot of space*

The findings on the high demand for palm oil products are supported by recent research which shows that the demand for palm oil has been growing worldwide at a rate of 7.1% per annum. In part this sustained growth is attributed to the flexibility of the plant and its multiple uses, including bio-fuels and health care products around the world (Lim, 2015).

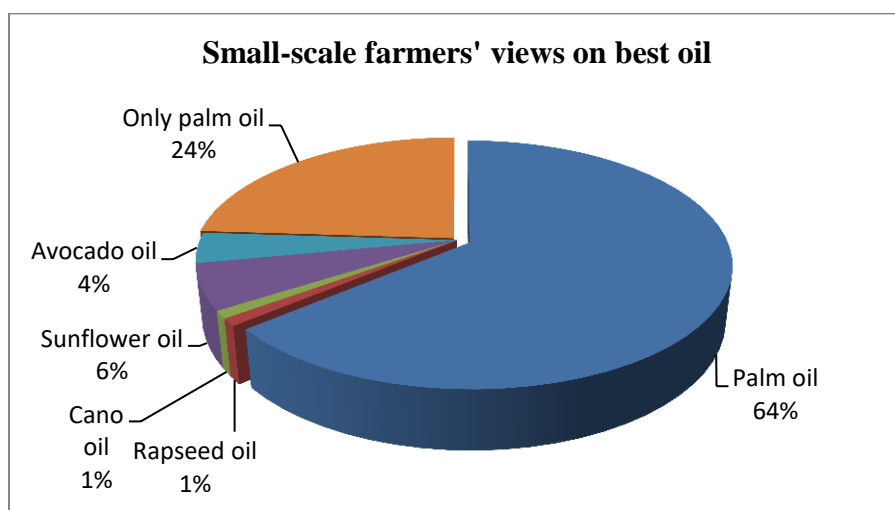
Santika, Wilson, Budiharta, Law, Poh, Ancrenaz, Struebig and Meijaard (2019) found that the social impacts of palm-oil plantations are neither uniformly positive nor negative and vary

systematically according to the biophysical locations and baseline socioeconomic conditions. Plantations developed in villages with low to moderate forest cover, in which the majority of communities already relied on market-oriented livelihoods, were associated with improved socioeconomic well-being compared to villages without oil palm development.

5.4.6 Farmers' views on best types of oil

The reason for this question was to find out, from a farmers' perspective, the best oil in terms of socioeconomic development and poverty alleviation within the Rumonge District.

Figure 5.4.8: Small-scale farmers' views on best oil



These results indicate that the majority of participants (64%) found palm oil to be the most reliable oil that met the needs of their customers. Very few of the participants thought that rapeseed oil (1%) and Cano oil (1%) offered the best quality in the market. Similarly, sunflower oil (6%) and avocado (4%) were also low in favour compared to palm oil.

On the whole, these results confirm that palm oil was the most popular and viable farming crop in Rumonge district. These results are corroborated by interviews which revealed the following:

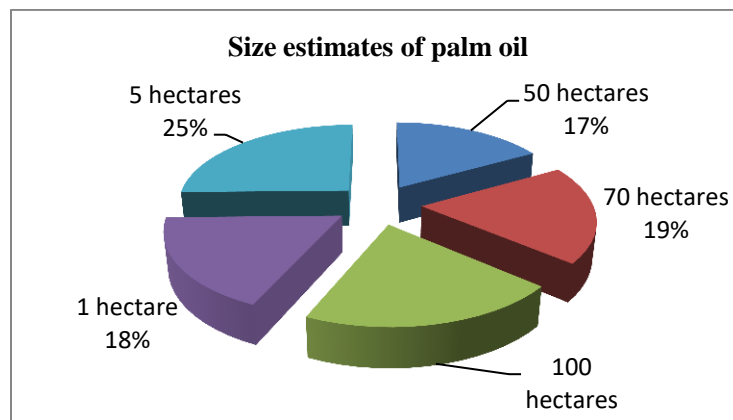
- *Farmers were not prepared to stop palm oil farming as a result of the reported environmental challenges in palm oil cultivation.*
- *Palm oil farming is a source of life for poor households in rural areas*
- *Most farmers saw palm oil as a good source of income*
- *Palm oil is a perennial crop that remains productive throughout the season*

- *Palm oil is resistant and most reliable crop*

5.4.7 Size of palm oil plantation needed to promote economic growth and poverty alleviation

Central to this question was the need to establish the amount of space needed to produce sufficient palm oil to meet the socioeconomic development needs of the Rumonge community and the local market. As shown below, the respondents offered different estimates of the hectares needed to ensure adequate supply of palm oil for the local market.

Figure 5.4.9 Size of plantation required for Economic growth and poverty alleviation



17% of the small-scale farmers surveyed thought that 50 hectares of land was needed to produce sufficient palm oil **for** promoting economic growth and poverty alleviation compared to 19% who said that 70 hectares was a suitable size. Other participants gave lower estimates of 1 hectare (18%) and 5 hectares (21%) respectively. These variations in size suggest that small-scale farmers of palm oil in Rumonge district did not have equitable access to land resources. During interviews, participants attributed this problem to:

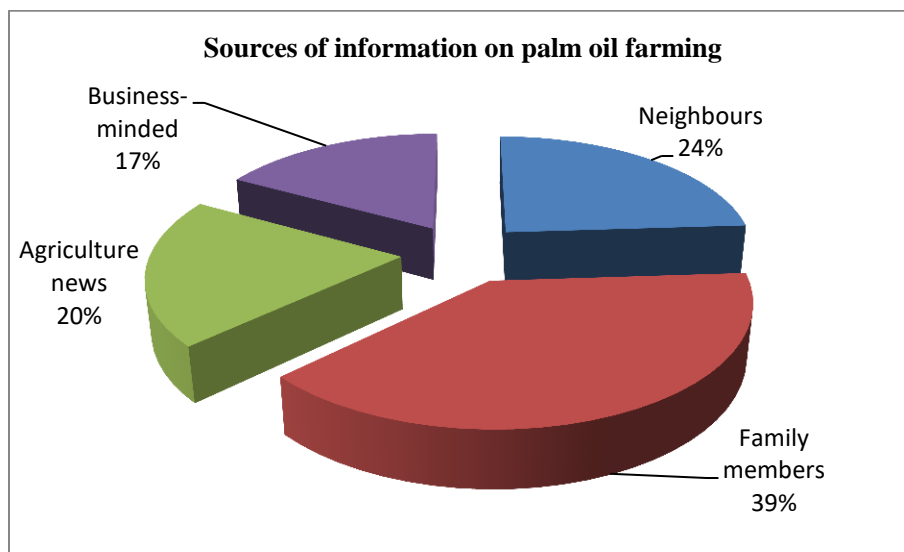
- *High administrative costs, which made it difficult for many of the farmers from holding licenses.*
- *Community use of land not respected in some cases*
- *Farmers' were not guided on how to secure land tenure and land rights*
- *People not aware of land ownership rights*
-

These findings match Beaupre’s (2015) study in Ngozi, Burundi, which revealed that conflicts over land rights in palm oil farming are linked to low community perceptions about land tenure security systems and the lack of resources necessary to register such rights with the land office. Article 36 of the Constitution of the Republic of Burundi (2005) guarantees protection of property rights by the government. The Constitution further protects the rights of refugees to reclaim their rights to land in conflict situations

6 Key sources of information on palm oil farming

This question was intended to establish the sources of information that small-scale farmers used to understand palm oil farming practice. The results showed that the respondents obtained palm farming information from a wide range of sources; which included the following:

Figure 5.4.10 Sources of information on palm oil farming



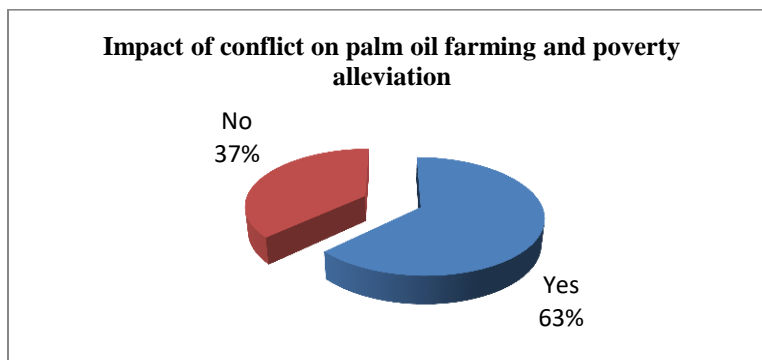
24% of the respondents reported that they received information on palm oil farming from their neighbours, while 39% got this information from family members. The high number of participants relying on family members as a source of advice and information suggests that family support networks played a key role in fostering palm oil farming among small-scale producers in Rumonge District. Other participants received information on palm oil farming from agricultural news (20%). Encouragingly, 17% of the participants relied on their own intuition and motivation to search and find relevant information on palm oil farming. These were mostly emerging farmers who were keen to succeed in the palm oil industry. Evidence from interviews suggests that some of these farmers learned palm oil farming from former employers,

business seminars, friends and through training. From these results, it is apparent that small-scale farmers accessed different sources to learn about palm oil farming.

5.4.9 Link between palm oil farming, poverty reduction and political conflict

This question was intended to establish if there were any causal links between the ongoing political conflict and using palm oil to alleviate poverty in Rumonge District. As indicated in figure 6.9 below, participants had different views on this issue.

Figure 5.4.11 Impact of conflict on palm farming and poverty alleviation

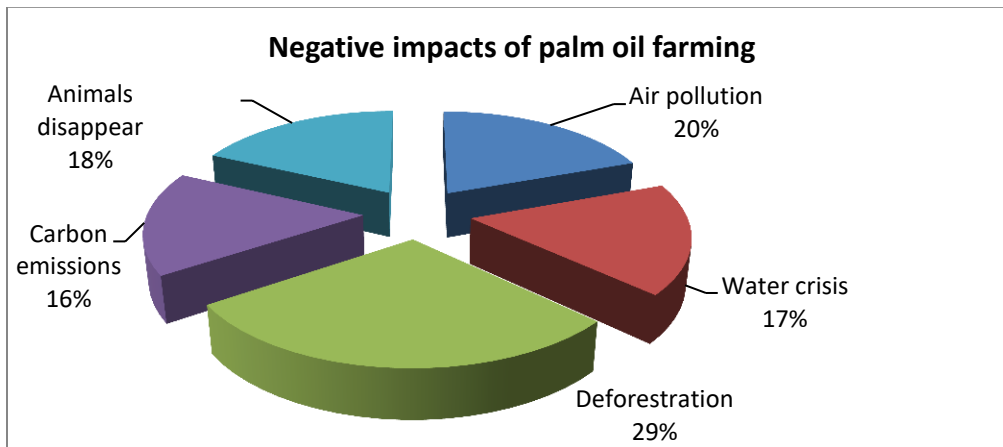


As Figure 5.4.11 shows, the respondents had different views on this issue. For instance, 63% of the respondents believed that the ongoing political and ethnic conflict disrupted farming of palm oil in Rumonge. In this view, the war led to destabilisation and displacement of small-scale farmers from their homes, which made it virtually impossible for them to tender their palm oil fields. This in turn led to poor harvests and undersupply of produce to the local market. Without adequate access to jobs and stable sources of income, households were exposed to poverty and economic deprivation.

However, 37% of the respondents disputed the impact of political conflict on palm oil farming and poverty alleviation in Rumonge, implying that these issues were unrelated. Proponents of this view argued during interviews that politicizing palm oil farming would overshadow the critical role that small-scale farmers were playing in creating jobs and alleviating poverty in rural areas. It was further pointed out that small-scale palm oil farming initiatives had survived the conflict for many years and still provided a source of livelihood for many poor households in rural areas.

5.4.10 The negative impacts of palm oil on the community

Respondents were asked to indicate whether palm oil farming had any negative impacts on Rumonge community. The results were as follows:**Figure 5.4.12 Negative impacts of palm oil farming**



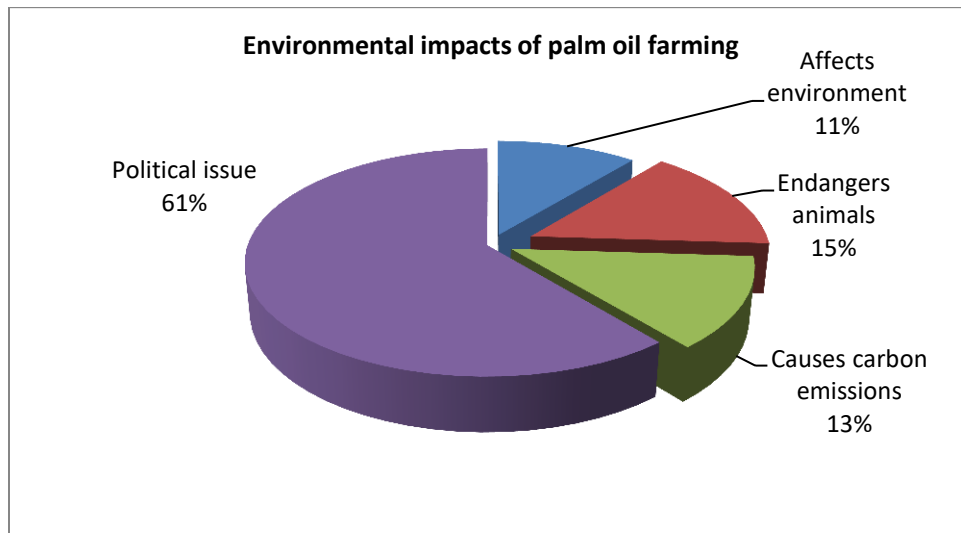
As Figure 5.4.12 shows, small-scale farmers understood the negative impacts of palm oil farming in different ways. For example, 20% of these farmers felt that palm oil farming contributed to air pollution, while 17% felt that these activities were partly responsible for the continued water shortages in this area. A further 29% indicated that palm oil farming resulted in deforestation when farmers start clearing land for cultivation; while carbon emissions were identified by 16% and the disappearance of animals by 18%. But these views were challenged by some interviewees who argued that:

- *Palm oil does not cause serious damage to the environment*
- *Environmental problems are largely due to lack of education and skills on sustainable farming practices in Rumonge district.*
- *Capacitation of small emerging farmers is key to addressing the environmental challenges associated with palm oil farming.*
- *Small-scale farmers alone cannot deal with environmental problems. All stakeholders must be involved*
- *The government, NGOs and companies must work together with the community and small-scale farmers to deal with environmental issues*

5.4.11 The impact of palm oil on the environment

This question was specifically designed to find out from the respondents how palm oil farming activities affected the natural environment. All the respondents conceded that palm oil farming affected the environment in various ways; including the following:

Figure 5.4.13 Environmental impacts of palm oil farming



According to this data, 11% of the farmers were of the view that palm oil farming has an adverse effect on the environment, while 15% and 13% felt that it was detrimental to the preservation of wildlife. Apart from the depletion of natural resources, palm oil farming also contributed to the rise in carbon emissions during cultivation seasons. Strikingly, 61% of the respondents felt strongly that these concerns were politically motivated and had nothing to do with palm oil farming. To solve the problem, government had to train small-scale farmers how to use natural resources responsibly and sustainably to minimise negative impacts on ecological systems. Even environmentalists were divided over the impacts of palm oil farming, suggesting a need to balance farmers' needs and nature conservation. These findings on the contribution of palm oil farming to climate change are recognised by the Burundian Ministry of Agriculture (2011) which states that climate change has become a constraint that must be dealt with on a regular basis. There is a need for policy intervention to build awareness about the need for proper control of water resources in order to compensate for irregular rainfall. Implicit in this statement is the realisation that agricultural activities; including palm oil farming needs to be aligned with the

goals of sustainable development advanced by the Brundtland Commission (1987) and the United Nations (2015).

The negative impacts of palm oil production in Rumonge were also confirmed by the small-scale farmers, managers and environmental groups during the interviews as follows:

- *Mass cultivation of palm oil resulted in widespread environmental problems, including deforestation as a result of removal of trees and bushes in preparation for palm oil farming projects.*
- *This is due to lack of awareness among smallholders about the importance of environmental management.*
- *It is the responsibility of the agro-processing industry to empower small-scale farmers with the knowledge and skills necessary to deal with environmental challenges linked to their palm oil farming activities.*
- *Carbon emissions and over-usage of water resources posed health risks to the community; while soil erosion led to further degradation of the natural environment.*
- *From the perspective of the environmentalists, the solution did not lie with the palm oil farmers only.*
- *A wide range of stakeholders were needed to deal with the palm oil farming in a constructive manner that benefited the community and the environment.*

These results are supported by other researchers. For instance, in a similar study, Hidayat (2018) established that intensive palm oil farming creates a host of problems for the environment and the community including deforestation, biodiversity loss, greenhouse gas emissions and social conflicts between big plantations and local communities.

5.4.12. The role of palm oil farming in poverty alleviation

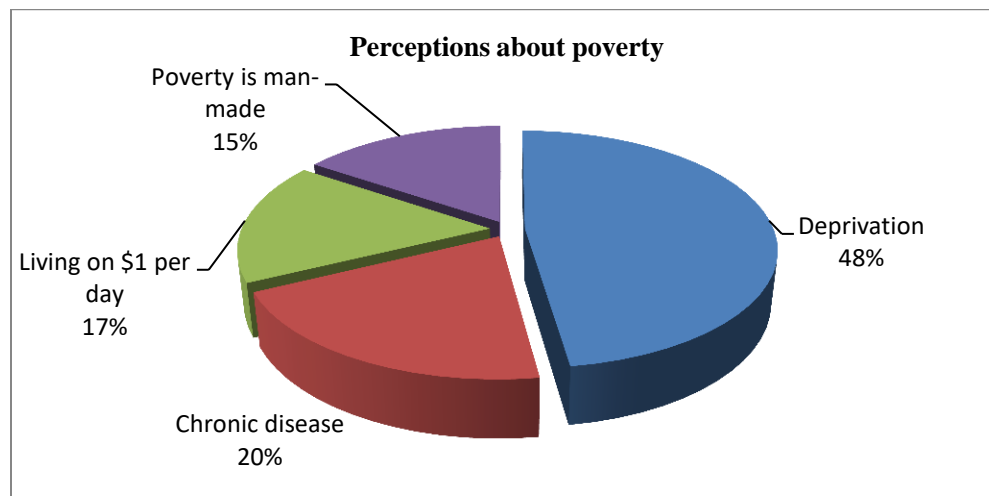
This theme talks to the second objective of the study which was to assess the role played by palm oil farming on poverty alleviation. This research objective underpins the second research

question: What are the roles and minimum size of palm tree plantation required to alleviate poverty? The following conclusions were drawn:

5.4.13 What does poverty mean to you?

This question tested the perceptions of the respondents on the meaning of poverty to determine if they realised the vital link between their palm oil farming activities and poverty alleviation. The survey results suggest that participants had different interpretations of poverty.

Figure 5.4.14 Perceptions about poverty



Almost half of the respondents 48% saw poverty as deprivation from the means of production such as land, resources and credit facilities. Others 20% saw poverty as chronic disease 15%, man-made 17% living on less than \$1 per day (17%) or not having material possessions such as a television, radio or car. These results show that poverty is a complex and dynamic concept whose meaning differs from one context to another. These explanations also show that small-scale farmers realised that with palm oil farming, poverty could be eliminated.

These findings dovetail with farmers' comments during interviews which revealed that:

- *Access to land is important for poverty alleviation*
- *Community involvement and participation must be encouraged in palm oil farming to reduce poverty*
- *Farmers' land rights need to be resolved*
- *Poverty alleviation needs all stakeholders*

- *Small-scale farmers could not expand to other agricultural sectors due to lack of funding*
- *Rural areas do not have many job opportunities and palm oil farming can close this gap if it is supported well*

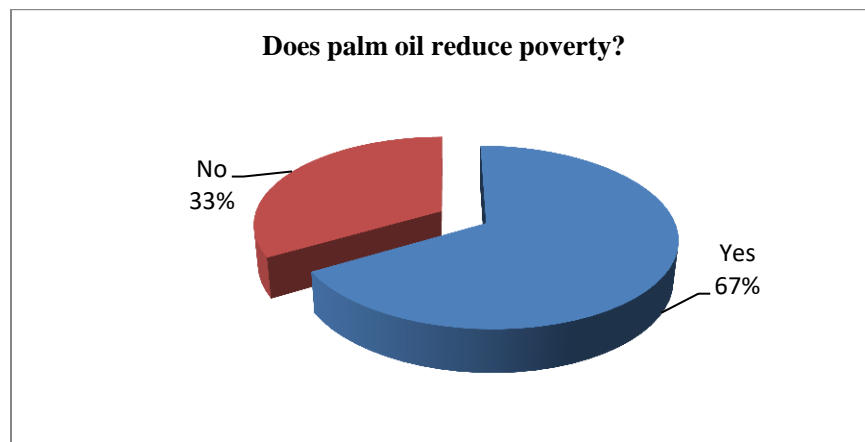
Such descriptions are consistent with the literature (Chapter 2) which provided several interpretations of the concept of poverty. For instance, Shillington, Lasota and Shantz (2009) measured poverty as deprivation of resources and human capital in cultural, economic, political and social senses. However, measuring poverty needs a broader interpretation than income and resources, as poverty is also shaped by context, such as the ongoing civil conflict which has a devastating impact on rural communities in terms of both unemployment and poverty.

The complex and dynamic nature of the concept of poverty as perceived by the small-scale palm oil farmers is corroborated by other empirical studies. Maxwell (1999:2) variously characterises poverty as income or consumption poverty, underdevelopment, social exclusion, ill-health, limited access to basic needs; vulnerability; weak livelihoods, low life expectancy, illiteracy and malnutrition.

5.4.14 Does palm oil help to reduce poverty?

In a follow up question, small-scale farmers were asked whether palm oil farming contributed to poverty reduction. To a large extent, the results affirmed that palm oil had the potential to combat poverty in Rumonge. The survey results are reported below.

Figure 5.4.15 Ability of palm oil to reduce poverty



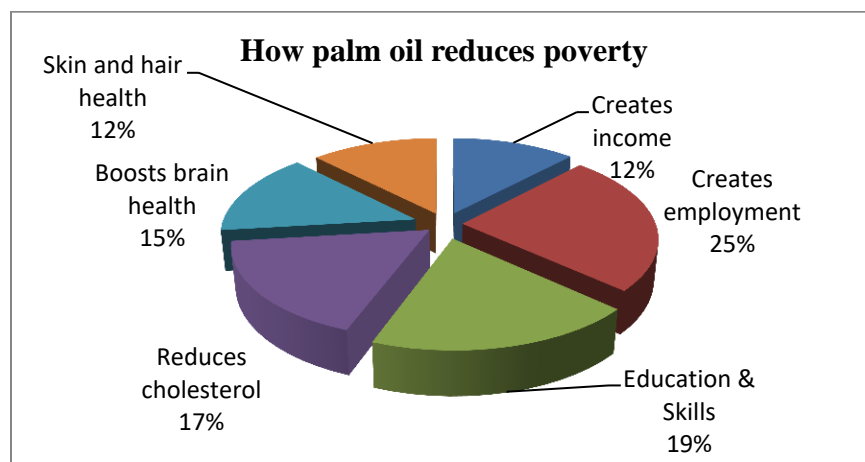
Two-thirds of the small-scale farmers agreed that palm oil reduced poverty in Rumonge. Evidence from interviews expanded on this as follows:

- *Palm oil farming is a vital source of employment and small business development.*
- *Palm oil farming opportunities are available during good seasons*
- *Families can use income from palm oil to meet the educational needs of their children*
- *Palm oil is a good source of bio-fuel which can be used to meet farmers' transport needs*
- *Palm oil is used for healing, so it is good for the well-being of the community – it can be used to reduce diseases*
-

One third of the respondents were not convinced that palm oil farming contributed to poverty alleviation. During the interviews, participants indicated that palm oil farming contributed to environmental degradation rather than poverty alleviation. From this perspective, palm farming should be stopped. Edwards (2015) notes that in most palm oil rich countries, there are many people who earn substantial incomes from small-scale farming activities, more than from any other crop. High earnings were also associated with rural areas that exhibited high levels of poverty. Edwards' study concluded that large and smallholder plantations reduce poverty with varying degrees across villages. The next section demonstrates how poverty reduces poverty in Rumonge

5.4.15 How palm oil reduces poverty

Figure 5.4.16 How palm oil reduces poverty



As indicated, 12% of the farmers surveyed reported that palm oil generates income for individuals and households alike. 25% indicated that palm oil stimulates employment which is vital for rural areas. Other participants said that they employ and train local people in their palm oil farms, which facilitates skills transfer to the community. Some participants stated that palm oil plays a key role in keeping cholesterol levels down (17%), while others felt said that palm oil boosted brain health as well (15%) and 12% indicated palm oil was good for the skin and hair. These results confirm what some farmers said during the interviews that palm oil cultivation is:

- *Needed to uplift rural communities from poverty*
- *Good for economic growth and social development of the country*
- *Palm oil is a natural plant, so it is easy to grow and maintain*
- *There is no substitute for palm oil – it is the best oil in the market*

In a further study of the correlation between poverty reduction and palm oil farming, Edwards (2019:3) established that palm oil farming has a significant positive impact on poverty

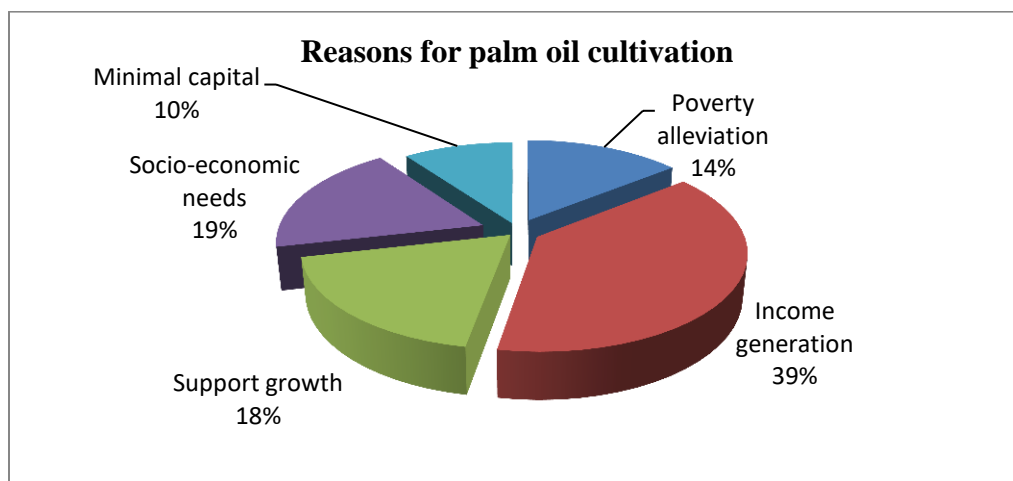
alleviation and economic gain for small-scale producers providing an estimated reduction of 5.36% in poverty levels and 8% growth in palm oil producing regions.

The literature (Chapter 2) suggests that in order to be lifted out of poverty communities need capabilities and know-how. Stiglitz (2009) emphasizes the importance of capabilities in enabling poor communities identify opportunities to develop themselves, alongside the freedom to choose. Choice and freedom go hand in hand with resources and are necessary to achieve meaningful human development, including for small-scale palm oil farmers and their communities. The literature (chapter two) suggests that in some instances, small scale palm oil farming activities harm rather than promote sustainable livelihoods. “It causes livelihood vulnerability in rural communities, besides the ecological disaster in the form of flooding due to damage to the rural environment, as well as drought in the dry season. Rural communities are forced to survive by migrating and diversifying livelihoods in the form of multiple livelihoods” (Obie, Pakaya and Syilfi, 2020:1).

5.4.16 Reasons behind palm oil cultivation

Respondents were asked why they cultivated palm oil.

Figure 5.4.17 Reasons for palm oil cultivation



According to this Figure, 14% of the small-scale farmers engaged in palm oil farming in order to fight poverty, while 39% saw it as an opportunity to generate income for their families. Only 18% of the respondents used palm farming to promote economic growth in their areas, while

19% saw palm oil farming as a means to address the social needs of rural communities. Finally, 10% of the respondents participated in palm oil farming because it had minimal start-up costs, suggesting that palm oil farming did not have high barriers to entry. These interviews revealed that:

- *Small-scale farmers were concerned about the high levels of poverty in their villages and*
- *Small-scale farmers first used their ventures to support the needs of their families.*
- *Some farmers did not engage in palm oil farming just for consumption, but they wanted to make a difference to other people's lives*

These findings are corroborated by other studies such as Shaputra and Zen (2018) which show that several factors have led to rapid industry expansion, including increasing returns associated with world demand for palm oil, land suitability for palm oil and palm oil's higher productivity than other common oil seeds, allowing the price of palm oil to exceed its competitors.

5.4. 17 What motivated you to pursue palm oil farming?

This question was aimed at identifying the specific reasons that motivated the respondents to participate in palm oil farming activities.

Figure 5.4.18 Motivation for palm oil farming

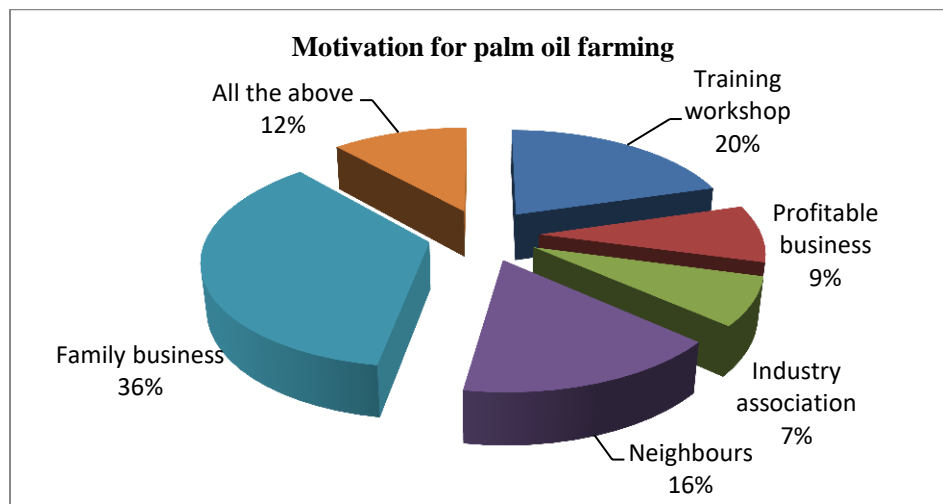


Figure 5.4.18 suggests that 20% of the participants were motivated by the training that they had received prior to starting their palm oil ventures. Others joined the palm oil industry because it

was profitable at the time. The local palm oil industry association (7%) also played a key role in motivating emerging small-scale farmers to pursue palm oil farming; followed by those who motivated by their neighbours (16%). A significant number (36%) of respondents got encouragement from their families, while 12% found inspiration from different sources. What is clear from these results is that family was the most important source of motivation for many of the start-up palm oil ventures. This is because many of the small-scale farmers surveyed used their families as a source of labour, which provided opportunities for skills transfer to their children. The interviews revealed specific factors for starting palm oil farming:

- *My family left the business with me*
- *From the beginning I always wanted to have my own farm*
- *The government supports small-scale farmers*
- *The customers want more palm oil*
- *People are hungry and they need food on the table*
- *The association supports smallholders*
- *Being business-minded*

5.4.18 Challenges faced by small-scale palm oil farmers in rural areas

This theme relates to the third objective of the study, namely, to assess the challenges experience in small-scale farming of palm oil tree by famers in Rumonge. The associated question is: What are the challenges of conflict to the farmers of small-scale farming of the palm oil tree in Rumonge Community?

- *Most small-scale farmers do not have enough production capacity in terms of equipment, palm seedlings, vehicles, machinery, and warehouses.*
- *Access to finance is limited as many of the farmers do not have the collateral required to secure loans from banks.*
- *Limited access to funding means that many of these farmers cannot not expand their farming operations*
- *Some of the farmers are forced to sell their products in the local market which is already saturated for small prices because they do not have access to bigger markets*

- *Most farmers started informally without acquiring the necessary skills and expertise and land rights. So they ran their palm oil farming projects based on general knowledge, which lowered their yields.*
- *Some farmers operate in remote parts of Rumonge, meaning that they missed out new technological developments on palm oil production.*
- *Ongoing conflict often results in displacement of households and the farmers themselves; which in turn disrupted palm oil farming initiatives and reduced outputs.*
- *Some farmers do not have access to land tenure and land rights, which makes their farming activities unsustainable.*

Vijay (2016) determined that the process of converting forests to palm oil fields, with plans for future expansion, contributed to the deterioration of bio-diversity and fuelled greenhouse gas emissions. The conclusion from this was that scaling down carbon emissions from palm oil farming activities will contribute immensely towards global warming reduction efforts (Vijay, 2016).

Beekmans (2014) found that specific programmes have been implemented to assist and prepare small-scale farmers for the market. This is particularly true in Indonesia where the government has introduced measures to compel large companies to partner with small-scale palm oil producers, providing incubation and support services to help them grow and sustain their palm oil ventures. The programme also assisted small-scale farmers to secure title deeds, thus ensuring the long-term sustainability of their farming projects.

The fact that many of the small-scale palm oil farmers could not get assistance or support, indicates that the lack of adherence to Amartya's (1992) theory which stresses the need to promote ethical decisions, equality and human capabilities in order to uplift poor communities and small-scale palm oil farmers. An action is ethical if it promotes equality of human potential in palm oil farming. Supporting this view, Todoru, and Smith (2012) posit that socioeconomic development should be an integrated process aimed at benefiting all stakeholders. Sound knowledge of how to achieve growth is critical in achieving the goals of sustainable development in palm oil farming.

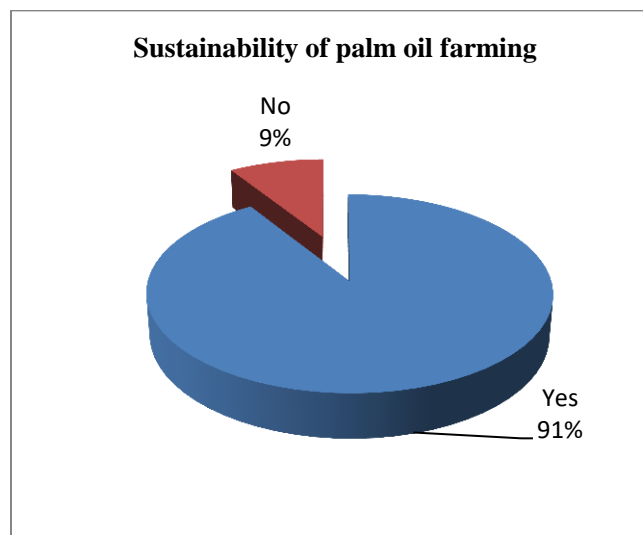
5.5 Sustainability of palm oil farming in rural areas

The fourth objective of the study concerned the sustainability aspect of palm oil farming in the rural areas of Burundi. This objective is linked to the fourth and fifth research questions: How can the palm oil industry provide sustainable developmental in rural areas? What are the costs and timescale for planting palm oil tree plantations in Rumonge and how long will it be before the poor can benefit? The survey revealed the following issues about the sustainability of palm oil.

5.5.1 Is palm oil farming sustainable?

The primary aim of this question was to determine whether palm oil farming activities were sustainable or unsustainable. The overwhelming response (figure 6.17) from small-scale farmers was that palm oil farming is a viable and sustainable business.

Figure 5.4.19 Sustainability of palm oil farming



The majority of small-scale farmers (91%) affirmed that palm oil farming was sustainable socially, economically and environmentally. In justifying this point, some farmers said that experienced farmers were able to comply with conservation regulations. Conversely, 9% of the farmers were not convinced that palm oil farming was a sustainable business option. Some indicated that most of the people who engaged in palm oil farming were largely driven by

personal profit rather than poverty alleviation in their villages. The focus on profits often compromised nature conservation because people cultivated the land purely for profit. The interviews with farmers, environmentalists and company managers also produced mixed results.

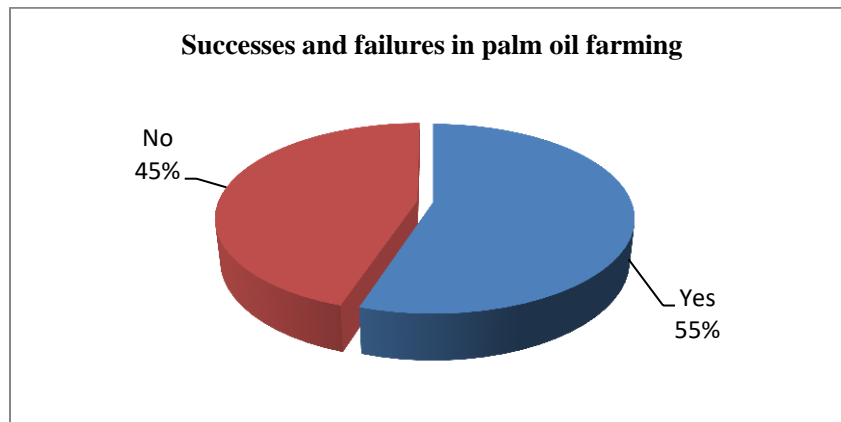
- *Palm oil is not sustainable, but it is safe to consume.*
- *The local market for palm oil was perceived as being monopolistic as “we only have one buyer, Savoror. Everyone sells to Savoror.”*
- *Because there is no fair competition in the palm oil products market, smallholder farmers are often exploited as monopoly dictates and set prices for both palm oil commodities and materials.*
- *Environmental problems from palm oil would cease if farmers were trained on sustainable palm oil production methods. Another participant added that there is a need to manage both the cultivation of palm oil in order to ensure that natural resources are used responsibly and sustainably.*
- *Mass production of palm oil should be discouraged because it increases depletion of natural resources.*
- *Land should be divided into two portions, namely: designated land for palm cultivation and preserved areas to avoid disappearance natural species.*
- *Stopping palm oil production will affect sustainable livelihoods in rural communities*
- *Carbon emissions occur in all farming activities, not just palm oil. Therefore, it would be unfair to stop cultivation of palm oil as this would deny poor households of the opportunity to make a living in this lucrative palm oil business.*
- *A specific programme is needed to capacitate smallholder farmers and their employees so that they know how to use palm oil resources in a sustainable manner.*
- *Need to balance the development needs of the community and sustainable use of natural resources to benefit future generations.*
- *Educate and train farmers on sustainable palm oil farming practices*
- *Ensure proper management of palm oil farming activities and the environment*
- *Rationalise production of palm oil to avoid mass cultivation of land*

The lack of sustainable palm oil farming practices is affirmed by Carlson's (2017) study which revealed that in Indonesia, the aggregate annual deforestation rate (2000-2015) across was 3.3%. Deforestation increased from 0.74% in 2001 to 6.5% in 2012, before falling to 4.0% in 2015 with similar trends for peat and deforestation. These figures suggest that deforestation rate are worryingly unsustainable even in the medium term. Higher deforestation implies less remaining forest.

5.5.2 Are you succeeding in palm oil farming?

In this question, the researcher wanted to establish the successes and failures of small-scale palm oil farmers in Rumonge. Overall, the results confirmed that some farmers made it and others failed.

Figure 5.4.20 Successes and failures in palm oil farming



More than half (55%) of the farmers surveyed confirmed that their palm oil ventures were successful. The interviews revealed that successful farmers had received proper training or grooming from their families. Conversely, 43% reported that their palm oil ventures had been unsuccessful, often due to lack of technical support or limited knowledge of palm oil business. Some farmers indicated that their farming business failed because they were not involved in deciding market prices and, as a result, often sold at very low prices that led to heavy losses. This was attributed to the lack of effective market regulations, monopolisation by Savor and limited access to international marketing opportunities.

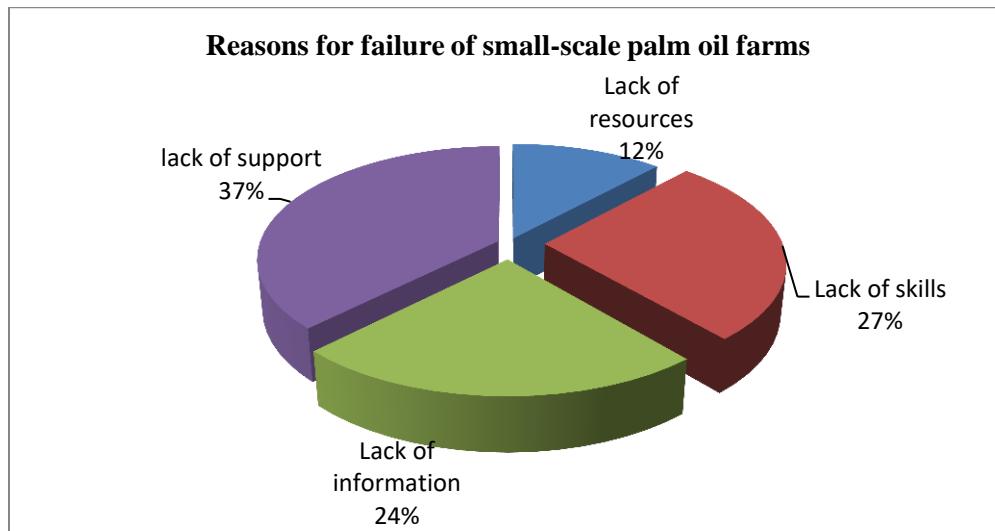
The intergenerational equity theory (Chapter 2) emphasises the need for citizens to have fair and equitable access to opportunities in the distribution of wealth (Rawls, 1971). Present and future

generations should have equal rights and be able to benefit from natural resources, including palm oil farming. Thus, limited access to marketing opportunities deprives small-scale palm oil farmers of their right to freedom of choice and self-development.

5.5.3 What are the reasons for failure in palm oil farming?

This question sought to determine the reasons that led to failure of some small-scale farmers.

Figure 5.4.21 Reasons for failure of small-scale palm oil farms



These results suggest that some of the palm oil farmers (12%) failed because they did not have access to adequate farming resources and equipment such as wheelbarrows tractors and harvesting machines. In other instances, small- farmers (27%) failed because they lacked the relevant skills necessary to start and run a palm oil farming business 24% lacks information, and 37%. Examples included knowledge of palm oil seeds, ability to identify and manage risks and understanding of sustainable palm oil farming methods and practices. The literature in chapter two emphasised the importance of empowering small farmers with the right set of skills and competences to improve productivity and the quality of their yields (Vermulen, 2006).

Others (38%) failed because there was no adequate information about palm oil farming and its value chain; suggesting that some community members in Rumonge did not have access to useful palm oil farming data. These findings were corroborated by the interviews, which revealed the following:

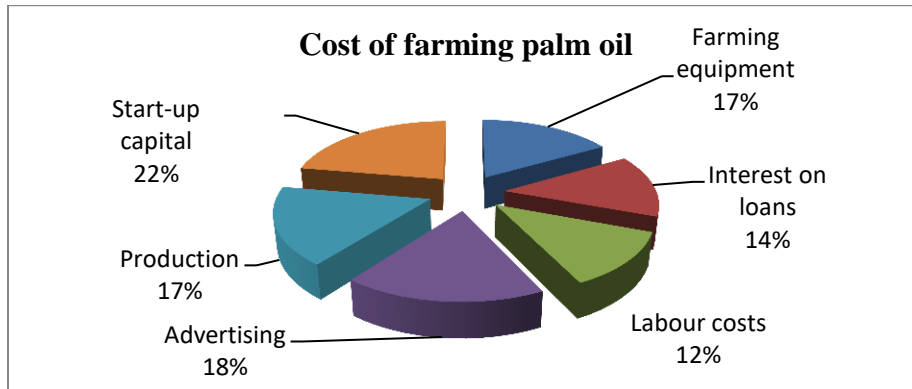
- *Lack of information*
- *Displacement resulting from ongoing conflict*
- *Lack of technical support*
- *Limited understanding of palm oil production*
- *High administrative costs (cost of maintaining the license)*
- *Limited access to national and international markets*

These challenges are not unique to Burundi. A related study of smallholders in Indonesia by Jelsma (2017) found that small-scale palm oil farmers struggled to adjust to the demands of the highly competitive global palm oil market because they were unable to comply with emerging public and private quality and safety standards. Increasingly, power relations between farmers and processors/retailers are shifting in favour of the latter, with new barriers emerging to prevent smallholder market participation. This is based on sector-wide adoption of quality standards and quality-based competition alongside rising market concentration and the dominance of the industry by a few large firms.

Bamber (2014:8) confirmed that small-scale farmers have limited access to international markets for palm oil, noting that agriculture in Burundi remains primarily a subsistence activity, dominated by smallholders with poor knowledge of modern agricultural practices and weak connections to the formal economy. All these constraints have limited the possibilities for the country to participate in the global agribusiness value chain. Beekmans (2014) reported similar results, noting that global palm oil trade is controlled by powerful large companies controlling nearly 45% of global palm oil trade. While many of these companies have their own supply-chains, they get most of their palm oil from independent producers, including small-scale farmers, at very low prices.

The cost of farming palm oil to the small-scale farmers

Figure 5.4.22 Cost of farming palm oil



Of the 300 farmers surveyed, 17% felt that farming equipment was costly, while 14% were concerned most about the rising cost of loans. In addition, 18% saw high labour costs as a major impediment to the growth of their business, 12% concern with labour costs. Advertising costs were considered significant by 18%, while 17% lamented the marked increase in production costs. Other respondents reported that start-up costs were generally high for their palm oil ventures (22%). These results are in line with the literature on the limited capacity of smallholder farmers who could not expand their farms due to lack of capacity development opportunities and training on modern, environmentally-friendly palm oil farming methods.

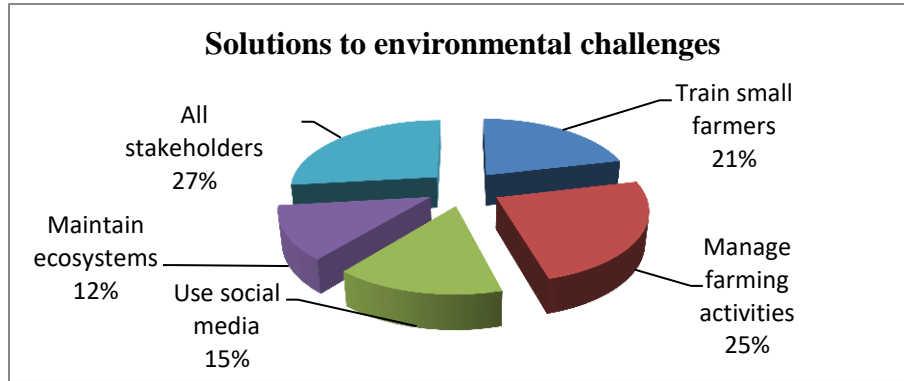
These findings on the high production costs in palm oil farming are corroborated by other researchers. Hassan (2016) determined in West Africa that small-scale farmers are geographically dispersed and that their produce is often mixed with other crops, leading to high transaction and transportation costs. In some cases, harvests are not fully utilised due to the low capacity of local mills.

The limited access to financial resources and the rising costs of farming for some small-scale palm oil farmers conflicts with the principles of the intra-generational equity theory (chapter 2) which calls for fairness among the current generation. Intra-generational equity deals with equality among the same generation as far as the use of resources is concerned. In this view, resources which are not conserved for the future generations need to be distributed equally among the constituents of the current generation (Jitender, 2017).

5.5.4 Solutions to the environmental problems in palm oil farming

This follow-up question was intended to elicit the opinions of small-scale palm oil farmers on possible solutions to the negative effects of their farming activities on the natural environment.

Figure 5.4.23 Solutions to environmental challenges



As reported in Figure 5.4.23, 21% of the respondents believed that the negative effects of palm oil farming on the environment could be reduced by training small-scale farmers on sustainable farming methods and practices. This would help balance the consumption needs of households against ecological needs in line with the inter-generation theory of sustainable development which calls for prudent use of scarce resources to ensure that future generations benefit. Some environmentalists supported this approach in the interviews, saying that small-scale farmers needed to be supported with advice and information on sustainable palm oil farming. Other respondents (25%) felt that proper and effective management of both palm oil farming activities and the environment would reduce the harmful effects of palm oil farming on the natural environment.

15% indicated that social media could be used to raise awareness among the farmers and the community about the importance of protecting natural resources in palm oil farming. 12% supported this view by saying that maintaining ecosystems properly in and around the farms would improve environmental sustainability. 27% of the farmers suggested that addressing the environmental problems should be prioritised. What is clear from these results is that small-scale

palm oil farmers were committed to work with the authorities to prevent environmental degradation and depletion of natural resources.

These findings on the strategies necessary to promote sustainable palm oil farming were supported by qualitative data from the interviews with the small-scale farmers, company managers and environmentalists. Their comments were as follows:

- *Government through the department of agriculture would plan a vital role in defining policy direction for the sustainable production of palm oil in the smallholders' sector.*
- *Companies involved in palm oil production and retailers using palm oil products and raw materials would be expected to play a bigger role in, for example, capacitating smallholders and providing the resources, information and sponsorships necessary to promote sustainable use of palm oil products not just in Rumonge district but in the entire country.*
- *Environmental groups would play a key role in building awareness about sustainable palm oil production and use, particularly at the community level.*
- *Working closely with government agencies, environmentalists, small-scale farmers and the community may hold joint workshops to educate local people about the benefits of environmental management in palm oil fields.*
- *Collaboration between stakeholders would facilitate sharing of resources and information between government, business, farmers and the community; as well as clear allocation of roles and responsibilities at all levels of the environmental awareness project.*
- *Balancing farmers' needs and environmental concerns would lead to sustainable farming practices which in turn would benefit the community of Rumonge.*

Together, the quantitative and qualitative results are corroborated by the literature which shows that while palm oil plays a key role in supporting sustainable livelihoods in rural areas, it could potentially damage the environment especially if farmers are not using sustainable farming methods. Purnomo (2018) found that while palm oil boosted economic growth, fires from the

palm oil fields and smoke from the mills increased air pollution, concluding that solving these challenges requires a holistic approach involving government interventions and business participation.

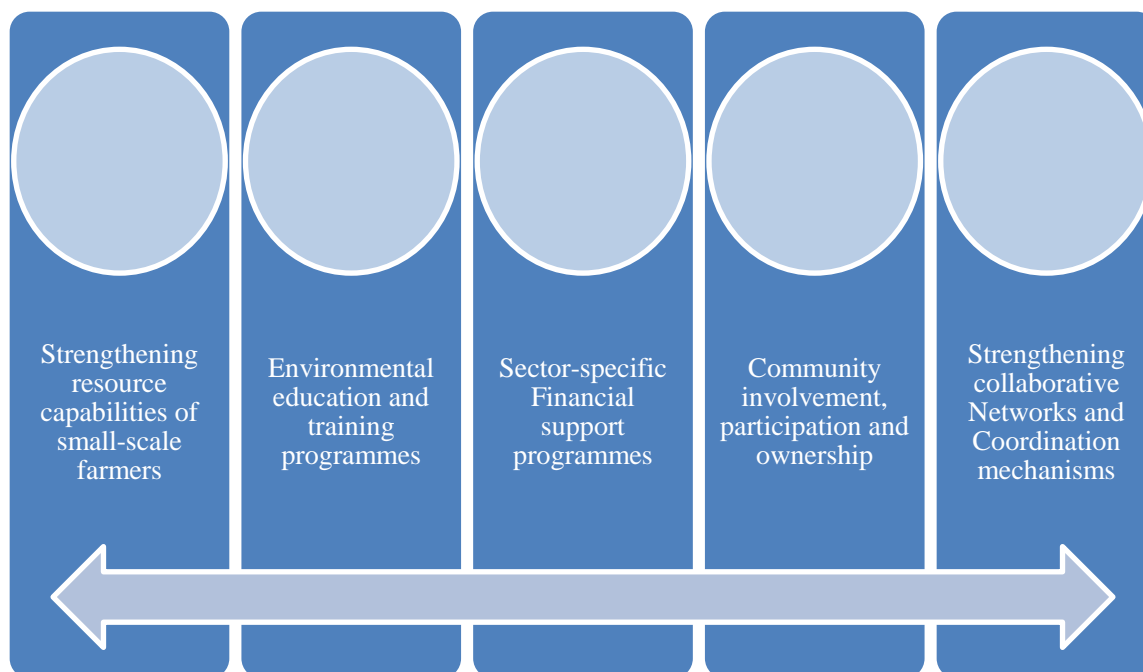
Overall, these results also demonstrate the increasingly complex and dynamic nature of sustainable development as both a concept and practice. As noted in Chapter 2, sustainable development can also restrict development by limiting application of resources to achieve the desired goals. Development is also an evolving process whose meaning, and outcomes differs from one context to another. Thus, in order for development to cater for present and future development, space, domain and social constraints have to be considered, in line with the Brundtland definition (Grosskurth and Rotmans, 2005).

5.6 Model to grow and sustain small holder farmers of palm oil

Bronkhorst (2017:1) suggests several models that could be utilised to stimulate growth and sustainability of small-scale palm oil farmers in rural areas. These include: (a) linking small-scale palm oil farmers with the main value chain through local middlemen; (b) fostering collaboration between mills and small-scale farmers to increase their delivery capacity; (c) self-managed small farmer support networks and resource sharing arrangements, and (d) small-scale farmers' cooperatives that are linked with established companies and community organisations.

As indicated in Chapter 1, the fourth objective of the study was to study the sustainability aspect of palm oil farming in the rural areas of Burundi. This objective was linked to the research question: How can the palm oil industry provide sustainable developmental in rural areas? Based on these models as well as insights from the survey, qualitative study and the literature, this study answers these questions by proposing an integrated smallholder development model that encompasses five pillars as follows (figure 5.4.24).

Figure 5.4.24 Sustainable business model for small-scale palm oil farmers



Source/Own creation / Nzokizwa (2019)

The model suggests the priority in developing small-scale palm oil producers is to build and strengthen their capabilities so that they may be able to withstand the pressures of globalisation and competition. Strengthening their resource capabilities will also help to create resilient communities in Rumonge. Environmental education and training programmes are needed to build awareness and understanding of best practices in palm oil farming.

Given the unique challenges that small-scale farmers face financially, it would be prudent to develop and implement specific financial packages linked to government agricultural policies. Ideally, this should form part of the small-scale farmers' empowerment programme. This will ensure that all small-scale farmers have easy and affordable access to financial support services. Effective community involvement and participation is necessary to ensure that community use of land is respected and incorporated into the land tenure system. Involving the community is also important in managing and resolving conflict around palm oil farming. As reported earlier in chapter3, conflict resulted in disruption of small-scale farming activities are central to poverty alleviation and job creation. Community ownership of palm oil farming will ensure that palm oil farming produce equitable benefits for all the people of Rumonge.

The fifth pillar addresses small-scale farmers' concerns about the lack of opportunities for collaborating and networking with established palm oil producing companies, NGOs and potential donors to grow and sustain their palm oil ventures which are crucial for poverty reduction in rural settings. This calls for the implementation of sector-wide coordination to encourage resource sharing and capacity building among small-scale palm oil farmers.

This model is consistent with the literature that for communities to uplift themselves from poverty they need to have the necessary capabilities and know-how. Stiglitz (2009) emphasises the importance of capabilities in enabling poor communities to identify and utilise opportunities to develop themselves and the freedom to choose or decide what is best for their lives. Choice and freedom go hand in hand with resources as said page 238 above, Capability, choice, freedom and resources lead to human development. The absence of one compromise the whole system

5.7 Conclusion

Overall, the quantitative and qualitative results show that palm oil farming activities in Rumonge district have a positive impact on socioeconomic development of individuals, households, community and the national economy through employment creation, household income generation, food security and tax revenue for the government. In this way, palm oil farming contributes to building and strengthening sustainable livelihoods and resilience in rural communities. Conversely, the results reveal that excessive and unguided palm oil farming activities had unintended ecological consequences, including deforestation, air pollution, water scarcity and depletion of natural resources and wildlife. The study also established that a lack of knowledge and skills, high administrative costs, as well as limited access to financial resources contributed to the failure of many palm oil farming ventures. Addressing this challenge requires proper capacitation of small-scale palm oil farmers in Rumonge. The next chapter presents the summary, conclusions and recommendations of the research.

CHAPTER 6

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

A central focus of this inquiry was to establish the socioeconomic benefits, growth and sustainability of palm oil production in rural areas in Rumonge. Overall, the results from both the qualitative and quantitative dimensions of the study showed that small-scale palm oil producers in Rumonge district are generally prepared to contribute to poverty alleviation through job creation and skills transfer in rural areas, boosting economic development. However, their efforts were hampered by capacity constraints, lack of financial resources, limited awareness of new farming technology and the pressure to foster environmental sustainability in the production of palm oil. Below is a summary of the study together with its conclusions and recommendations. The remainder of this chapter highlights future research needs within the small-scale palm oil production industry in Burundi.

6.2 Summary

This study employed a mixed methods approach to determine the socioeconomic benefits, growth and sustainability of palm oil production in four villages of Rumonge, Burundi. The qualitative dimension of the study included interviews with smallholder farmers, managers and environmentalists to gain an in-depth understanding of their role in palm production. The quantitative dimension of the study entailed a survey with smallholder farmers to elicit their opinions on the scale and intensity of palm oil production and the contribution of palm oil farming to poverty alleviation in the Rumonge community. In constructing the sample, the study relied on a probability sampling technique called random sampling to select 300 small-scale

palm oil producers for the study. Data collection instruments were blended and included interviews and questionnaires. The internal consistency of the quantitative research instrument (questionnaire) was tested using Cronbach's Alpha and the test results confirmed the consistency of the questionnaire as a data collection instrument. In addition to this, the questionnaire was also piloted prior to the survey in order to determine its relevance and effectiveness in facilitating meaningful data collection from the respondents. Comments and inputs from this pilot study were subsequently used to enhance the quality of the final questionnaire. The research process entailed disseminating permission letters to the smallholder farmers and the agro-processing companies requesting them to contribute to this research project. Below are the conclusions of the study.

6.3 Conclusions

The conclusions are drawn against the four research objectives and accompanying research questions to demonstrate how small-scale farmers of palm oil contributed to the alleviation of poverty and sustainable development in Rumonge district of Burundi.

6.3.1 The socioeconomic benefits and growth of the palm oil production in rural areas in Rumonge

As indicated in Chapter 1, the first objective of this inquiry was to investigate the socioeconomic benefits and growth of palm oil production in rural areas in Rumonge. This objective is aligned to the first research question: How can the potential economic benefits of palm oil farming, relating to poverty alleviation, be realised in Rumonge, Burundi? The following conclusions were reached by the study.

6.3.1.1 Social benefits

Evidence from the qualitative interviews and the survey with smallholder farmers showed that palm oil farming activities promoted household well-being and helped to strengthen food security efforts in the three villages of Rumonge. Palm oil production addressed household consumption needs and health needs. Farmers saw this as an important contribution to the government's poverty reduction strategies. Having said that, it is also important to note that in

order for smallholder farmers to continue providing these social benefits to the Rumonge community they need to be assisted in many areas, including access to modern palm oil production methods and technologies. GAs will be seen later, limited access to funding and modern farming technology is one of the most daunting challenges facing smallholder farmers in Burundi's Rumonge district. The intra-generational equity theory (Chapter 3) emphasises that sustainable development cannot be achieved unless we balance the needs and rights of present and future generations in terms of wealth creation and resource sharing.

6.3.1.2 Economic benefits

Despite constraints in capacity, resources, technology and the pressure to comply with environmental regulations, smallholder farmers were able to provide jobs, skills and income to their communities through their palm oil farming activities. Income from these activities also contributed to tax revenue, which boosted government's spending power on social services, for example a study done in Nigeria by Afuberoh and Okoye(2014) concludes that taxation has a significant contribution to the rate of economic growth, and hence per capital income which leads to higher standard of living. The only challenge in this regard was the limited market exposure of smallholder farmers as they relied heavily on the local market to sell their goods. This highlights a need for further policy interventions to promote exports of palm oil products to international markets. These results are consistent with Stiglitz's notion of economic growth as a catalyst for sustainable development (Chapter 2). It is imperative that small-scale farmers are assisted to understand the relationship between economic growth and poverty alleviation to benefit the Rumonge community.

6.3.1.3 Environmental concerns

From an ecological perspective, the analysis revealed that while palm oil farming activities boosted employment creation and income generation for smallholder farmers and the community of Rumonge, it also had unintended ecological consequences. One such problem was deforestation resulting from intensive land clearance activities during palm oil cultivation. A related problem was air pollution emanating from combustion of grass and shrubs in the palm oil fields. In some cases, palm oil farming activities led to the disappearance of wildlife including chimpanzees and Orangutans. Water pollution, resulting from chemical use in manufacturing of

palm oil products such as soaps and detergents, leaked into Lake Tanganyika and killing fish. In addition, increased demands for water during cultivation led to widespread water shortages. The environmentalists interviewed believed that smallholder farmers need to be taught about sustainable palm oil farming practices; and that this required cooperation among the key stakeholders including government, the agro-processing industry and established palm oil production companies. These results are consistent with sustainable development theory which states that human development efforts should be aligned with environmental sustainability goals to benefit both present and future generations (Chapter 3).

6.3.2 The role played by palm oil farming on poverty alleviation

The second objective of the study was to assess the role played by palm oil farming on poverty alleviation. In terms of the development of palm oil industry, palm oil production creates many jobs for the surrounding communities. This research objective underpins the second research question: What are the roles and minimum size of palm tree plantation required to alleviate poverty? The following conclusions were drawn:

6.3.2.1 Scale of palm oil production needed to reduce poverty

Evidence from the survey indicated that smallholder farmers were producing high enough yields to support their businesses and the Rumonge community. For instance, palm oil production ranged up to 18000 tonnes per annum, enough to meet the needs of the farmers, households and the community. Farmers believed increasing production capacity would help them meet the growing demand for palm oil in the market.

6.3.2.2 Employment creation opportunities

Community members, especially unemployed youth and vulnerable groups benefited immensely from formal and informal employment opportunities offered by smallholder farmers in the palm oil sector. In part, this explains why most of the smallholder farmers interviewed were convinced that palm oil farming was an indispensable part of government poverty alleviation strategy in Burundi. However, farmers' job creation efforts in Rumonge district were hampered by displacement of households as a result of the continuing political conflict in the country.

6.3.2.3 Skills transfer to the community

Through participation in smallholder farming projects, employees and community members were able to learn and master basic farming skills which they subsequently used to start their own palm oil retail activities. Some of the farmers interviewed were confident that increased support from government and agro-processing companies would help accelerate skills development in the small-scale palm oil farming sector. Some of the farmers interviewed indicated that it would be better if the government encouraged agro-processing companies to support skills training for smallholder farmers in the local palm oil production industry.

6.3.2.4 Empowerment of small holder farmers

While efforts had been made by government to recognise and support smallholder farmers in the palm oil sector, many of these farmers still struggled to acquire and maintain their farming certificates due to rising compliance costs. A related problem was the continued monopolization of the palm oil market by Savoror. Some of the farmers interviewed felt that this led to exploitation as they were not directly involved in the determination of the pricing structure in the local market. Without much influence on price determination, smallholder farmers were systemically excluded from the lucrative side of the palm oil industry.

6.3.3. Challenges in small-scale palm oil farming

The third objective of the study was to assess the challenges experience in small-scale farming of the palm oil tree by famers in Rumonge community. This objective addresses the third question: What are the challenges of conflict to the farmers of small-scale farming of the palm oil tree in Rumonge Community? The following conclusions were established:

6.3.3.1 Severe capacity constraints

The results revealed that most small-scale palm oil producers in the four villages did not have equitable access to the necessary resources, including manpower, infrastructure, palm oil production technologies, supply distribution channels and farming equipment. This situation was

compounded by limited access to credit facilities and other funding schemes. Coupled with this was the rising cost of capital which made debt financing very expensive for most small-scale palm oil producers in Rumonge district.

The rising administrative costs for smallholder farmers of palm oil in Rumonge district are consistent with the findings of the Roundtable on Sustainable Palm Oil (2017) which revealed that certification of small-scale palm oil producers in Indonesia fell by 38% in 2017 as a result of the expiration of their production licenses. This report further showed that these producers could not renew their licenses as they lacked the minimum resources needed to fund and maintain certification.

6.3.3.2 Limited awareness of new farming technology

Across the four villages of Rumonge, small-scale palm oil producers conceded that lack of knowledge about new technology on palm oil production was a major problem and that even those who had the knowledge could not access the technology due to the lack of support from established palm oil producers and the government. Lack of knowledge about relevant farming technology is partly attributed to the weak partnership between agro-industry and small-scale producers in Rumonge district.

6.3.3.3 Shortage of skills and expertise

Widespread shortages of relevant skills and expertise among small-scale palm oil farmers were reported across the four villages of Rumonge. Not only did this constrain small-scale farmers' ability to scale up production but also limited their ability to market their products. The overall impression among these players was that transformation in the sector had not encouraged skills transfer to small-scale palm oil producers. Only medium and large companies benefited from the government's palm oil production policies.

6.3.3.4 Limited technical support

One of the key issues that emerged from the interviews with small-scale palm oil producers was that most did not have equitable access to technical support services. It was felt that established palm oil producers, agro-business and the government must join hands to support emerging palm oil producers in critical areas such as technology transfer, marketing, risk control, finance and business management expertise.

6.3.3.5 High administrative costs

Some of the small-scale palm oil producers in Rumonge were also concerned about barriers to entry, which prevented many aspiring palm oil producers from entering the industry. The biggest hurdle was certification costs. Before operating their farms, these farmers were required to pay an upfront administrative cost for licenses. Additional costs included training and financial auditing. These costs could amount to 50% of annual revenue. This drove many start-up smallholder farmers out of business as they could not raise the funds required to finance the certification process.

6.3.3.6 Rigid industry pricing structure

The analysis showed that even though some smallholder farmers were able to access the market, they had little control over the price structure. The contractual arrangements were such that smallholders could only rely on the prices dictated by agro-processors and distributors of palm oil products. Faced with an inflexible and highly fluctuating price structure, most smallholder farmers earned low profit margins, which exacerbated inequalities between established and emerging palm oil producers in the Rumonge area.

6.3.3.7 Balancing poverty alleviation and environmental sustainability

As highlighted in the analysis, small-scale palm oil growers in Rumonge were faced with the twin challenges of meeting their production yields without compromising the principle of environmental sustainability. This proved difficult as the high demand for palm oil often led to degradation of the environment through deforestation, soil erosion, depletion of natural resources and increased carbon emissions from land clearing, cultivation and fires. Nearly all the farmers

interviewed admitted that some farming practices were not consistent with the principle of environmental sustainability. Some of the respondents attributed this to the lack of proper education about nature conservation and sustainable palm oil production practices.

However, the environmental issues linked to palm oil production are not unique to Burundi's small-scale palm oil producers. A similar study of palm oil production by Mahat (2012) in Malaysia found that although palm oil production plays a vital role in the country's agricultural sector, unsustainable farming practices were a major threat to environmental sustainability. Chief among these were deforestation, soil erosion and carbon dioxide emissions, particularly when new palm oil farming projects are launched. This calls for targeted policy interventions to ensure that palm oil production practices conform to the goals of sustainable development.

6.3.3.8 Sustainability of palm oil farming in Rumonge

The fourth objective of the study was to study the sustainability aspect of palm oil farming in the rural areas of Burundi. This objective is linked to the fourth and fifth research questions: How can the palm oil industry provide sustainable developmental in rural areas? What are the costs and timescale for planting palm oil tree plantations in Rumonge and how long will it be before the poor can benefit? The research results indicated that the industry was largely fragmented with the key role players channeling resources to main producers rather than small-scale producers. This led to the marginalisation of smallholder farmers in the palm oil sector. Effectively dealing with these imbalances will require the cooperation of all key stakeholders in the palm oil supply chain, including regulators, agro-processors, retailers, smallholder farmers and the community.

6.4 CONTRIBUTION TO KNOWLEDGE

While there have been efforts to theorise palm oil production from a main market perspective, little has been documented about the role of small-scale palm producers in poverty alleviation. This study contributes to the knowledge of rural smallholder farmers to design longer term plans to improve their livelihoods, particularly concerning how palm oil production can

influence the socioeconomic problems facing the people of Burundi: poverty, unemployment and economic stagnation. The study also enhances understanding of sustainable palm oil production practices and the linkages between mainstream producers and small-scale operators. In particular strengthening the capacity resource capabilities of small scale farmers palm oil farmers is an important consideration in expediting transformation of the sector. Ecologically, the study raises awareness about the need for customised training that build climate change resilience among small farmers while also improving access to modern farming technology to reduce environmental degradation. Running parallel to this is the need for sector-specific financial packages and incentives to escalate small scale farming in the palm oil sector. As articulated in the Sustainable livelihoods approach, the study advances participatory and inclusive cross-sector collaborative approaches that build synergies and instill a culture of cooperative farming within the small palm oil sector. This requires strengthening of coordination and accountability mechanisms to ensure that financial and technological resources are effectively deployed to ensure that small farmers make a meaningful contribution to sustainable livelihoods in rural areas.

6.5 RECOMMENDATIONS

6.5.1 Capacitate small-scale farmers to scale up palm oil production

Evidence from qualitative interviews and the survey demonstrated that small-scale palm oil producers in Rumonge face constraints which limit their production capabilities and targets. This calls for a multi-faceted and integrated capacity building programme focusing on the following:

- Easy and equitable access relevant, accurate and current information on palm oil production and farming methods
- Marketing of palm oil products and services
- Localised One-stop shops providing a wide range of support services to the small-scale farming community, including manuals, brochures, pamphlets
- Support structure for small-scale palm oil farmers
- Technical support for start-ups and medium palm oil producers focusing on new palm oil farming technologies, business plans, marketing strategy, customer service, etc.

- Targeted skills training to build critical skills such as financial planning and control, credit use and management; risk management and environmental management, cooperatives; contract management and business networking skills
- Knowledge dissemination workshops and seminars to help small-scale producers keep abreast of new developments in the palm oil industry.

6.5.2 General Recommendations

South Africa is a potential customer for Burundian palm oil for the manufacture cosmetic products. It is time for Africa to connect and integrate, trading within. For example, South Africa is a sophisticated economy with significant industrial and manufacturing sectors, with the potential to buy raw materials from other African countries such as Mozambique and Burundi who produce palm oil. Why therefore, does South Africa import palm oil from Malaysia and Singapore instead? Why is it not possible to make a bilateral agreement between smallholder farmers of palm oil in Burundi and manufacturers of cosmetics in South Africa, from which the people of both African countries will benefit? The answers are rooted in challenges like infrastructure, capacity to meet purchases orders of South African companies by Burundi farmers, as well as instability such as conflict based on ethnicity and division based on jealous and hatred, bad governance and corruption. It is where South Africa as the powerhouse of southern and east African Countries need to set up to facilitate the integration, starting the empowering the human capital to the smallholders farmers of palm oil in Burundi and elsewhere in the Region. This study calls for leaders and policy makers in Sub-Saharan Africa to support the provision of small-scale farmers with such skills and resources

6.5.3 Policy recommendations

6.5.3.1 Improve cross-sector policy coordination to benefit small palm oil farmers

A growing trend in most developing countries is to encourage close cooperation between different policy sectors to promote synergies and cost-savings in policy implementation, including the quality of outcomes. Opportunities for cross-sector collaborations and resource

sharing can be identified through a range of complementary activities, including annual agricultural summits; technological exhibitions; and sector-based palm oil farming awareness campaigns.

6.5.3.2 Align small scale palm oil farming with mainstream agricultural policies

To ensure that farmers receive sustainable support from government and agro-processing companies, it would be prudent to link these activities with agricultural programmes. Linkages can be identified in the following areas:

- Agri-business charter to foster transformation that benefits small-scale palm oil producers
- Small medium and micro-enterprises (SMME) financial support scheme
- Small medium and micro-enterprises (SMME) institutional support framework

6.5.3.3 Link small scale farming practices with sustainable livelihoods

There is a great need for policy makers, particularly in the agricultural sector to start seeing small palm oil farmers as key drivers of the sustainable livelihoods agenda in rural areas. This will ensure that palm oil farming contributes to building and strengthening community livelihoods and resilience against poverty and climate change challenges.

6.5.3.4 Incorporate incentives schemes in palm oil farming policy initiatives

In order for the palm oil farming initiatives to yield the desired results, small farmers should be incentivised for reaching their production and marketing targets. Incentives may include tax exemptions and prizes to encourage healthy competition in the palm oil sector.

6.5.3.5 Benchmark policy implementation practices against major palm oil producing countries

Leading countries in palm oil production such as Indonesia and Cameroon, may be used as key benchmarking partners. A lot can be learned from these countries in how government policy is used as a tool to promote cooperative farming practices and mechanisation of the palm oil sector.

6.5.3.6 Strengthen policy evaluation in the small palm farming sector

To establish whether state resources are effectively deployed to assist and empower small palm oil farmers, it would be vital for the provincial department of agriculture and its agencies to regularly generate and analyse data on the performance and contribution of palm oil farmers to economic growth, food security, job creation and poverty alleviation

6.5.3.7 Review palm oil farming policy to facilitate community participation

As part of the government's poverty alleviation and empowerment strategies, palm oil production policies and regulations need to be adjusted to accommodate the unique needs of small-scale producers and the community of Rumonge. Policy improvements should explore:

- Rewards and incentives for small-scale producers
- Reduced administrative costs for small-scale producers
- Revitalisation of small-scale farmers
- Revise financing mechanisms for palm oil producers
- Strengthening coordination mechanisms
- Institutionalizing financial support system for small-scale
- Tackling unfair competitive practices by the main players
- Foster incubation of small-scale farmers by big players and mills as part of the government's efforts to promote transformation of the palm oil industry

6.5.3.8 Improve access to technical support and information services

The following steps would assist small-scale farmers' access to technical support:

- Localising small agri-business support centres
- Using multiple ICT tools to reach remote areas
- Using multiple communications media platforms
- Regular seminars, workshops and summits
- Market and industry trends and new production methods

6.5.3.9 Institutionalise funding support for small-scale palm oil producers

Revitalised and institutionalised funding arrangements may help small-scale palm oil producers cut-down on production costs by providing additional funding for replants – the replacement of low-yield plants with high-yield seedlings. This would enable smallholder farmers to raise the funds necessary to acquire and keep their palm oil production certificates.

6.5.3.10 Foster cooperative farming practices among smallholder farmers

Fostering cooperatives where small-scale producers are assisted and supported to form cooperatives to facilitate information sharing and intergroup learning on a range of issues affecting their farming activities, including information and technical skills on palm oil production. Apart from ending fragmentation, the cooperatives model would also enable these small-scale growers to negotiate contracts with established palm producers, agro-processing companies and government.

6.5.3.11 Benchmark small-scale palm oil farming methods and practices

Best practice from Malaysia suggests that small-scale producers of palm oil enjoy the following privileges / benefits:

- Self-organised
- Self-managed
- Self-financed
- Freedom to choose which crops to plant

- Small-scale producers have the bargaining power and autonomy to influence supply and pricing structure
- They are not contractually to any particular mill or association; although they may receive support services from the government

6.5.3.12 Encourage collaboration between large producers and small-scale farmers

Established palm oil producers can play a major role in fostering growth, expansion and the sustainability of small-scale farmers in the sector through a range of technically-oriented support services, including sector-specific funding schemes, business incubation, helping small players to access markets, providing training on marketing basics and sharing technological resources.

6.6 Expected outcomes

Based on these policy recommendations, the expected outcomes in respect of transformation in the small palm oil sector are as follows:

- A well capacitated smallholder farming community in terms
- Equitable access to financial resources, infrastructure, technology, machinery and equipment
- Improved bargaining power of smallholder farmers in the palm oil sector
- Improved direct participation of small farmers in pricing decisions
- Establishment and accreditation of small farmers' association
- Creation of community-based agricultural cooperatives in the palm oil sector
- Direct representation of small farmers in international palm oil markets

In order for Burundi to achieve these outcomes, the following conditions should be met:

- Prioritise the needs and interests of small palm oil farmers
- Incorporate palm oil farming in agricultural vocational education programmes to prepare young people for participation in palm oil industry
- Utilise agricultural policy instruments to mobilise funding for smallholder farmers

6.6 Future research requirements

The current study provided an analysis of the socioeconomic benefits of the smallholder palm oil production sector, as well growth and sustainability of this vital industry to aid the fight against poverty and unemployment in Burundi's Rumonge district. Given this limited focus of the current study, further research may be required to determine supply chain opportunities and constraints for small palm growers using a cross-country case study approach. This would provide a comprehensive analysis of the issues that impact on the ability of smallholder farmers to effectively compete and succeed in the highly competitive palm oil industry.

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Appendix: A: Farmers' Questionnaire

Resp. . no.

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Title:

Dear Palm Oil Farmer

Instructions:

Please answer all the questions as honestly as possible. The information collected for this study will be collated and analysed in order to form an accurate picture of this research project..... It will assist the researcher to make findings and propose recommendations to improve You do not need to identify yourself and, similarly, the researcher will uphold anonymity in that there will be no possibility of any respondent being identified or linked in any way to the research findings in the final research report. Where required please indicate your answer with a cross (X) in the appropriate box or write a response in the space provided, using a black ballpoint pen. For the open-ended questions, please write your responses clearly and legibly in the space provided. If there is not sufficient space for your response please number a blank sheet of paper with the question number and continue writing your response on the extra piece of paper.

SECTION A: Farmer's demographic characteristics

Q1. Gender

Male/UMuhugu	1	
Female/Umukobwa	2	

Q2. How old are you? /ufisimyaka ingahe

Below 30 years/musi yimyaka 30	1	
30–39 years/hagati ya mirongwitatu kugeza mirongwitatu nicena	2	
40–49 years /kuva 40 gushika mirongwine nicenda	3	
50–59 years/kuva mirongwitanu gugeza mirongwitanu nicenda	4	
60 years and above	5	

Q3. What is your marital status? /Urubatse canke ntiwubatse

Never married/sinigeze nubaka	1	
Married/ndubatse	2	
Divorced/narahukanye	3	
Separated/twaravanye	4	
Widowed/ndumupfakazi	5	
Cohabiting/turabana gusa tutubatse	6	

Q4. In which area in Burundi were you born? / Wavukiye muntara iyihe

Rumonge	1	
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Bururi	2	
Gitega	3	
Bujumbura	4	

Q5. What is your highest level of education?/ Ufise amashule angaha

Never attended school/ sinigeze nza mwishule	1	
Grade 1 – 9/kuva muwambere gushika muwicenda	2	
Grade 10 -12/kuva muwicumi kugeza kuwicumi nakabiri	3	
Diploma/certificate (vocational training)/mfise Diplome/iseretifika/imyuga	4	
University degree/ urupapuro rwo muri kaminuza	5	
Post graduate degree/mfise metrise	6	
Other (specify)/ibindi /sigura	7	

SECTION B: INFORMATION ON FARMING PALM OIL/Imforomasiyo kuburimi bwibigazi

Q6. From which of the following sources, did you come to know about the palm oil farming role for poverty alleviation?/Muribi bikurikira nikihe catumye umenye uburimi bwibigazi/shirako akamenyetso ko kurwiza

Source of information/ Isoko ryamakuru	Yes	No
Posters./amaposita aranga ikintu	1	2
Pamphlets./Impapuro zimenyesha amakuru	1	2
Magazines. /ibitabo vyamashusho	1	2
External Physical notice boards (Company or Billboards)./Amatangazo yamasosiyete	1	2
Websites/kungurukana bubenye	1	2
Social media (facebook, Instagram, twitter, whatsapp)/Ibimenyeshamakuru	1	2
Non-govermental organisations/Amashirahamwe adaharanira ivyapolitike	1	2
United nations personnel/Abakozi bumuryango wabibunye	1	2
Family members and friends/Abanyamuryango nincuti	1	2
Workshops and seminars for farmers/Amaseminari yuburimi	1	2

Q7. What size of palm oil trees you need to promote economic growth and poverty alleviation?/Nigitigiri c ibigazi bikenewe kugira tuzamure ubutunzi kandi turwanye ubukene

30 palm oil trees/Ibigazi mirongwitu	1	
50 palm oil trees/Ibigazi mirongwitanu	2	
100 palm oil trees/Ibigazi ijana	3	
1 hectare of palm oil trees/Iheka imwe	4	
At least 5 hectares of palm oil tree/namaburiburi amahegitari atanu	5	

Q8. What is the minimum size of palm tree plantation required to alleviate poverty?/Nibigazi binganiki bikenewe kugira turwanye ubukene

2 hectare of palm oil trees/Iheka imwe	1	
At least 3 hectare of palm oil trees/Namaburiburi iheka zitatu	2	
200 palm oil trees/Ibigazi amajanabiri	3	
The minimum size depends on the big of plot you got/ Igitigiri cibigazi biva kwitongo ufise	4	
To alleviate poverty depend on the knowledge not the numbers of palm oil trees/kurwanya ubukene ntibifatira kugitigiri cibigazi ufise ahubwo bivane nubumenyi ufise	5	
	6	
Skills in farming of palm oil is the answer to poverty alleviation/Ubumenyi kuburimywi bwibigazi ninyishu yokurwanya ubukene	7	
500 palm oil trees is good for generating a good income/ibigazi amajanatanu nigatigiri ciza co kuronka inyungu nziza yamafranga		
The size does not matters, what is need it is human capital/Igitigiri sicogifise ikimazi igifise ikimazi nubumenyi bwumuntu afise	8	

REASONS FOR FARMING PALM OIL/Ibituma murima ibigazi nibiki/shirako akamenyetso ko kurwiza

Q9. Why did you start palm oil farming as a means of fostering poverty alleviation?? Tick all that is applicable/Kuberiki watanguye kurima ibigazi nkuburyo bwokurwanya ubukene

Due to attendance in agriculture training workshop/kubera naja mumaseminari yuburimywi	1	
Business agricultural mindset/Narimfise ubumenyi kukugene bakora ivyashara	2	
Learned from my neighbor/ navyigiye kumubanyi	3	
Inherited from family/ Nabirazwe nabavyeyi	4	
Availability of a ready market to sell the product/kubera ubwinshi bwamasoko dushoreramwo ibigazi	5	
Due to climatic conditions which are suitable to grow the trees/kubera isi yacu ikundibigazi	6	
Availability of start-up income from funding agencies/kubera harihamashirahamwe afasha kukuronka umutahe	7	
Knowledge on palm tree growth easily accessed/kubera ubumenyi bwukurima ibigazi buroroshe kuronka	8	

Q10 To what extent are the following oils the best. /Muraya mavuta yose nayahe arimeza/shirako akamenyetso kokurwiza

	Types of oil	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	Rapeseed oil/Amavuta yimbuto	1	2	3	4	5
b)	Oil of Cano (Canola oil)/amavuta yibiyoba	1	2	3	4	5
c)	Sunflower oil/Amavuta yibihoke	1	2	3	4	5
d)	Palm oil/Amavuta yibigazi	1	2	3	4	5
e)	Avocado oil/Amavuta yamavoka	1	2	3	4	5
f)	Salad oil/amavuta yimboga	1	2	3	4	5
g)	Olive oil/amavuta yimizabibu	1	2	3	4	5
h)	Hard margarines/Amavuta yesamule	1	2	3	4	5
i)	Cottonseed oil/amavuta yimbuto zipampa	1	2	3	4	5
j)	Grapeseed oil/amavuta yimbuto zimizabibu	1	2	3	4	5
k)	Peanut oil/amavuta yibiyoba	1	2	3	4	5
l)	Coconut oil/amavuta kakawo	1	2	3	4	5
m)	Vegetable oil/amavuta yimboga zamababi	1	2	3	4	5
n)	Linseed oil/amavuta yimbuto zibiti	1	2	3	4	5
o)	Pumpkin oil/Amavuta yimyungu	1	2	3	4	5
p)	Walnut oil/Amavuta yimbuto za wal	1	2	3	4	5
q)	Flaxseed oil/Amavuta yimbuto za flex	1	2	3	4	5
r)	Sesame oil/Amavuta yibire	1	2	3	4	5
s)	Soyabean oil/Amavuta yisoya	1	2	3	4	5

Q11. To what extent are the following issues reasons for picking palm oil instead of sunflower oil/Nikuberiki wahisemwo kurima ibigazi kuriko urime ibihoke/ shirako akamenyetso kokurwiza

	Reasons	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	It is easy to farm and manage/Biroshe kurima	1	2	3	4	5
b)	It is sustainable/ Nuburimy burama	1	2	3	4	5
c)	It requires only small space/Bisaba itongo rito	1	2	3	4	5
d)	Low level in cholesterol/bifise ibibazo bike vyumubiri	1	2	3	4	5
e)	Low in mono and polyunsaturated fats/amavuta yavyo ntabuvybuhe atera	1	2	3	4	5
f)	It is higher in saturated fat/Bifise kuvura kuri hejuru	1	2	3	4	5
g)	A high smoking point (good for searing, browning, high-heat frying)/Amavuta yavyo afita umwotsi muremure iyo uyakaranze	1	2	3	4	5
h)	A long shelf life/amavuta afise uburambe kukuyabika	1	2	3	4	5
i)	Palm oil is an excellent source of tocotrienols, a form of vitamin E with strong antioxidant properties that may support brain health/Amavuta yibigazi afise akamaro kanini muri vitamin E	1	2	3	4	5
j)	High antioxidant content (Palm oil also contains antioxidants, such as carotenoids and tocotrienols, that might provide protection against certain types of cancer)/Amavuta yiigazi arakingira ubwoko bumwe bwa kansera	1	2	3	4	5

k)	Palm oil has been credited with providing protection against heart disease. / Amavuta yibigazi arakingira ingwara zumutima	1	2	3	4	5
l)	Contains vitamin E and carotenes which help protect the body from free-radical damage/ Amavuta yibigazi arakingira kononekara kumubiri	1	2	3	4	5
m)	Palm oil can help improve vitamin A status in people who are deficient or at risk of deficiency/ Amavuta yibigazi arafasha kuronka vitamini A	1	2	3	4	5
n)	Consumption of Palm oil as part of a balanced diet does not have incremental risk for cardiovascular disease/ Amavuta yibigazi ntangaruka mbi zindwara zumutima	1	2	3	4	5
o)	It is cheaper than sunflower oil/ Arazimbutse gusumba ayibihoke	1	2	3	4	5
p)	It is commonly used/ Namavuta akundwa nabenshi	1	2	3	4	5
q)	It is readily available/ Araboneka atangorane	1	2	3	4	5
r)	Can be used in production of biodiesel (as palm oil methyl ester)/ Arashobora gukoreshwa mugukora amazutu	1	2	3	4	5
u	It is more profitable than sunflower/ Arazimbutse gusumba amahoke	1	2	3	4	5

SECTION C: SOCIAL ECONOMIC BENEFIT AND GROWTH/Inyungu zukurwiza imwimbu nukwitezimbere

Q12 To what extent are the following Issues function of Social economic benefits and economic growth in palm oil production/Nuburyo buki ibi bikurikira bifasha mukurwiza umwimbu hamwe nukwiteza imbere

Item	Reasons/Ibituma	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	The availability (build) of partnerships with corporates to improve smallholder incomes/ Kubaka ubufatanye bwo gufasha abarimyi batobato	1	2	3	4	5
b)	Government/NGOs have designed policy interventions for sustainable oil palm production/ Leta namashirahamwe adaharanira ivya politike bashizeho amategeko afasha kuburimyi bwibigazi burama	1	2	3	4	5
c)	Assisted in improving the livelihoods of the community (living conditions of people)/ Uburimyi bwibigazi burafasha kukwitezimbere kwabanyagihugu	1	2	3	4	5
d)	Have access to pipe borne water/ kugira ubrenganzira kumazi meza yamabomba	1	2	3	4	5
e)	Supporting the replanting of aging crops with more productive seedlings/ Kugufasha kugutera kandi kumbuto zama	1	2	3	4	5
f)	Ability to satisfy statutory obligation/ Ubushobozi bwogushiraho amategeko ngenderwako	1	2	3	4	5
g)	Members of a small-scale palm oil farming household are	1	2	3	4	5

	working together to farm the palm oil/ Imiryango yabarimyi bibigazi batobato bakorera hamwe muburimyi bwibigazi					
h)	Availability of smallholder farmers insurance/ Ukubaho kwa asilanse yabarimyi batobato	1	2	3	4	5
i)	Availability of markets to sale product/ kukubaho kwamasoko yo kugurisha ibiva mubigazi	1	2	3	4	5
j)	Availability of information on farming palm oil/ kubaho kwivyirwa vyuburimyi bwibigazi	1	2	3	4	5
k)	Availability of organisations that assist in helping smallholders to secure legal land-ownership rights/ Kubaho kwamashirahamwe afasha abarimyi batobato kuronka amatongo yabo baganza	1	2	3	4	5
l)	Access to improved seedlings/ KUgira uburenganzira bwo gushika kumbuto zigezweho	1	2	3	4	5
m)	Palm oil is highly resistant to oxidation/ Ibigazi birarinda ingorane zihinduka ryibihe	1	2	3	4	5
n)	Availability of capital for plantation development/ Kubaho kwimitahe ifasha kugutera ibigazi	1	2	3	4	5
o)	Ability to participate in cooperative Contribution/ Ukubaho kuburyo bwokuja muma coperative	1	2	3	4	5
p)	Access to technical advice/ Kuburenganzira bwo kuronka impanuro kubuhinga bugezweho	1	2	3	4	5
q)	It is a perennial plant that is productive year-round and has a useful life of between 20 to 25 years/ Ibigazi nigiterwa gifise ubuzima bwimyaka 20 na mirongebiri nitanu	1	2	3	4	5
r)	Presence of oil palm company-community joint ventures/ Ukubaho kwamasosiyete yibigazi yabanyagihugu bagiye hamwe	1	2	3	4	5
s)	It is cheaper to produce/ Ibigazi birazimbutse kurima	1	2	3	4	5
t)	To have a better life/ Ibigazi bituma umuntu agira ubuzima bwiza	1	2	3	4	5
u)	Promotion of well being/ Ibigazi bitezimbere imibereho myiza	1	2	3	4	5
v)	Providing farmers with property rights/ kuronsa abarimyi uburenganzira bwokuganza amatongo yabo	1	2	3	4	5
w)	Local people are likely to benefit from plantation establishment/ Abanyagihugu barungukira kukurima amashamba yibigazi	1	2	3	4	5

SECTION D: DESCRIPTION OF POVERTY AND THE ROLE OF THE PALM OIL PLANTATION ON POVERTY ALLEVIATION: Gusigura ubukene icarico hamwe nakamaro kuburimyi bwibigazi mukurwanya ubukene

Q13. To what extent do you think the following issues describe poverty?/Nigute wiyunvirako ibibikurikira bisigura ubukene icarico

	Poverty is/Ubukene ni	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	Poverty is man-made/ Ubukene bwakozwe numuntu	1	2	3	4	5
b)	Poverty is a chronic disease. /Ubukene nindwara idakira	1	2	3	4	5
c)	Poverty is classified by not owning items such as car, TV, radio, or stylish clothes. /Ubukene nigihe umuntu abadafise televiziyo canke iradio canke impuzuzigzweho	1	2	3	4	5
d)	Poverty is when you live on less than one dollar a day/Ubukene nigihe ubayeho musu ya varere yidollar rimwe	1	2	3	4	5
e)	Severe deprivation of safe drinking water (access only to surface water (e.g. rivers, ponds) for drinking or living in households where the nearest source of water was more than 15 minutes away – 30min round trip (e.g. indicators of severe deprivation of water quality or quantity/Ubukene nigihe uba utaronka amazi meza yibombo,ukoresha amazi yo mumigezi ari nko kubilometro cumi nabitano	1	2	3	4	5
f)	Severe deprivation of food/ Kuba udafise indya zikwiyye	1	2	3	4	5
g)	Severe deprivation of sanitation facilities (no access to a toilet of any kind in the vicinity of their dwelling, e.g. no private or communal toilets or latrine)/ Ubukene nigihe udashobora kugira uburenganzira bwo kuba hafi yibitaro	1	2	3	4	5
h)	Severe deprivation of information (no access to newspapers, radio or television or computers or phones at home, e.g. no information sources)/ Ubukene nukuba udashobora kuronka amakuru agezweho	1	2	3	4	5
i)	Severe deprivation of education (youth who never attended school and who are also illiterate)/ Ubukene nigihe udashobora kwiga canke kwigisha abana bawe	1	2	3	4	5
j)	Lack of health shelter/ Ubukene nukubura uburaro bwiza	1	2	3	4	5
k)	Poverty is deprivation from access to resources, such as land and credit/Ubukene nukuba udashobora kuronka itongo canke ingurane muri bank	1	2	3	4	5
l)	Lack of income and productive resources to ensure sustainable livelihoods/Ubukene nukuba udafise amahera yokugufasha mubuzima bwamisi yose	1	2	3	4	5
m)	Hunger and malnutrition/ Ubukene nukubura ivyurya	1	2	3	4	5
n)	Ill health/Ubukene nukurwara	1	2	3	4	5
o)	Limited or lack of access to education and other basic services/ Ubukene nukubura ivyankenerwa mubuzima	1	2	3	4	5

p)	Increased morbidity and mortality from Illness/ Ubukene butuma haba indwara zintakira hamweme nimfu	1	2	3	4	5
q)	Homelessness and inadequate housing/ Ubukene nukutagira ahuba	1	2	3	4	5
r)	Unsafe environments/ Ubukene nukuba ahantu hatari heza	1	2	3	4	5
s)	Social discrimination and exclusion/ Ubukene butuma bagukumira mubandi	1	2	3	4	5
t)	Lack of participation in decision making/ Ubukene butuma udatanga impanuro mumuryango	1	2	3	4	5
u)	Lack of participation in civil, social and cultural life/ Ubukene butuma udafasha mumanza zumuryango	1	2	3	4	5

Q 14. To what extent will the following issues affect alleviation of poverty through palm oil production? /Nigute ibi bikurikirarintambamyi mu kurwanya ubukene

a	The choice of investment in palm oil is limited because of land problem/ Guhitamwo mukurwiza umwimbu biragoye kubera ikibazo camatongo	1	2	3	4	5
b	The small-scale farmers are limited to the investment of palm oil agricultural/ Abarimyi batobato barimiwe mugushora umutahe muburimyi bwibigazi	1	2	3	4	5
c	Income from palm oil growth has assisted in improving health conditions/ Umwimbu wamafranga avuye mubigazi urafasha mukugira ubuzima bwiza	1	2	3	4	5
d	There are programs on cash transfers to cover interim periods when income streams are affected/ hariho iporograma zifasha igihe umwimbu wamafranga uvu mubigazi ugabanutse	1	2	3	4	5
e	Increased employment for the community/ Uburimyi bwibigazi burafasha mukurwiza akazi kubantu batobato	1	2	3	4	5
f	Availability of organisations in building infrastructure (building community roads, schools and healthcare facilities)/ Ukubaho kwamashirahamwe yubaka amabarabara namashule hamwe nibitaro	1	2	3	4	5
j	Being able to save money in banks/ Gushobora kubika amahera mwibank	1	2	3	4	5
k	Reduces the pressure of rural to urban migration/ Kugabanya abimukira bavuye ruguru baja mubisagara	1	2	3	4	5
l	Ability to satisfy statutory obligation/ Ubushobozi bwo kubahiriza amategeko	1	2	3	4	5
n	Payment of health care charges/ Gushobora kuriha amafranga yo kwamuganga	1	2	3	4	5
m	Availability of education on sustainable oil palm production/ Ukubahiriza inyigisho zizanye nuburimyi bwibigazi	1	2	3	4	5
o	Payment of health care charges/ Kuriha amafranga yo kwamuganga	1	2	3	4	5
p	Have access to pipe bonne water/ Gushobora kuronka amazi meza	1	2	3	4	5
q	Ability to pay electricity changes/ Ubushobozi bwokuriha	1	2	3	4	5

	amafranga yumuriro					
r	Ability to buy petrol for generator/ Ubushobozi bwokuriha petrole yimashini zatsumuriro	1	2	3	4	5
u	Affordability of means of living/ Ubushobozi bwokuronka uburyo bwokubaho	1	2	3	4	5
v	Purchase of household basic needs/ Kugura ibikenewe vyomunzu	1	2	3	4	5

SECTION E: THE NEGATIVE EFFECTS AND CHALLENGES EXPERIENCED IN SMALL--SCALE FARMING OF THE PALM OIL TREE BY FAMERS/ Ingaruka mbi kubarimiye bibigazi batobato

Q15. To what extent are the following negative effects for farming palm oil? / **Nizihe murizi ngaruka mbi zibangamiye abarimiye bibigazi**

	Negative effects/Ingaruka mbi	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	Causes air pollutions from forest fires/ bitera impwemu zanduye bivanye numuriro bakoresha muguturira amashamba	1	2	3	4	5
b)	Disappearing of Orangutans (It affects our animals like Orangutans)/ Guhona kwibikoko nkimamfu ninguge	1	2	3	4	5
c)	Disappearing of forests (deforestation)/ Guhona kwamashamba	1	2	3	4	5
d)	Water pollution from fertilizers/ Kononekara kwamazi bitewe nintabire bashira mubigazi	1	2	3	4	5
e)	It causes carbon emissions/ bitera kwononekare kwibirere	1	2	3	4	5
f)	Pesticide drift/ umuti wogutabira uratera ingaruka mbi	1	2	3	4	5
g)	Requires large-scale land clearing/ Bisaba guhonya imyonga uriko utegura ahuzotera ibigazi	1	2	3	4	5
h)	Palm oil plantations results in tensions around land rights with government/ Uburimiye bwibigazi butera indyane zifatye kumatongo	1	2	3	4	5
i)	There is poor labour conditions (abusive labour conditions)/ Ifatwa nabi ryabakozi bakora mubigazi	1	2	3	4	5
j)	Causes water crisis/ Uburimiye bwibigazi butera ikena ryamazi	1	2	3	4	5
k)	Parts of the tropics palm oil is grown on carbon-rich peat soils which can be used for other crops/ Ibigazi biterwa ahokoreshejwe gutera izindi mbuto	1	2	3	4	5
l)	Government and palm oil companies' concessions on land have resulted in local people losing access to land and resources they have used for centuries/ Amasezerano ya masosiyete arima ibigazi na leta bituma abarimiye batobato bahomba amatongo yabo	1	2	3	4	5
m)	Consumption of palm oil can have significant health impacts/ Ugukoresha amavuta yibigazi birashobora kugira ingaruka mbi	1	2	3	4	5
n)	Climate change/ Thinduka ryibihe	1	2	3	4	5
p)	Local people refuse to participate in a process to obtain free					

	prior and informed consent/ abanyagihugu baranka kwitaba muburyo bwokunvikana kubibaraba					
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Q.16. To what extent are the following challenges in the farming of palm oil? / **Ningaruka ki mbi ziri muburimi bwibigazi**

	CHALLENGES/Ingaruka mbi	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	Lack of funds/ Kubura imitahe	1	2	3	4	5
b)	Not having skills to farm palm oil trees/ Kutagira ubumenyi mukurima ibigazi	1	2	3	4	5
c)	Lack of information about palm oil value chain of the palm oil industry/ Kukutagira ubumenyi kuyerekeye ingene ubibikorwa bijanye nibigazi bigenda	1	2	3	4	5
d)	Lack of improved varieties/cultivars of seeds/ Kutaronka imbuto zibigazi za kijambere	1	2	3	4	5
e)	War conflicts causes palm oil farmers to desert they plantation/ Umutekano muke utuma abarimi bata amatongo yabo yibigazi	1	2	3	4	5
f)	Poor extension services/ Kubura ubwunvikane	1	2	3	4	5
g)	Low soil fertility/ Ahantu hatamera	1	2	3	4	5
h)	Poor market networks/ Ukutagira isoko ushoreramwo	1	2	3	4	5
i)	Lack of storage facilities/ kubura aho ubika ibintu vyawe	1	2	3	4	5
j)	Poor access to good road network for transportation/ Kutagira amabarabara meza	1	2	3	4	5
k)	Poor market price/ Ibiciro bibi vyo kwisoko	1	2	3	4	5
l)	Scarcity of labour/ Ukubura kwabakozi	1	2	3	4	5
m)	Lack of innovation/ Kubura kokwiteza imber mubuhinga	1	2	3	4	5
n)	Use of inefficient methods/ Gukoresha uburyo ataribwiza	1	2	3	4	5
o)	Low level of adoption of improved production technology among oil palm producers/ Uburyo buke bwogukoresha uburyo bwanyone bugezweho mubarimi bibigazi	1	2	3	4	5
p)	High cost of milling machine/ Ikiguzi gihanitse cimashini zengamavuta nizimena imise	1	2	3	4	5

q)	Tedious nature of processing/ Uburyo busanzwe bukoreshwa	1	2	3	4	5
r)	Unavailability of milling machine for rent/ Ukutaronka aho ukotesha imashine zukwenga	1	2	3	4	5
s)	Poor quality of oil palm produces/ Kwenga amavuta atameze neza	1	2	3	4	5
t)	High cost of transportation/ Igicro gihanitse cukunguruza ibintu	1	2	3	4	5
u)	Lack of adequate land/ Kutagira amatongo akwiye	1	2	3	4	5
v)	High cost of hired labour/ Igicro gihanitse cabakozi	1	2	3	4	5

SECTION F: STRATEGIES TO THE SUSTAINABILITY ASPECT OF PALM OIL FARMING IN THE RURAL AREAS/ Ubugingira bwukurima ibigazi kuburyo burama

Q17. To what extent will the following issues able to solve the problem of environmental degradation and palm oil production? **Nigute ibibukurikira bishobora gutorera umuti uburimy bwigazi Nugukingira ibidukikije**

		No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	Cultivation of palm oil trees needs to be sustainable/ Uburimy bwigazi busabwa kuba buramye	1	2	3	4	5
b)	Training of small-scale farmers how to exercise sustainable farming/ Gutanga inyigisho kuburimy batobato.	1	2	3	4	5
c)	Manage both cultivation of palm oil and environmental affairs/ Gushobora kubahiriza uburimy bwigazi nugukingira ibidukikije	1	2	3	4	5
d)	Valuable biodiversity is protected or enhanced on a population, metapopulation and ecosystem level/ Gukingira amashamba nibidukikije	1	2	3	4	5
e)	Ecosystem services are maintained/ Ibidukikije birakingiwe	1	2	3	4	5
f)	Community Use is respected/ Abanyagihugu babikoresha barubahirizwa	1	2	3	4	5
g)	Develop financial incentives (e.g., via a fund, low interest loans, or other mechanisms) for companies, communities/ Gushiraho uburyo bwimikopo kubanyagihugu bifuzwa kurima ibigazi	1	2	3	4	5
h)	Generate benefits from low impact uses of the forested land previously slated for conversion/ Kushiraho inyungu zivuye mubakoresheje amatongo muburyo ataribwo	1	2	3	4	5
i)	Local governments to relocate planned plantations from forested to degraded land/ Intwao ntonto kwimura ibigazi vyatewe mumashamba bakabishira ahagenewe kurimwa ibigazi	1	2	3	4	5
j)	Legal land status allows for conversion to oil palm plantation (Legal feasibility can be changed—and needs to be clarified—by policy-makers)/ Amategeko yamatongo	1	2	3	4	5

	ararekurira guhindura itongo ryawe kuba iririmwa ibigazi					
k)	Revise land use plans (zoning) such that degraded areas are classified for agricultural use while forest and peat lands are classified for conservation or sustainable management, through a process that incorporates best practices in participatory spatial planning/ Ubugenzuzi bwamatongo butegerezwa gukingira imyonga,bukareka ibigazi bigaterwa ahamaze gutituka	1	2	3	4	5
l)	Identify and remove legal barriers to the development of areas that are otherwise environmentally, economically, and socially acceptable/ Gusobanura ingorane zibuza ku developa amatongo agombwa guterwamwo ibigazi,ariko amashamba agakingirwa	1	2	3	4	5

Q.18 To what extent do you use the following channels to sell your palm oil? / Nigute wokoresha ibi bikurikira mukudandaza amavuta yibigazi

	Marketing channel/	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	By paying school fees/ Kwishura ishule	1	2	3	4	5
b)	Paying for medical expenses/ Kwishura imiti yo kwamuganga	1	2	3	4	5
c)	Trading off with other goods/ Kudandaza hamwe nibindi bidandazwa	1	2	3	4	5
d)	Using social media (internet – twitter, whatsapp, facebook and etc)/ Gukoresha ubuhinga ngurukana bumenyi	1	2	3	4	5
e)	Using catalogues and pamphlets/ Gukoresha kataloge nibindi vyapa	1	2	3	4	5
f)	Using sales agency/ Gukoresha am ajansi	1	2	3	4	5
g)	Distributing products and services through locations that you own and operate (Retailers)/ Gukwiragiza ivyudandaza kubibanza udandarizamwo	1	2	3	4	5
h)	Selling to retailers (Retail partners)/ Kudandaza kubagurisha kimwekimwe	1	2	3	4	5
i)	Establishing a direct relationship with customers with techniques such as personal selling or ecommerce (Direct Marketing)/ Kugira ubumwe na bakiriya bawe	1	2	3	4	5
j)	Distributing through retail locations that you have significant control over but don't own (Franchising)/ Gukwiragiza ivyudandaza kubindi bibanza uzi mugabo utaganza	1	2	3	4	5
k)	Partnering with wholesale businesses that have their own	1	2	3	4	5

	distribution networks (Wholesale)/ Gukorera hamwe nabadandaza bagurisha kugicro cokuranguza bafise uburyo bwabo bwo gukwiragiza ibidandazwa					
l)	Using agents and brokers to represent you in distributing your product to wholesalers, retailers or customers (Agents/brokers)/ Gukoresha am ajansi bahagararira ivyuhingura	1	2	3	4	5
m)	Distributing products or services to partners that incorporate it into their own offerings (Value added reseller)/ Gukwiragiza ibidandazwa kubongera kubigurisha	1	2	3	4	5
n)	Selling to national markets/ Kugurisha kwisoko mpuzamakungu	1	2	3	4	5
o)	Selling to international agency (Exporting)/ Kugurisha kumajanse mpuzamakungu	1	2	3	4	5
p)	Selling to local market/ Kugurisha kwisoko isanzwe	1	2	3	4	5

SECTION G: THE COST TO THE FARMER OF THE SMALL-SCALE-FARMING OF THE PALM OIL PRODUCTION/ Umutahe wo gushora muburimi bwibigazi kuburimi batobato

Q19. To what extent has the following issues contribute to the cost of farming palm oil? /Nigute ibibikurikira bifasha mugishoro cuburimi bwibigazi

	Cost	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	High cost in farming implement/ Ibiciro bihanitse kuburimi bwibigazi	1	2	3	4	5
b)	High interest rate in loans/ Inyungu zohejuru kudasaba imikopo	1	2	3	4	5
c)	High cost of hiring labour/ Ibiciro bihanitse kubakozi bo mubigazi	1	2	3	4	5
d)	High advertising cost of products/ Ibiciro bihanitse vyo kumenyekanisha ivyashara	1	2	3	4	5
e)	High marketing cost/ Uburyo buzinye bwokumenyekanisha ivyashara	1	2	3	4	5
f)	High storage facilities cost/ Ibiciro bihanitse kunzu zokubikamwo ibidandaza	1	2	3	4	5
g)	High production cost/ Ibiciro bihanitse muguhingura ibidandazwa	1	2	3	4	5
h)	High cost of machinery for producing palm oil/ Ibiciro bihanitse vyimashini zenga amavuta	1	2	3	4	5
i)	High cost of maintaining the palm oil/ Ibiciro bihanitse kugukorera ibigazi	1	2	3	4	5
	High cost of establishing a plantation of palm oil trees/ Igicro gihanitse mugutanguza itongo ryibigazi	1	2	3	4	5

J)	High start-up cost for palm oil farming/ Igicro kinini cogutanguza itongo ryibigazi	1	2	3	4	5
k)	High cost of producing seedlings/ Kunambika imbuto birazinnye	1	2	3	4	5

SECTION F: ADVANTAGES OF FARMING PALM OIL/Akamaro kukurima Ibigazi
Q20. To what extent are the following factors advantages of farming palm oil? / Nakamaro gaki muribi bikurikira kuvyerekeye uburimyi bwibigazi

	Factor	No to any extent at all	To a little extent	To some extent	To a large extent	To a very large extent
a)	Create worth income/ Kurwiza umwimbu	1	2	3	4	5
b)	To promote education/ Gutezimbere indero yabana	1	2	3	4	5
c)	Lift up the poor to prosperity/ Kurwanya ubukene	1	2	3	4	5
d)	Promotion food security/ Kurwiza infungurwa	1	2	3	4	5
e)	It decreases cholesterol levels/ Biragabanya uburwayi	1	2	3	4	5
f)	It reduces oxidative stress/ Biragabanya ingorane za sterese	1	2	3	4	5
g)	It increases vitamin A status/ Birongereza vitamin A	1	2	3	4	5
h)	It slows the progression of heart disease/ Biragabanya indwara zumutima	1	2	3	4	5
i)	It boosts brain health/ Amavuta yibigazi arangereza ukumererwa neza kubwenge	1	2	3	4	5
j)	It improves skin and hair health/ Arafasha kuvura ingorane zurukoba numushatsi	1	2	3	4	5
k)	Association has been credited with building roads, schools and health care centers/ Amashirahamwe yarakozwe kugira akoreshe amabarabara	1	2	3	4	5
l)	Farmers can be able to maintain a reserve fund to cover the smallholder's replanting expenses/ Abarimyi barashobora kubandanya basubiriza ibigazi bikuze canke vyanse	1	2	3	4	5
m)	It is a perennial plant that is productive year round and has a useful life of between 20 to 25 years/ Ibigazi nigiterwa gifise ubuzima buva kur 20-25 imyaka	1	2	3	4	5
n)	It is cheaper to produce/ Ibigazi biroroshe kurima	1	2	3	4	5

Thank you for taking part in this survey.

If you would like to receive a report on the findings, please email the researcher, as it is on request.

Nzokiwa Bnoit

nzobnoit@webmail.co.za

Appendix B: Interviews Schedule for small-scale farmers

1. Tell me something about yourself
2. How would you describe the role of palm oil in poverty alleviation?
3. To what extent the potential economic benefit of palm oil farming relating to poverty alleviation in the Rumonge communities
4. How palm oil farming is promoting economic growth in the Rumonge District of Burundi
5. What is the minimum size of palm oil plantation do you need to alleviate poverty in your family?
6. Do you think the minimum size of palm oil is a tool to alleviate poverty in your households?
7. What are the challenges of conflicts to the farmers of small-scale farming of palm oil in Rumonge community?
8. How the conflict of civil war affects the small-scale farmers to access the capital for palm oil development
9. How can the palm oil industry provide sustainable development in rural area of Rumonge?
10. What are the negative impacts of palm oil plantation towards environment?
11. How can the palm oil farming and environmental issues can be balanced for sustainable development?

Appendix C: Interviews Schedule for Key informant

1. Tell me something about yourself
2. In which other way do you use palm oil except exporting?
3. How much palm oil do you harvest per year?
4. How much of that volume is from sustainable source?
5. Where are the export markets for your palm oil?
6. Do you export palm oil to any neighboring Country?
7. Are there other countries that you would wish to export palm oil to apart from the above?
8. Do you sell your palm oil via a middle trader or directly to palm oil company's import?
9. What are the challenges of exporting palm oil far distance?
10. Are you aware that if you export the palm oil to South Africa companies, it could profit you more than to export to a distant country like Netherlands?

Appendix D: Interviews schedule for Environmental activist

1. Tell me something about yourself
2. To what extent does palm oil affect our ecology?
3. What is the negative effect of palm oil on the environment?
4. Has the disappearance of orangutans contributed to palm oil farming?
5. What are the negative impacts of palm oil production on the disappearance of forests in Rumonge?
6. How would you like the problems of environmental degradation and palm oil production to be solved?
7. Do you think palm oil production should stop because it affects carbon emissions?
8. What is the socio-economic impact of palm oil farming?
9. How would you like the conflict between poverty alleviation and environmental issues to be solved?
10. To what extent does palm oil farming cause climate change?

ACCESS LETTER REQUESTING PERMISSION TO CONDUCT RESEARCH

University of South Africa
PO Box X003
Pretoria
3886

The Municipal Manager
.....Local Municipality
Private Bag
140 BP
Rumonge/Burundi

Date

Dear Ms/Mr

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am a registered PhD student in the Department of Development Studies, at the University of South Africa. My supervisor is Dr.Oloruntoba.....

The proposed topic of my research is: **ANALYSIS OF THE SOCIOECONOMIC IMPACT OF THE PALM OIL INDUSTRY ON SMALLHOLDER FARMERS IN RUMONGE, BURUNDI**

The objectives of the study are:

(A)To To investigate the socio- economic benefits and growth of the palm oil industry on poor people in rural areas (specifically Rumonge, Burundi).

(B)To assess the role of the palm oil plantation on poverty alleviation

I am hereby seeking your consent to above mentioned. To assist me in reaching a decision, I have attached to this letter:

- (a) A copy of an ethical clearance certificate issued by the University
- (b) A copy the research instruments which I intend using in my research

Should you require any further information, please do not hesitate to contact me or my supervisor. Our contact details are as follows:

T/cell:+27742173707 (Mr.Benoit)
+27842842427(Dr.Oloruntoba)

Upon completion of the study, I undertake to provide you with a bound copy of the dissertation.

Your permission to conduct this study will be greatly appreciated.

Yours sincerely,

Nzokizwa Benoit

Department of Development Studies
University of South Africa
P.O. Box 392
UNISA
0003
Pretoria, South Africa

Date: 15 May 2018

To whom it may concern,

REQUEST FOR PERMISSION TO UNDERTAKE DOCTORATE (PHD) RESEARCH IN YOUR ORGANISATION BY MR. NZO BENOIT (UNISA STUDENT NUMBER: 33969574)

I wish to introduce Mr. Nzo Benoit as our Doctor of Philosophy (PhD) student in the Department of Development Studies, School of Human Sciences at the University of South Africa (UNISA). Mr. Benoit is currently pursuing his PhD studies in the field of Development Studies under the supervision of Dr Sam Olorunfoba. His approved research topic is: *Analysis of the socio-economic impact of the palm oil industry on smallholder farmers in Rumonge, Burundi*. Mr. Benoit is currently undertaking his field research, which is a fundamental requirement for the completion of his degree programme.

Given the above background, Mr. Benoit has selected your organisation to be part of his sample where information for his topic has to be collected. In some instances, he will need to undertake face-to-face interviews while in others, questionnaires will be administered to your members of staff. It is for that reason therefore, that I write to ask you to allow Mr. Benoit to undertake his research in your esteemed organisation. In addition, it is important for you to know that the research proposal for Mr. Benoit has already been approved and given ethical clearance by the **UNISA Policy on Research Ethics** through the **Ethics Review Committee**. To that extent, high research ethical and confidential standards shall be adhered to at all cost. It is my sincere hope that you will accord him the needed support to accomplish his research tasks in your institution.

Please see attached Ethical Clearance certificate as well as Ethical Declaration by Mr Benoit.

You are welcome to contact me, should you need any clarification or confirmation.

Yours sincerely,


Prof DA Kotzede

Department of Development Studies, UNISA
Email: kotzede@unisa.ac.za
Mobile: +27 828825314
Office: +27 12 429 6813

DEPARTMENT OF DEVELOPMENT STUDIES
RESEARCH ETHICS REVIEW COMMITTEE
APPLICATION FOR ETHICS REVIEW AND CLEARANCE

Date: 29/05/2017

Ref
#:2017_DEVSTUD_Student_02
Name of applicant: Mr/Ms
Benoit Nzo
Student #: 33969574

Dear Mr/Ms Benoit Nzo

Decision: Ethical Clearance

Name: MR/Ms Benoit Nzo

Student in the Department of Development Studies; Supervisor Dr S Oloruntoba

Proposal: ANALYSIS OF THE SOCIO-ECONOMIC IMPACT OF THE PALM OIL INDUSTRY ON SMALLHOLDER FARMERS IN RUMONGE, BURUNDI.

E-mail: 33969574@mylife.unisa.ac.za

Qualification: Doctoral Degree in Development Studies

Thank you for the application for research ethics clearance by the Department of Development Studies' Research Ethics Review Committee for the above mentioned research. Your application was reviewed in compliance with the Unisa Policy on Research Ethics by the Department of Development Studies' Research Ethics Review Committee on 29/05/2017.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Department of Development Studies' Research Ethics Review Committee. An amended application could be requested if there are

- substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.
- 3) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

Note:

The reference number 2017_DEVSTUD_Student_02 should be clearly indicated on all forms of communication. [E.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Department of Development Studies' Research Ethics Review Committee.

Kind regards,


.....
Dr L. Ntemaj
Departmental Chairperson-ERC
Department of Development Studies
Room Tw 4-25
Tel 017 429 2121
E-mail: ntemaj@unisa.ac.za