AN EVALUATION OF GREEN SCHEME PROJECTS IN THE KAVANGO: THE AWARENESS, INTEGRATION AND CAPACITY BUILDING OF SMALL SCALE FARMERS

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ABSTRACT

The main objective of this study was to evaluate Green Scheme projects in the Kavango region with specific emphasis on the awareness, integration, and capacity building of small scale farmers. The Shadikongoro Green Scheme project from the Mukwe constituency and the Ndonga Linena Green Scheme project from the Ndonga Linena constituency, were purposively selected for this study. As per the statistics from the national census in 2001 and 2011, the Kavango region (now Kavango East and West) remains one of the poorest regions in Namibia, despite being host to seven of the eleven Green Scheme Projects countrywide. This poses a series of questions on the areas of awareness, integration and capacity building of one of the Green Scheme Programme's target population; the smallholder farming communities also known as small scale farmers (SSFs). A case study using semi-structured questionnaires and face to face interviews was employed to investigate three factors for this study. Respondents for this study were randomly selected. The findings revealed that, only 45.2% of the participants within the Mukwe constituency indicated they were aware of the opportunity of becoming small scale farmers within the Green Schemes and a lower proportion from the Ndonga Linena constituency (37.5%). In terms of integration, the study uncovered that, there have not been any small scale farmers recruitment for the past five years and a majority of those integrated suggested they need trainings in the use of modern farm machinery and up to date horticultural trainings. From the findings, it is clear that more needs to be done in terms of enhancing community awareness, integration as well as capacity building of small scale (smallholder) farmers if the Green Scheme Programme (GSP) is to realise its objectives of poverty reduction and food security in general and in the Kavango region in particular. This study, therefore recommends that, awareness and skills transfer programmes be developed for each Green Scheme project and their corresponding host communities as informed by periodic need-gap analysis.

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DEDICATION

I dedicate this thesis to my mother, the woman I owe the world to, Ms. Kornelia Matumbo. Thank you for dedicating your entire life to raising me and my siblings into the people we are now. May God continue blessing you!

I also dedicate this work to my one-year old son, Kyle Anselm Mughongora, who was born during the course of my studies. May this be an inspiration when you grow up and push you to always aim for the stars.

To my father, Herman Mughongora and all my siblings and the entire Kana Frans court yard, I dedicate this to you.

DECLARATION

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ACRONYMS AND ABBREVIATIONS

AGRIBUSDEV	Agricultural Business Development Agency
AMTA	Agricultural Marketing and Trade Agency
FAO	Food and Agriculture Organisation
GDP	Gross Domestic product
GS	Green Scheme
GSP	Green Scheme Programme
HDI	Human Development Index
HPP	Harambee Prosperity Plan
MAWF	Ministry of Agriculture, Water and Forestry
MSIF	Medium Scale Irrigation Farmer
MSP	Market Share Promotion
NAMPA	Namibia Press Agency
NDP4	Fourth National Development Plan
NDP5	Fifth National Development Plan
NEPAD	New Partnership for Africa's Development
NHDI	National Horticultural Development Initiative
NPC	National Planning Commission
NSA	National Statistics Agency
PPP	Public Private Partnership
UNDP	United Nations Development Programme
SPSS	Statistical Package for the Social Sciences
SSIF	Small Scale Irrigation Farmer

CHAPTER 1

1. INTRODUCTION

1.1. Background of the study

The World Bank Report (2002), emphasised the need for developing countries to use the opportunities provided by agriculture to reduce poverty and ensure food security. The challenge though, has always been in pursuing a smallholder-driven approach to agricultural growth that reconciles the economic, social and environmental functions of agriculture. It is important that developing countries ensure that food security for all is achieved, as explained by Desai and Potter (2002) that "food security in the developing world must not come to be dependent on surpluses from the industrialized countries or, worse, food aid". If food security is to be achieved, countries should emphasise on meeting nutritional needs of their people through local production. Both the Fourth National Development Plan (NDP4) and Fifth National Development Plan (NDP5), in line with Vision 2030, flags **agriculture**, logistics, tourism, and manufacturing as the four economic priority areas of focus for Namibia (National Planning Commission, 2012, 2017). NDP5, for instance, highlights, improving productivity of small holder farmers as an effective way to food security and reducing poverty. Before that, NDP4, clearly outlined that the two major factors to achieving a Developmental State, are: Capacity enhancement and people-centric economic development (NPC, 2012), which are two of the three issues this research focused on.

People-centred economic development, directs the country's activities, to focus on the welfare of the people. To this end, the Government has embarked on state-led socio-

economic development through the Green Scheme Programme (GSP), a programme that is aimed at ensuring agricultural productivity and food security in line with Namibia's Vision 2030 (MAWF, 2008). Fiebiger et al., (2010) stress that, through the Green Scheme Programme, which was approved in 2003 and revised in 2009, the Namibian Government aims to develop the potential of irrigation farming. The strategy of the Green Scheme is to attract and enable large-scale commercial farming enterprises to establish commercially viable entities in remote and under-developed rural areas, by acting as service providers. These service providers should therefore ensure the provision of effective production on a cost recovery basis and facilitate the transfer of skills to small scale farmers integrated into the Green Scheme projects.

The Kavango region, despite housing seven of the eleven Green Scheme projects in Namibia, remains one of the poorest in Namibia, with 53.2% poverty prevalence recorded in 2011 (NSA, 2012). Over the years, the national food demand has been satisfied mostly by imports rather than local production, for example, in the 2015/16 production year, the total national production equalled 18 000 metric tons, which equates to less than 13% of national food demand (Agrisbudev annual report, 2017). The significance is that, Namibia largely still remains a majority food import country, despite the introduction of Green Scheme projects. The productivity of the Green Scheme projects has significantly not reached desired levels. According to the Agribusdev annual report (2017), the annual maize production target in the 2016/17 year was 19845 metric tons, but only 14437 metric tons was achieved. This clearly indicates that the production capacity of these Green scheme projects is not being optimised. Clearly, the Green Scheme Programme has not achieved its intended objectives of increasing

agriculture production and sector contribution to GDP, promoting food security at national and household levels as well as the transfer of skills and technology to small-holder farmers (MAWF, 2008)

This study, evaluated the Shadikongoro and the Ndonga Linena Green Scheme projects in the Kavango region with repect to aspects of awareness, integration and capacity building of small scale farmers. The aspects are hypothesised to have an impact on the overall perfomance of the Green Scheme projects as these projects are designed to be people-centic.

1.2. Statement of the problem

As addressed in the Harambee Prosperity Plan, the most effective way to address poverty is through wealth creation, which is done by growing the economy in a sustainable inclusive manner and through the creation of decent employment opportunities. Considering that, national development initiatives should therefore, be people centred and inclusive. In other words, reforms in effective governance and economic transformation should result in favourable social improvements, (The Office of the president, 2016).

Even though, the Kavango region houses seven of the eleven Green Scheme projects in Namibia, the region remains one of the poorest in Namibia, with 53.2% poverty prevalence recorded in 2011 (NSA, 2012). What is more worrisome is the fact that, the region was still recorded as being the poorest region in the 2001 national census, as shown by Table 1.1. This poses a question of what impact has the introduction and expansion of Green Scheme projects in the region brought. Could it be that the local communities are not aware of how they could benefit from these projects? Can it be that the few integrated small-scale farmers within these projects are hardly capacitated on new agricultural technologies and trends to improve their productivity? These questions prompted this study.

Coincidentally, Government intends to expand these Green Scheme projects to improve on food security at both household and national levels during the Harambee period (The

Office of the President, 2016). This expansion would mean an all-round increase in the small-scale farmers integrated into the project, if the programme is to remain people centric. In turn, this posed an urgent need to first establish the effectiveness of these Green Scheme projects in the current set-up, which has rarely been documented, let alone studied. There is also a need to establish the level of awareness of the local communities on the provision of farming units to small scale farmers within the Green Scheme projects and this would help ensure future participation of the local communities in this government initiative.

Table 1.1: Namibia Index of Multiple Deprivations. Headcount Rate, 2001 - 2011 (upper bound poverty line).

Region	**Poverty head count**		
	2001	**2011**	**Change**
Zambezi	32.0	39.3	7.2
Erongo	9.3	6.3	-3.0
Hardap	20.4	17.2	-3.2
Karas	18.0	14.5	-3.4
Kavango	57.9	53.2	-4.8
Khomas	3.4	4.6	1.2
Kunene	53.7	38.9	-14.8
Ohangwena	62.8	35.3	-27.5
Omaheke	41.6	26.2	-15.5
Omusati	50.9	28.6	-22.2
Oshana	28.3	21.1	-7.1
Oshikoto	57.3	42.6	-14.7
Otjozondjupa	30.4	27.5	-2.9
Namibia	37.9	26.9	-11.0

(Source: NPC, 2012)

1.3. Objectives of the study

The main objective of this study is to evaluate the Green Scheme projects in the Kavango region, with specific emphasis on the awareness, integration and capacity building of small scale farmers.

The following are the specific objectives:

- To assess the selected communities' awareness and knowledge on the provision of farming units to small scale farmers within the Green Scheme projects
- To assess the extent of capacity building of small scale farmers as per the objective of the Public-Private Partnership model
- To assess the extent of small scale farmers' integration into the Green Scheme projects in the Kavango regions
- To identify points of intervention to improve the adopted Green Scheme farming model

1.4. Significance of the study

The significance of this study, tried to answer questions as to why the study is important; what are the implications of doing it and how it links with other studies and knowledge. Additionally, it deliberated on what new perspectives it will bring (Punch, 2006). In this study, key issues pertaining to how to improve socio-economic contributions of the Green Scheme projects were unpacked. The researcher chose three factors that have a direct influence on the socio-economic contribution of Green Scheme projects to the

communities and these factors were: awareness, integration and capacity building of small scale (small holder) farmers.

As part of continuous improvement, important socio-economic initiatives need to be monitored and evaluated and one of such initiatives is the Green Scheme projects which were designed to improve the livelihoods of rural communities. Poverty alleviation is one of the Republic of Namibia's top priority areas, as highlighted by the recent formation of the Ministry of Poverty Alleviation by the new government. It is indeed quite clear that, Government has recognized that the most effective way to reduce poverty and improve food security is to raise the productivity of its agricultural resources on which poor people depend for their livelihood (MAWF, 2008) and this, through irrigation development. In that regard, there are currently seven Green Scheme projects in the Kavango region and as a requirement, these Green Scheme projects have small scale farming units made available to preferably local smallholder farmers for application and occupation in a Public-Private Partnership with a commercial (private) farmer, who is mandated to act as a service provider to these small-scale irrigation farmers.

The effectiveness of this arrangement needs to be evaluated as a basis for going forward and to determine how aware the local small-scale farmers are in terms of them being involved in the Green Scheme projects. It is indeed one thing for government to introduce pro-poor development, but it is another thing to make sure the target group are aware of such developmental initiatives to ensure they benefit. These results will be used to identify points of intervention to improve the adopted Public-Private Partnership

model employed in the Green Scheme projects and ensure improved socio-economic contribution to the target population. Additionally, this study will add to new knowledge on the subject, for example, this study will give new insight on whether the factors of awareness, integration and capacity building of small scale farmers have been contributing towards the attainment of food security, despite increased efforts directed at the expansion of Green Scheme projects. Last, but not least, results will in future direct policy makers on points of intervention considering the grassroots response on the subject.

1.5. Scope and limitation of the study

Limitations are potential weaknesses in a study, which in most cases are beyond the control of the researcher (Leedy and Ormrod, 2010). Since it was not feasible for the researcher to cover all the Green Scheme projects in the Kavango region and then interview all community members from all constituencies which house these Green Scheme projects, this means that the findings of this study may not be generalisable to all the Green Scheme projects. However, according to Silverman (2010)'s explanation, generalisability in qualitative research, can be achieved using purposive sampling procedures, which takes a representative sub-section of a precisely defined population to make inferences about the whole population. In this regard, two Green Scheme projects, namely: Shadikongoro and Ndonga Linena were purposively sampled within their respective stratum based on the presence of small scale irrigation farmers (SSIFs), integrated within their set ups. Thus, such representativeness as in this study allowed the researcher to make broader inferences to the population.

Despite this limitation, the findings of this study are still capable of providing important insights. Thus, this study was limited to first and foremost; the Kavango regions of Namibia and to the two selected Green Scheme projects in the Kavango East region only and some respondents needed translations when completing the questionnaires. Additionally, this study only focused on three factors, which are; awareness, integration and capacity building of small scale farmers and not the overall evaluation of the selected Green Scheme projects, thus perhaps another build up study to evaluate areas of Green Scheme projects considered to influence food security and overall socio-economic contribution that this study did not cover, could be necessary.

1.6. Delimitations of the study

Delimitations define the parameters of the study (Leedy and Ormrod, 2010). This study focused only on small scale farmers within the selected Green Scheme projects: Shadikongoro and Ndonga Linena Green Scheme projects respectively and households from constituencies within which these selected Green Scheme projects hail from. The Shadikongoro Green Scheme project is in the Mukwe constituency, while the Ndonga Linena Green Scheme project is housed in the Ndonga Linena constituency. The interviewed households are small scale farmers as they are dependent on subsistence farming. The study was not necessarily a comparative study of the two selected Green Scheme projects, but rather a case study of each of these projects, combined into one study on the subjects of: awareness, integration and capacity building. However, comparison was done as it could further help evaluate levels of identified interventions.

1.7. THESIS OUTLINE

The thesis is divided into five chapters as follows: chapter one is the introduction, which focuses on the background of the study, the problem statement, and the objectives of the study as well as the significance of the study. It also gives a brief overview of the scope and limitations of the study as well as the delimitations. Chapter two discusses the literature reviewed according to the defined research objectives of the study. Chapter three details the research methods used in answering the research objectives, which explains the research design, the population and sample size of the study. Furthermore, it explains the sampling procedure utilized in the study, the research instruments, method of data collection and the data analysis thereof. Chapter four is the results and discussion. This is done in the form of both graphical and frequency tables. The validity and reliability of the research instruments in answering the research objectives is also discussed in this chapter. Finally, chapter five is the conclusion, which discusses the conclusions deduced from the findings and provides recommendations for action and further research.

1.8. Summary of chapter

This chapter discussed the background of the study, the problem statement, the study objectives, significance of the study, limitations and delimitation of the study as well as the outline of study.

CHAPTER 2

2. LITERATURE REVIEW

2.1. Introduction

Literature review is done to place the research objectives in the context of previous work to explain or justify the decisions to undertake the study, especially regarding how and why the research objectives were formulated (Locke et al., as cited in Punch, 2006). It shows relationships between the study and previous related research. Thus, a literature review is important in conveying what has been written about the subject, its strengths and weaknesses, and to stimulate the current study within the body of literature (Oliver, 2012). Literature review should also identify areas of controversy in the literature; and formulate questions that need further research (Silverman, 2010). A literature review should therefore help the researcher to do some preliminary thinking about what they are doing before beginning the research itself and the researcher is required to focus on those studies that are relevant for defining their research problem (Silverman, 2010).

The literature review in this thesis is the evaluation as related to the subjects of awareness, integration and capacity building of small scale farmers in Green Scheme projects. The chapter is divided as follows:

- Suitability of the Kavango regions for Green Scheme projects
- Background on study Green Scheme projects: Shadikongoro and Ndonga Linena
- Current Green Scheme farming model in Namibia
- Evaluation of the Green Scheme Programme in Namibia (incorporating awareness, integration and capacity building)

- Defining a small-scale farmer
- Impact of the Green Scheme Programme farming model to small scale farmers
- Agriculture sector's contribution to the Gross Domestic Product (GDP)
- Namibia's vision for the Agriculture sector- Policy framework
- Conceptual framework
- Summary

2.2. Suitability of the Kavango region for Green Scheme projects

The Kavango is one of the poorest regions in Namibia, and this is clearly reflected in various reports and surveys. According to a Central Bureau of Statistics 2 analysis of poverty data, the highest incidence of poverty in Namibia is in the Kavango Region, where 56.5% of the population are poor and 36.7% are severely poor (Central Bureau of Statistics, 2008). The United Nations Development Programme (UNDP), Human Development Index (HDI) underscores that, of Namibia's 13 regions, the Kavango had the second worst life expectancy and the second lowest annual average per capita income as shown in Table 2.1. The HDI provides a quantitative representation of three main dimensions of human development, namely: a long and healthy life, knowledge and a decent standard of living. Each of these dimensions is assigned corresponding quantitative indicators. The HDI is then the simple average of the three indices (UNDP, 2013).

Table 2.1: Regional HDI indicators for Namibia.

Region	Life expectancy at birth		Annual average adjusted per Capita income (N$)	
	2001	**1991**	**2001**	**1991**
Caprivi	41	53	6, 411	2, 413
Erongo	59	65	16, 819	8, 189
Hardap	50	60	12, 092	8, 977
Karas	57	60	12, 706	10, 049
Kavango	44	57	4, 427	2, 662
Khomas	58	68	25, 427	17, 152
Kunene	55	63	7, 260	3, 327
Ohangwena	41	63	4, 304	1, 616
Omaheke	60	59	12, 232	5, 955
Omusati	45	65	5, 466	2, 193
Oshana	46	62	9, 963	2, 902
Oshikoto	46	61	5, 895	2, 537
Otjozondjupa	61	61	9, 457	5, 525
Namibia	49	61	10, 358	5, 448

Source: Adapted from UNDP (2013)

In addition, according to the UNDP's Human Poverty Index (HPI), of the 13 regions, people in the Kavango had the fourth highest probability at birth of not surviving to age 40 and the second highest share of the population in households that spent more than 60% of total income on food (UNDP, 2013). The Human Poverty Index also concentrates on three essential dimensions of human life; longevity, knowledge, and a decent standard of living. Most of the population in the Kavango regions, continues to live in rural households, most of which rely on locally-available natural resources for fuel and building materials. Livelihoods depend largely on agriculture. At the last census, 96% of all homes were involved in farming activity and 71% of rural households depended on agriculture as their major source of income (NSA, 2012).

Table 2.2: Human poverty indicators.

	Probability at birth of not surviving to age 40 (%)		**Share of population in households that spend more than 60% of total income on food (%)**	
	2001	**1991**	**2003/04**	**1993/94**
Caprivi	55	28	40	46
Erongo	25	14	5	27
Hardap	39	20	25	19
Karas	28	19	18	25
Kavango	50	23	50	71
Khomas	27	10	3	8
Kunene	33	16	39	39
Ohangwena	57	16	27	40
Omaheke	27	22	40	53
Omusati	52	13	50	39
Oshana	49	16	33	47
Oshikoto	49	16	53	36
Otjozondjupa	24	18	20	43
Namibia	42	18	32	38

Adapted from UNDP (2013)

The Okavango River is the main source of water for the people living along the river, and for their livestock. Water is readily available for the water demanding Green Scheme projects. It is this suitability for agricultural production as well as the high poverty levels in the region, which makes Green Scheme projects the perfect vehicle towards the socio-economic upliftment of the region.

2.3. Background of the selected Green Scheme projects

2.3.1. Shadikongoro Green Scheme project

The Shadikongoro project is situated 180 km east of Rundu in the Mukwe constituency of the Kavango East region. The farm covers an area of 590 hectares, of which 300 hectares are used for commercial farming and 90 hectares are occupied by small-scale farmers. Fourteen (14) small-scale farmers are part of the project, of which 12 have 6 hectares each and 2 have 9 hectares each. Shadikongoro is managed through contract agreement by the Agricultural Business Development Agency (AGRIBUSDEV) and produces maize, wheat and sunflower. The project also processes sunflower seeds into sunflower oil (AGRIBUSDEV, 2015).

2.3.2. Ndonga Linena Green Scheme Irrigation Project

The Ndonga Linena project is situated 75 km east of Rundu in the Ndonga Linena constituency of the Kavango East region. The farm covers total land area of 1000 hectares of which currently only 500 hectares are under commercial and small-scale production. A total of 332 hectares are utilised by commercial farming and 174 hectares are under small-scale farming. Twenty-nine (29) small-scale farmers are part of the project each occupying6 hectares. Until recently when AGRIBUSDEV took over its management, the project was managed by Shikunino Trading Enterprise (Pty) Ltd. through a profit-sharing agreement and produces maize, wheat, groundnuts and different types of vegetables such as sweet potatoes, butternuts, potatoes, watermelon and sweet melon (AGRIBUSDEV, 2015).

2.4. Current Green Scheme farming model in Namibia

Private sector investment in agricultural research is increasing worldwide, accounting for approximately 35% of global investment in agricultural research and development (Pardey and Beintema, 2001). However, these resources are rarely invested in research that is directly or intentionally pro-poor (MWAF, 2008). One way of ensuring that pro-poor research programs are maintained and strengthened is through collaboration, partnerships or other forms of interaction between the public and private sectors. The revised Green Scheme policy encourages private sector investment into the rural communal land in that regard. This policy identified the farming model that would create an enabling environment for increased food production through irrigation on both commercial and communal land. The policy also seeks to support individuals with access to irrigation water to increase output through special incentives and the creation of synergies between large and small-scale farmers; creation of opportunities for emerging farmers to participate; and injection of capital into the rural economy through the public private partnership (MAWF, 2008). This model is further highlighted in the Tandjieskoppe Green Scheme project evaluation report by Mwangi et al., (2004), which give a glimpse of the Green Scheme model as follows: commercial farming enterprises are tied to a settlement of small-scale farming units in a joint enterprise. The idea is for the SSIFs to learn by watching the good agricultural practices from the commercial farmer, thereby building their capacity in terms of production and marketing management.

In addition to capacity building, the commercial farmer serves as a service provider to the small-scale irrigation farmers, by providing them with the necessary farm equipment,

transport and marketing services at cost (Mwangi et al., 2004). The aims of the Green Scheme Programme are to create an enabling, commercially viable environment, through effective public-private partnerships, by stimulating private investment in the irrigation sub-sector and settle small-scale commercial irrigation farmers.

Public-private partnerships (PPPs) are collaborative efforts between the public and private sectors in which each sector contributes to planning, resources and activities needed to accomplish a mutual objective. These partnerships can help private firms, access farmers in emerging markets, giving them a chance to wield constructive influence in the development of legal and regulatory regimes; opportunity to participate in important local, regional and global forums on pro-poor research collectively (World Bank, 2002).

PPPs in agriculture, thus, help improve the capacity of researchers to address problems in the sector that cannot be solved by a single actor. Public agencies on the other hand are introduced to new, cutting edge scientific expertise, knowledge and technologies by the public sector, mechanisms for developing, marketing and distributing final products and financial resources that are otherwise increasingly difficult to obtain (World Bank, 2002).

The Green Scheme Programme is implemented parallel to the National Horticulture Development Initiative. Through the NHDI, fresh produce hubs have been developed in Rundu, Ongwediva and Windhoek. The prime purpose of these hubs is the marketing of fresh produce and distribution in domestic and external markets. Market Share

Promotion is also being used. The market share promotion endeavours to increase the share of locally produced fruit and vegetables in the domestic market. The Namibian Market Share Promotion currently stands at 41.5 %.

2.5. Evaluation of Green Scheme projects in Namibia

Just like any other project, the objectives of the state-led socio-economic development in the form of the Green Scheme Programme needs to be constantly monitored and evaluated to ensure that progress is measured, and the project is aligned accordingly, going forward. Evaluation as defined by OECD, (2001) (cited in Mtangira, 2016) refers "to the process of determining the worth of significance of an activity, policy, or program. It is as systematic and objective as possible, of a planned, on-going, or completed intervention". It is indeed vital to evaluate the effectiveness of developmental projects. Not only should the focus be on outputs but outcomes and impacts as well (Bamberger, Rao and Woodcock, 2010). Evaluation serves varying purposes, such as: ethical; managerial; decisional; educational and motivational resolutions (Immas and Rist, 2009). Evaluation is an important tool for giving feedback to all the relevant stakeholders such as politicians and citizens, for budgeting and better decision making; and information sharing partnerships to the interventions (Immas and Rist, 2009).

Research in Agriculture continues to receive encouragement. A report from the **Bank of Namibia (2008),** recommends that to unleash the potential in the agricultural sector, concerted efforts should focus on increasing the production of beef, Karakul and **horticultural products** in the communal areas. In addition to research, there is a need to enhance the productivity of agricultural workers by introducing tailor made agricultural

training in the rural areas, Bank of Namibia (2008). The Green Scheme farming model is designed to support the empowerment of rural farmers, such that it clearly indicates that the direct contribution of the commercial irrigation farming enterprise towards the social development of the traditional community will be realized through the mentorship and skills transfer requirement to small-scale irrigation farmers (Mwangi et al., 2004).

With the public concerns on issues relating to Green Scheme projects such as; Mismanagement of the Green Scheme projects, lack of monitoring and evaluation of the projects and lack of farmers' empowerment, as reported by the Green Scheme Programme Audit Report (Report No. 79/2013), it is therefore imperative that this socio-economic initiative be constantly evaluated. To heed the call for more research in agriculture in Namibia, Mumbala (2014), studied the supply chain challenges faced by small scale crop farmers at Etunda Irrigation Farm in Namibia. Although this study evaluated the Green Scheme Programme in general, it was limited to Etunda irrigation Farm and its small-scale crop farmers thereof. Subasubani (2014) evaluated the Green Scheme Programme with specific emphasis on the Kalimbeza Rice Project. In this study, areas such as; employment creation, crop production and food security, contribution to Gross Domestic Product (GDP) and the overall impact of the Kalimbeza Rice Project were unearthed. Amongst the recommendations that arose from the study was that, Public-Private Partnership (PPP) agreements be reached and strengthened so that communities can achieve sustainable development and technocrats be brought to the communities and tasked with the responsibility of transferring the much-needed agricultural skills to community members.

"A strong Public-Private Partnership (PPP) is highly recommended for all current and future developmental projects such as the Kalimbeza Rice Project" (Subasubani, 2014). PPP will benefit communities as it places socio-economic and environmental sustainability at the top of public and private sector operations (Subasubani, 2014). It is this Public-Private Partnership which has been adopted as the Green Scheme farming model in the Green Scheme Programme that this study focused on with specific emphasis on the integration of small scale farmers in the PPP, the effectiveness of skills and knowledge transfer from the commercial farmer (acting as the private farmer) to the small scale farmer (public) and finally, the traditional communities' awareness of the provision of farming units to local small scale farmers within the Green Scheme projects. This specific area has not been studied.

The most recent study on Green Scheme projects was done by Isala (2016), who evaluated the impact of Green Schemes on the livelihood of communities in the Kavango region, Namibia. The Sikondo Green Scheme was the selected Green Scheme in this study and its contribution towards the socio-economic well-being of households at the Sikondo village was evaluated in this regard. The study by Isala (2016) just as the prior study by Subasubani (2014) indicated that the Green Schemes in question have not significantly improved the socio-economic conditions and food security of communities and this study, on the other hand, attempts to answer the reason for such a status quo by focusing on already determined factors that are believed to influence the contribution of Green Schemes towards livelihoods of rural communities: These factors are; awareness, integration and capacity building of small scale farmers. Thus, unlike the study by Isala (2016) and Subasubani (2014), this study does not try to establish the socio-economic

contribution of Green Schemes, but rather tries to answer why the Green Scheme Programme in general and the selected Green Scheme projects have not achieved their intended objectives of poverty reduction and food security. In this regard, the researcher attempts to establish if the under-performance of Green Scheme projects in the Kavango is associated to the areas of awareness, integration and capacity building of small scale farmers. It is against this background, that the study of this nature was necessitated as it also compliments the findings by Isala (2016), Subasubani (2014) and Green Scheme Programme Audit Report (Report No. 79/2013).

2.5.1 The Importance of awareness, integration and capacity building of rural small scale (small-holder) farmers

In agriculture, the role of information in enhancing agricultural development cannot be over emphasized. Bachhav (2012) stated that, the flow of information in the agricultural sector is enhancing farming productivity in many ways, including and not limited to: providing information on weather trends, best practice in farming, and timely access to market information. This helps farmers make correct decisions on what crops to plant and where to sell their products and buy inputs. According to Klair, Boggia, & Richardson (1998), the information needs of farmers change from time to time, due to changing agricultural technologies, environmental changes, agricultural policies and the emergence of agricultural innovations, it is thus imperative for extension workers to inform small scale farmers periodically.

To put this into perspective, Ronald, Dulle, & Honesta (2014) in the study titled "Assessment of the information needs of rice farmers in Tanzania" stated that, most of the small-scale rice farmers lack information on the improved seeds and consequently, stick to traditionally preferred varieties which might not be economically efficient but have prominent aromatic and palatability characteristics. Ozowa (1997) reiterated the importance of scientific and technical information towards agricultural and industrial development in developing countries and affirmed that it is unfortunately still neglected and accorded a lower status compared to other sectors. It is no secret that rural farmers are the vehicle to overcoming poverty and ensuring food security. However, these farmers are either not getting the right information at all or not getting the right information at the right time, leading to slow development of agricultural activities. Tologbonse, Fashola, & Obadiah (2008) conducted the study of information need of a community of rice farmers in Niger state; the findings showed that most farmers needed information about the crop production. The study further found that amongst the challenges facing farmers in accessing agricultural information, were: *outdated information, language barrier, lack of awareness on existence of different information sources, lack of funds to acquire information and poor format of information carrie*r. A study in Tanzania by Lwoga (2009), established that 66.3% of the small-scale farmers interviewed needed information on controlling plant diseases and pests, 59.1% on marketing, 58.6% on credit facilitates, 54.7% on control of animal diseases and 29.3% on irrigation practices.

The above references bear witness to the importance of the flow of information. Any given project will not realise its full potential if its target population is not made aware

of it. In business, the concept of awareness is important for affirming market viability and validation of the introduced product or service. The Green Scheme Programme was at least designed to improve the livelihoods of rural communities. In a public private partnership, a commercial (private) farming enterprise is tied to a settlement of small-scale farming units, where the commercial farmer serves as a service provider to the small-scale irrigation farmers integrated within the Green Scheme project (Mwangi et al., 2004). In this set up as addressed by the Green Scheme policy, transfer of skills and knowledge from the commercial farmer to the integrated small-scale irrigation farmers are the goal. To successfully attribute and rate the performance of the Green Scheme Programme in general and the adopted Public-Private Partnership farming model, factors that directly influences the contribution of this initiative towards achieving its intended socio-economic objective need to be investigated as a basis of moving forward. It cannot be argued that factors such as; awareness, integration and capacity building of the target population clearly has a direct on performance of Green Scheme projects. In fact, a study by Fiebiger et al (2010), the small-scale irrigation farming sector in the communal areas of Northern Namibia, pinned out that one of the major challenges faced by small scale farmers is the lack of skills to improve their farming operation. The results from this study identified the crucial aspects and reoccurring key problems experienced by small scale farmers in the communal areas as follows:

- Lack of information and communication structures regarding customer demand.
- *Lack of production knowledge and know-how related to post-harvest handling in order to optimize and control production.*
- Lack of management knowledge (bookkeeping, financial management and

production planning).

- Lack of farming inputs and suitable/efficient irrigation techniques.
- Few lending institutions exist in the AoI.
- Lack of collateral (contracts, land titles, crop insurances) for loans.
- Insufficient degree of cooperation between farmers.
- Lack of pre-marketing and storage facilities.
- Lack of transport (availability, affordability, reliability and suitability).

A study by Endunde (2017), even though it focused more on the empowerment of female SSFs in the Ndonga Linena Green Scheme, also pin pointed the importance of integrating more local SSFs in the schemes. The study revealed that 80% of the small-scale farmers at Ndonga-linena green scheme originate from other regions than the Kavango east region, an indication that green scheme projects has a lot to do with regards to integrating local SSFs. It is evident that to improve the productivity of Green Scheme projects in general and the on-farm production of small scale (smallholder) farmers, efforts should be directed towards awareness as well as integrating small scale farmers into the Green Scheme projects and then enhance their agricultural skills and knowledge with new trends. This will ensure their production and productivity improves and ultimately, the rural community's livelihoods enhanced.

2.6. Defining a small scale (smallholder) farmer

Small scale farmers also known as smallholders are characterized by family-focused motives such as favouring the stability of the farm household system, using mainly family labour for production and using part of the produce for family consumption, usually managing areas varying from less than a hectare to 10 hectares (Food and Agriculture Organisation of the United nations (FAO), 2012). If agriculture is at the heart of addressing poverty in Africa, then small scale farmers are the vehicle to achieving that. It is quite evident that, Africa in general and Namibia has recognised that smallholder farmers are the key drivers of economies even though their potential is often not brought forward. There is therefore a need to significantly increase the productivity of smallholder farmers to ensure long term food security. One of the main characteristics of production systems of smallholder farmers are; simple, outdated technologies, low returns, high seasonal labour fluctuations and women playing a vital role in production (FAO, 2012). It is these characteristics that must change if the collective vision of reducing hunger and ensuring food security is to be realised.

In general terms, smallholder only refers to their limited resource endowment relative to other farmers in the sector. (FAO, 2012). In this study, small-scale farmers strictly refer to small scale irrigation farmers integrated into the Green Scheme projects. As per the Green Scheme policy, a small scale farmer refers to the irrigation farmer utilizing a farming unit within the state agro project. This farmer is allocated not more than 10 hectares of land for cultivation and enters into an agreement with a commercial farmer for service (MAWF, 2008). In the Green Scheme projects, small scale farmers are differentiated from medium scale farmers in that, even though medium scale farmers

also utilise farming unit within the state agro projects, they however provide their own surety and funding of production activities.

Statistically, most rural communities, especially in the Kavango regions are engaged in subsistence agriculture, thus they can rightly be referred to as "small scale" farmers or small-scale farming households. At the last census, 96% of all homes in the Kavango regions were involved in farming activity and 71% of rural households depended on agriculture as their major source of income (NSA, 2012).

2.7. Impact of the Green Scheme farming model to small scale farmers

Namibia has one of the biggest gaps between the rich and poor, where more than one in four households live in poverty and the wealthiest 10 per cent control more than half of the country's economy (UNDP, 2013). There is thus, an urgent need for socio-economic development programmes aimed at addressing poverty and economic inequality. Over the years, the Namibian government has come up with new ways that will accelerate socio-economic development for both urban and rural areas (Subasubani, 2014). One of these poverty reduction methods is the introduction of the Green Scheme Programme, a public-private partnership initiative especially targeting the rural population.

This public-private partnership farming model ensures that commercial farming enterprises are tied to a settlement of small-scale farming units in a joint enterprise within the Green Scheme project (MAWF, 2008). The idea is for the small-scale irrigation farmers to learn by following the best practices of the commercial farmer, thereby building local capacity in terms of production and marketing management. In

this set up, the commercial irrigation farming enterprise (private) will be the most valuable source to offer appropriate practical advice, relevant skills and knowledge transfer, operational and management support as well as on hand guidance and support to the small-scale irrigation farmers at a cost (MAWF, 2008).

The Green Scheme Programme is being implemented together with the National Horticultural Development Initiative (NHDI). The intention of the NHDI is to increase the local production and facilitation of the marketing of fruits, vegetables, livestock fodder and other horticultural products, which will promote import substitution (Mwangi *et al*., 2004). To this effect, fresh produce hubs have been developed in Rundu, Ongwediva and Windhoek. The prime purpose of these hubs is the marketing of fresh produce, packaging and distribution in domestic and external markets. Market Share Promotion (MSP) is being used to facilitate import substitution. MSP ensures that for every supplier of fruits and vegetables, a certain percentage of their supply is bought from local producers and not entirely imported. This initiative ensures that local fresh producers have buyers. The Namibian Market Share Promotion currently stands at 41.5% and is the threshold of how much all importers of fresh fruit and vegetables need to source locally before they are allowed import permits for horticulture fresh produce from outside Namibia.

The significance of this is that, the more rural small-scale farmers integrated and capacitated with all relevant production skills will result in effective reduction of poverty and consequently improve the socio-economic livelihoods of the local poor communities. To ensure that the rural communities benefit from this initiative, it is

imperative that they are made aware of such provision and hence the inclusion of awareness survey in the study. According to NDP 5, in the year 2014, 31% of Namibian work force worked in agriculture sector which contributed only 3.9% of the GDP. While drought and declines in prices on the global market are maybe partly responsible for agriculture's relatively small contribution to Namibia's GDP, a lack of modernization in farming techniques and a lack of infrastructure in business development have made the agriculture sector efficient, less robust and less profitable than it would otherwise be. (NPC, 2017).

Namibia has vowed to deliberately address this unfortunate statistic within the period of the NDP 5 and has identified five game changers that will move Namibia from a reactive, input-based economy towards a proactive, high performing economy. The game changers are: 1. Increase investment in infrastructure development, 2. Increase productivity in agriculture, especially for smallholder farmers, 3. Invest in quality technical skills development, 4. Improve value addition in natural resources, 5. Achieve industrial development through local procurement (NPC, 2017).

This study is designed to contribute towards these game changers by evaluating awareness, integration and capacity building of small scale farmers, also known as small holder farmers in the two selected Green Scheme projects and their host constituencies in the Kavango regions. One of the goals of the NDP 5 is to have an inclusive, equitable and sustainable economic growth, this further emphasizes the importance of capacitating small scale (small holder) farmers to address the inequalities that exists in Namibia. It is therefore essential for Namibia to address the skill deficits in its labour force so that

more Namibians can obtain a living wage. Government has also vowed that government institutions will procure locally-sourced agricultural produce in bulk for government institutions (NPC, 2017). This presents a sales opportunity for small scale (small holder) farmers, hence a motivating factor for increased production and productivity. Kawana (2016) argued that Green Scheme projects are not a solution to address poverty and inequalities faced by the rural community of the Kavango East Region and Namibia in general. He further rightly argued that new policies are needed to come up with mechanisms aimed at filling the gap left by the Green Scheme projects. However, for that argument to substantial hold, several factors influencing successful contribution of Green Scheme projects towards food security and overall socio-economic contribution need to be clearly addressed. Both Isala (2016), Subasubani (2014) and Endunde (2017) asserted to the fact that Green Schemes have not impacted the local communities as it was envisioned.

The researcher chose to study the specific areas of awareness, integration and capacity building of small scale farmers to try and understand if and how these factors affects envisaged contribution of Green Scheme projects in the Kavango region and Namibia at large. In contrast to Kawana (2016)'s argument, Green Scheme projects remain one of the very important drivers to addressing poverty and inequalities in the rural areas, if the rural individuals are 1. made aware of how they could benefit, 2. Then integrated into these schemes and 3. capacitated enough on up-to date farming techniques and marketing strategies to help improve productivity and sales, thereof.

2.8. Agriculture sector's contribution to the GDP

Gross Domestic Product (GDP), is the measure of the total value added (total value of the goods and services produced within the country less raw materials, and other goods and services consumed during the production process in all resident producing units). As a primary indicator, it is used to show the health of a country's economy. Agriculture remains one of the backbones of the Namibian economy and has the potential to create a substantial number of jobs. Over the NDP4 period, Namibia's specific desired outcome was to increase agricultural production and result in agriculture experiencing average real growth of 4% per annum (NPC, 2012). Strategic initiatives were designed to drive the country towards achieving this strategic outcome, such as:

- the continued promotion of the Green Scheme
- initiatives to increase the land's carrying capacity for livestock
- the establishment of agricultural fresh produce markets, and
- the establishment of other agricultural infrastructure such as silos and research stations.

It is quite evident that within the NDP4 period, these strategic initiatives were undertaken as the Green Scheme received increased popularisation and injection of extra funds (Namibia Press Agency, 2008), fresh produce hubs have been developed in Rundu, Ongwediva and Windhoek and strategic food reserve facilities (silos) at Tsandi, Omuthiya, Okongo, Rundu and Katima Mulilo through the Agricultural marketing and Trade Agency (AMTA). Despite all these strategic initiatives being implemented, growth of the sector during this period, contracted to an average 2.2 percent per year, partly due to continuous drought and frequent outbreaks of animal diseases experienced

(NPC, 2017). It is also visible that despite Government efforts and the potential associated with agriculture, the performance of the sector has been substandard because of many factors, hence, Namibia still imports more than 50% of the cereals and horticultural products consumed locally (NPC, 2012).

The desired outcome within NDP 5 is that by 2022, the proportion of food insecure individuals be dropped from 25 percent in 2016 to 12 percent and food production is increased by 30 percent cumulatively over the NDP5 period (NPC, 2017). According to The World Bank (2008), GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture (The World Bank, 2008). The reason is that GDP growth from agricultural activities benefits the poorest of the population, mainly because agricultural activities take place in the rural areas. If industrialisation is to be used to enhance GDP per capita, it is important to invest resources for agricultural growth, as witnessed in the Western world in the 18th century and in Asia in the 20th century (The World Bank, 2008) and in this way, a wider population will benefit. Therefore, agriculture has the potential to grow the Namibian economy, at the same time reducing poverty, as seen in countries such as Chile and Ghana.

Table 2.3: GDP by activity current prices-percentage contribution to GDP.

Industry	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Agriculture and forestry	5.3	4.0	4.3	5.1	5.0	4.9	3.4	3.7
Fishing and fish processing	3.2	3.6	3.9	3.5	3.2	3.1	3.0	2.7
Mining and quarrying	12.7	17.2	10.9	10.4	8.7	12.7	13.2	11.6

Source: Adapted from the annual national accounts, NSA (2014)

The table above indicates that despite increased effort into improving the agricultural sector, its contribution to the national GDP has decreased over the years.

Table 2.4: Export and import statistic over the years.

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Exports of goods and services	31,088	38,108	39,372	39,447	41,023	46,391	52,241	56,273
Imports of goods and services	34,374	46,871	55,005	50,102	51,789	64,284	72,396	93,184
Import on agric and forestry products	***804***	***1056***	***1180***	***1008***	***1052***	***1170***	***1844***	***1900***
Balance of goods and services	**-3,286**	**-8,763**	**-15,633**	**-10,654**	**-10,767**	**-17,893**	**-20,154**	**-36,911**

Source: Adapted from the annual national accounts, NSA (2014)

The table above indicates that Namibia remains an import dependent country, despite efforts to increase local production of goods and services, this including agricultural

production. While it can be argued that, the demand for more food was expected with the increase in population observed over the years, Namibia has at the same time also deliberately increased efforts to be self-reliant in terms of food production. Over the NDP 4 period, the Green Scheme projects for example, received more funds and were expanded to address the overdependence on food imports (Nampa, 2008).

Additionally, the market share promotion was increased to suppress imports within the same NDP 4 period, but despite all these efforts, Namibia's expenditure on imports of goods and services in general and on agriculture and forestry production continues to increase.

2.9. Namibia's vision for the Agriculture sector- Policy framework

Namibia is signatory to the New Partnerships for Africa's Development (NEPAD). Within the overall vision of NEPAD, the vision for African agriculture is to maximise the contribution of the continent's largest economic sector to achieving the ambition of a self-reliant and productive Africa that can play its full part on the world stage (NEPAD, 2003). Agriculture must, within NEPAD, deliver broadly based economic advancement to which other economic sectors, such as petroleum, minerals and tourism, may also contribute significantly, but which they cannot achieve on the mass scale what agriculture has the potential to do. The goal of NEPAD for the sector is "an agriculturally-led development which eliminates hunger, reduces poverty and food insecurity, thereby enabling the expansion of exports and putting the continent on a higher economic growth path within an overall strategy of sustainable development coupled with preservation of the natural resource base" (NEPAD, 2003). Amongst the

strategies proposed to be devised to improve agriculture in Africa are: *methods to help the predominantly small-scale producers to become competitive in a world dominated by large-scale producers, many of whom are subsidised; ways of bringing about institutional innovations that will enable the African agricultural community to maintain efficient and dynamic, demand-driven, participatory and pluralistic systems*; and methods to cope with climatic uncertainty and lack of access to irrigation (NEPAD, 2003).

On the local front, Namibia's vision for the agriculture's sector is clearly outlined in the Fifth National Development programme. The NDP5 framework is organised around the four interconnected pillars that are founded on the principle of sustainable development, namely: economic progression; social transformation; environmental sustainability and good governance (NPC, 2017). These pillars are aligned with Namibia's commitment to eradicate poverty and inequality as outlined in Vision 2030 and the Harambee Prosperity Plan (2016). Additionally, the pillars support the global and continental development frameworks to which Namibia is committed. These includes; Agenda 2030, Sustainable Development Goals (SDGs), The Paris Agreement (CoP21); African Union (AU) Agenda 2063 and SADC Regional Indicative Strategic Development Plan (RISDP).

Within these contexts, Namibia commits herself to enhancing growth and economic diversification while addressing challenges that include high rate of unemployment and high vulnerability to food insecurity at house level, especially in rural communities. To successfully address these challenges, NDP5 identifies five game changers that will

move Namibia from a reactive, input-based economy towards a proactive, high performing economy. The game changers are: 1. Increase investment in infrastructure development, 2. ***Increase productivity in agriculture, especially for smallholder farmers***, 3. ***Invest in quality technical skills development***, 4. Improve value addition in natural resources, 5. Achieve industrial development through local procurement (NPC, 2017).

This study is devised to address game changer 2 and 3 respectively. Are there current predicaments hindering productivity in agriculture, especially for smallholder farmers in terms of awareness, integration and capacity building? Results from this study will help to allocate efforts to improve the productivity of small scale (small-holder) farmers. It will determine what quality technical skills do small scale farmers need to that effect. The desired outcome for the agriculture sector and food security within NDP 5 is that by 2022, the proportion of food insecure individuals has dropped from 25% in 2016 to 12% and food production has increased by 30% cumulatively over the NDP5 period (NPC, 2017). Namibia has devised strategies to achieve this desired strategic outcome and there are: 1. *Increase agricultural production for cereals, horticulture and livestock*, 2. Develop agro-processing industries by utilizing local produce and regional value chains, 3. *Increase smallholder or communal farmers' productivity*, 4. Enhance animal health and production, 5. Enhance preparedness for effective response, recovery and reconstruction and 6. Promote the planting of drought resistance varieties. It is evident from NDP5 that, Namibia recognises the very important role of agriculture and most

importantly the significance of capacitating and integrating small scale (smallholder) farmers into its vision towards achieving poverty reduction and food security.

2.10. Conceptual Framework for this study

Previous studies on Green Scheme projects have indicated that the Green Scheme Programme has not achieved its intended objectives of poverty reduction and food security, especially in the rural communities. In line with that, the researcher chose to investigate three independent variables that are believed to positively address the goals of the Green Scheme Programme. This therefore formed the researcher's conceptual framework as illustrated in Figure 2.1 below:

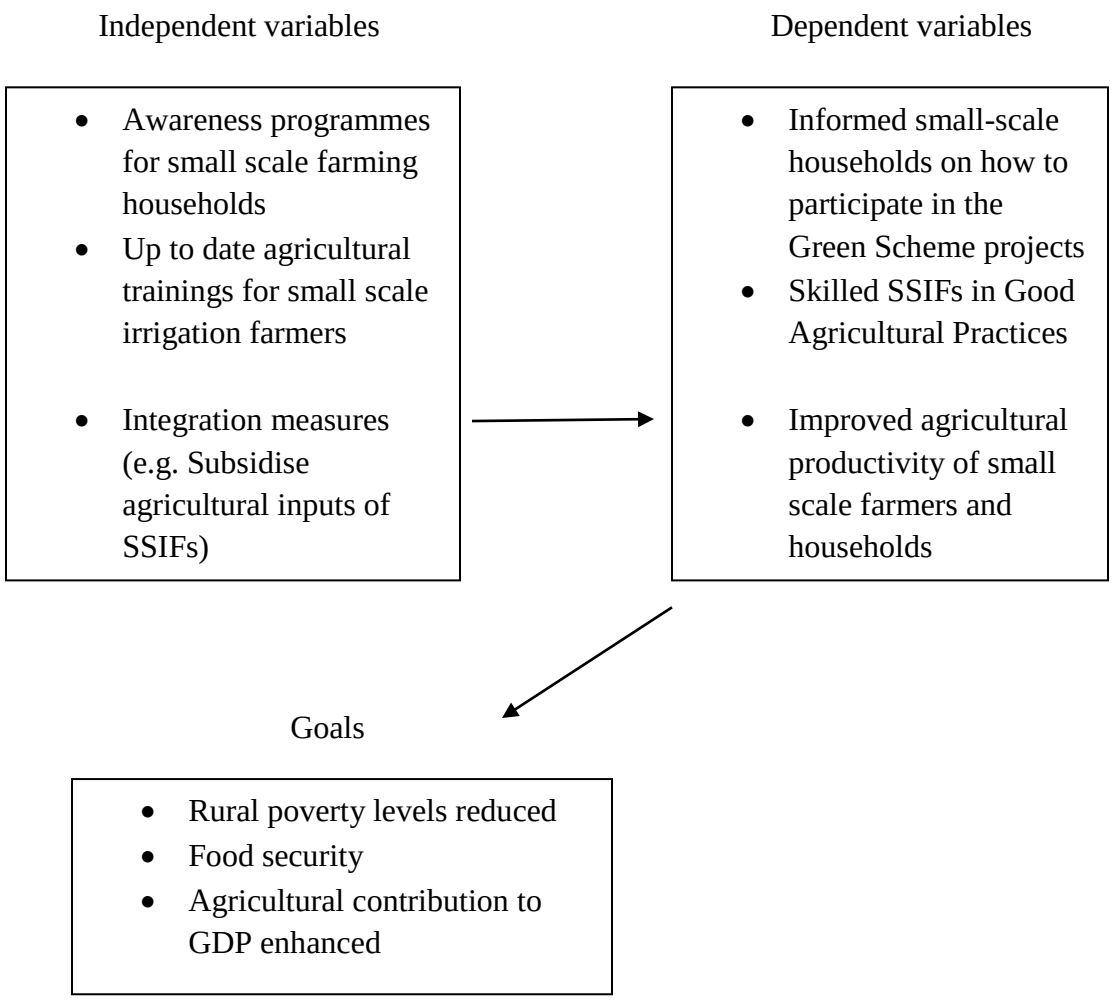

Figure 2.1: Conceptual framework of Green Scheme benefits

Source: Author's own construct based on the objectives of the Green Scheme Programme.

2.11. Summary of chapter

The main objective of this study was to evaluate the Green Scheme projects in the Kavango region with specific emphasis on the integration and capacity building of small scale farmers as well as the awareness of local communities on the provision of farming units to small scale farmers within the Green Scheme projects to which they could participate. The literature reviewed, revealed that there are several studies that have been conducted on Green Scheme projects in the past. Previous studies evaluated the Green Scheme projects in totality and attempted to validate its contribution or non-contribution thereof to the socio-economic well-being of individuals. There was little evidence of any researcher that has investigated the Green Scheme project in the specific areas of awareness, integration and capacity building and specifically targeting small scale (small holder) farmers. This study sought to fill this identified gap.

From the reviewed literature, it is evident that the subjects of awareness, integration and knowledge transfer plays a very important role in the success of rural small holder farmers in general. Furthermore, it is also evident within regional and national developmental documents, that poverty eradication is a priority and increasing agricultural productivity, especially for small holder farmers is listed as one of the most effective vehicles as well as priority to achieving that and investing in enhancing the technical skills development of these type of farmers is prerequisite to that. The next chapter deals with the research methods used to gather data pertaining to these issues.

CHAPTER 3

3. RESEARCH METHODS

3.1. Introduction

This chapter gives an insight on the main research objective, the appropriate research approach, the methods and instruments of data collection adopted to address the objective. It describes what was done to address the research objectives and how the research was carried out. It also justifies the design and, explains why the selected methods were appropriate for the research objectives, including the feasibility of the whole study process (Bak, 2003). It also explains how the results were analysed and gives full details on how the researcher was able to come up with the solution to the problem statement the study was designed to address. Measures used to address the expected academic standards on ethical considerations were also highlighted in this chapter.

3.2. Research Design

Research design is the plan or proposal to conduct research which provides specific direction for procedures in research (Creswell, 2014 as cited in Mtangira, 2016). Mouton (1996), on the other hand, described research design as "a set of guidelines and instructions to be followed in addressing a research problem". This study used a case study research design. The case study design was feasible for this study to show the current situation regarding three factors that the researcher chose to study. These factors are hypothesized to influence the envisaged performance of the selected Green Scheme projects. 1. **Awareness** of local communities or rather local small scale (smallholder) farmers on how they could be involved in the Green Scheme projects as integrated

Small-Scale Irrigation Farmers; **2**. The extent to which small scale farmers are **integrated** into the Green Scheme and 3. **Capacity building** of Green Scheme integrated small scale irrigation farmers from the two selected Green Scheme projects in the Kavango East region. The two Green Scheme projects this study was based on are: The Shadikongoro and Ndonga Linena Green Scheme. Initially, the study was designed to cover the Green Scheme projects in the two Kavango regions, however, upon document reviews and telephonic follow up on the subject, it was discovered that the two Green Scheme projects in the Kavango West region do not have small scale farming units and hence no small-scale farmers have been integrated into these Green Scheme projects.

The purpose of this study was to provide both qualitative and quantitative information on the three factors as listed above, hence a mixed case-study research method with both exploratory and descriptive approaches was used. This case study was supported up by semi-structured questionnaires, Face to face interviews and document review was used to gather the empirical data in the selected Green Scheme Projects, targeting the integrated small-scale farmers themselves. Individuals in households from the constituency of the selected Green Scheme projects were interviewed using semi-structured questionnaires on their awareness of the provision of farming units to small scale farmers within the Green Scheme projects. From the semi-structured questionnaires, qualitative data was obtained with a small portion of quantitative data, thus this was a mixed research.

3.3. Population

This study was intended to target the population of people in the two regions of Kavango East and Kavango West, with a combined population of 223 352 inhabitants (NSA, 2012) and a total of 36, 741 households. According to the NSA report (2012), 43.0 % of the households in the Kavango regions depend on farming as their main source of income, which equates to 15 798 households. But after purposively selecting the Shadikongoro and Ndonga Linena Green Scheme projects, only households within these Green Scheme constituencies formed part of the population. All the seven Green Scheme projects in the Kavango region formed part of the population of Green Scheme projects in the two regions, as well as the integrated small-scale irrigation farmers in these projects.

3.4. Sample

Firstly, Stratified sampling was used to divide the seven Green Scheme projects into three strata using: *locality and neighbourhoods* and this yielded three strata; **Far east**: Shadikongoro and Shitemo; **East**: Ndonga Linena, Mashare and Uvhungu-Vhungu; and **West**: Musese and Sikondo. Purposive sampling was employed to select *Shadikongoro, Ndonga Linena* and Sikondo from their respectively stratum, however only Shadikongoro and Ndonga Linena were studied as both Sikondo and Musese do not have small scale irrigation farmers. Sample size was determined upon confirmation of how many small-scale farmers are in the Green Scheme projects after documentation study. Sample size was calculated using Slovin's formula (Ellen, 2012)

Sample size: $\mathbf{n = \frac{N}{1+N\,(e)^2}}$

Where:

N= Population
n= Sample size
e= (0.05)2

Table 3.1: Sample sizes of selected Green Scheme projects and host constituencies

Name of Green Scheme project (constituency)	**Population of small scale farmers in the Green Scheme project**	**Sample of small scale farmers**	**Farming households in constituency of Green Scheme project**	**Sample of households**
Shadikongoro (Mukwe)	14	14	2693	348
Ndonga Linena (Ndonga Linena)	27	25	731	259

Source: Author's own sampling calculations from (NSA, 2014) data

Secondly, a simple random sampling method was used to select and interview participants from the constituency of the selected Green Scheme projects on their awareness of the provision of farming units to small scale farmers within the Green Scheme projects. The sample sizes are indicated in Table 3.1 above. According to the Kavango 2011 census regional report, 59.7% of the 4511 households in the Mukwe constituency depend on farming, while in the Ndonga Linena constituency, it is 40.4% of the 1809 households (NSA, 2014).Following a recommendation of the Fourth Delimitation Commission of Namibia in August 2013, the Ndonga Linena constituency was created, thus, the Ndonga Linena Green Scheme project now falls within this new constituency, having previously fallen in the Ndiyona constituency.

3.5. Research Instruments

Using both the reviewed literature and the study objectives, the researcher designed a semi-structured questionnaire and interview questions. The researcher conducted a pilot study prior to administering the survey. The pilot study was conducted at the Uvhungu-Vhungu Green Scheme project and the Uvhungu-Vhungu village. This pilot study was primarily conducted to improve the questionnaire and interview questions.

Document review was concurrently used to determine the number of small scale farmers at each of the selected Green Scheme projects prior to the survey. Afterwards, semi-structured questionnaires were then given to randomly selected small-scale farmers within the selected Green Scheme projects and individuals who were from the constituencies of origin of the selected Green Scheme projects to investigate the areas of awareness and capacity building. Each of the selected Green Scheme projects' Farm managers were interviewed to gather information on the integration of small scale farmers and overall project performance and direction using a combination of open and close-ended questions.

3.6. Procedure

First, Stratified sampling was used to divide the seven Green Scheme projects into three strata using: *locality and neighbourhoods* and these yielded three strata. Purposive sampling was employed to select one Green Scheme project in each stratum. A simple random sampling technique was then being used to select the small-scale farmers to be interviewed in each of the selected projects. Parallel to that, simple random sampling

was used to select and interview participants (households) from the constituency of the selected Green Scheme projects on their awareness of the provision of farming units to small scale farmers within the Green Scheme projects. In both the two surveys, a semi-structured questionnaire was used. The semi-structured research questions have been prepared in English, but were administered in vernacular such as, Rumanyo and Thimbukushu where necessary. For the questionnaire set administered to the small-scale farmers in the Green Scheme projects, the data collection method used by the researcher was to deliver the questionnaire in person to the participants and collect it after completion. However, two data collection methods were used when administering questionnaires to the communities about awareness: 1. Administered by the researcher in person and 2. The Researcher entrusted the questionnaires to a community member for distribution. The latter was in cases when it was not possible for the researcher to carry out the task in person.

3.7. Data analysis

The Statistical Package for Social Sciences (SPSS) was used for analysis and the Microsoft Excel was used to graph the descriptive statistics. The study provided frequencies of biographical descriptive information, such as gender, age and highest educational levels. This biographical data was cross tabulated with the different lead questions in the sections of community awareness to determine if the level of awareness is associated to these biographical variables. Chi-square test was then used to determine between highest educational level and level of awareness. The ATLAS.ti software was used to analyse qualitative responses to semi-structured questionnaires and themes were

produced. These qualitative responses were then assigned to respective themes in Microsoft Excel and quantified in SPSS and then Microsoft Excel was used to produce graphical illustration.

3.8. Research Ethics

In addition, to sensitizing the participant on their rights to partake in the survey, permission was sought from the participants to record the interviews. Furthermore, the participants' identities were completely removed during the data analysis process. Additionally, assurance was given to participants that the research report would be made available to them upon completion of the project. The data gathered is being kept under lock and key for five years and will be destroyed thereafter.

3.9. Summary of chapter

This section dealt with the research methods employed in this study. The type of research and research design have been described and explained. The sampling procedure and data collection methods as well as data analysis have been outlined in this section. The research method has been described as mixed approach research and the adoption of both qualitative and quantitative research methods has been justified. The methods of collecting data by means of semi-structured questionnaires and interviews have been clarified, and finally, the need for ethical considerations when collecting data was also explained. The next chapter looks at the results and discussions of this research findings.

CHAPTER 4

4. RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter presents the research findings based on the objectives of the study. Key research findings are presented as per each objective and within the two selected Green Scheme projects. Eventhough the study is not necessarily a comparative study, where necessary, the research findings within each objective were compared between the two study Green Scheme projects. This can be used to assist in identifying the effort levels needed for each intervention proposed as per the finding recommendations. Research results will therefore be presented and then discussed according to the research objectives and in each studied Green Scheme project and their respective constituency of origin.

4.2. Objectives of the study

The main objective of this study was to evaluate the Green Scheme projects in the Kavango regions with specific emphasis on the integration and capacity building of small scale farmers as well as the awareness of local communities on the provision of farming units to small scale farmers within the Green Scheme projects to which they could participate. The two Green Scheme projects that were studied are: Shadikongoro and Ndonga Linena Green Scheme project, respectively. The two constituencies are therefore, the Mukwe constituency and the Ndonga Linena constituency.

The following were the specific objectives:

- To assess the selected communities' awareness and knowledge on the provision of farming units to small scale farmers within the Green Scheme projects

- To assess the extent of small scale farmers integration into the Green Scheme Projects in the Kavango regions
- To assess the extent of capacity building of small scale farmers as per the objective of the Public-Private partnership model
- To identify points of intervention to improve the adopted Green Scheme farming model

4.3. Background information of participants on community awareness

Primary data was collected to determine the views and opinions of the respondents. This collected data was ultimately utilized to draw conclusions on the research predicament. Following are the demographics of the respondents. A total of 239 respondents were surveyed in the Mukwe constituency, representing a 68.7% response rate and a total of 160 participated in the Ndonga Linena constituency, equalling to a 61.8% response rate.

4.3.1 Gender

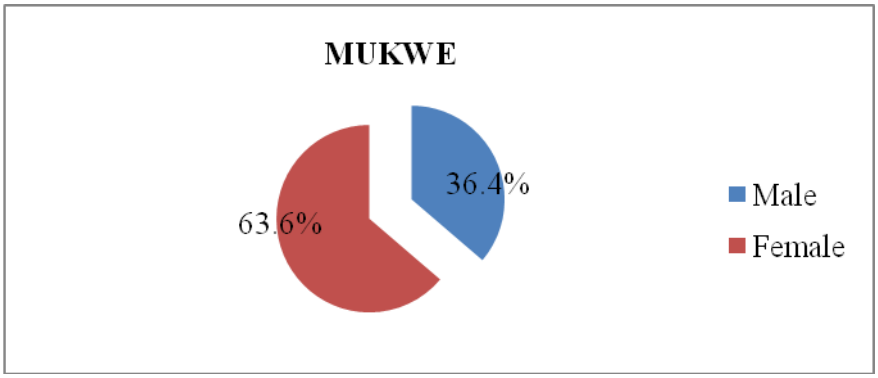

Figure 4.1: Gender statistic of respondents in Mukwe constituency

Source: Author's own analysis from survey data

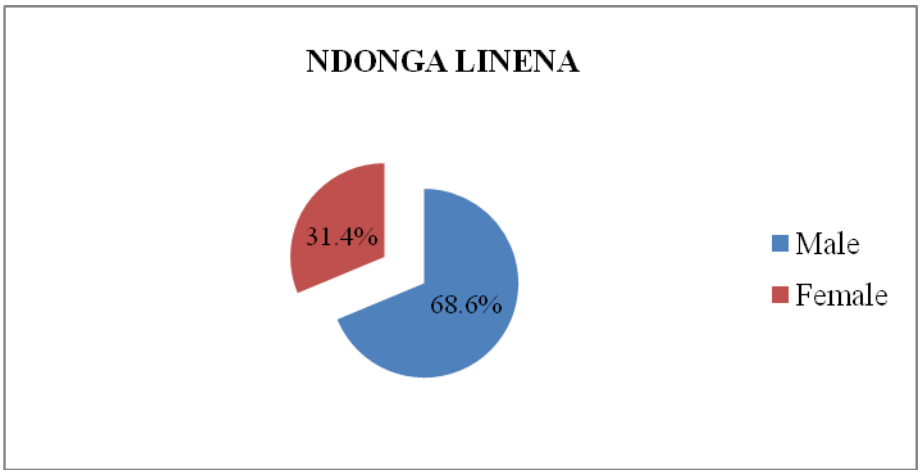

Figure 4.2: Gender statistic of respondents in Ndonga Linena constituency
Source: Author's own analysis from survey data

Figure 4.1 illustrates that out of 239 participants surveyed in Mukwe constituency, 36.4% were males and 63.6% were female %. It shows that there were more females than males who participated in the study in Mukwe constituency. This also validates the statistic that there are more females than males in the Mukwe constituency. As per the Kavango 2011 census regional report, 53.6% of the Mukwe constituency comprises of females and 46.4% males (NSA, 2014).This can also be attributed to the few opportunities that exist for women in the constituency such as educational development and the fact that women are homemakers. The same cannot be said of the statistics in the Ndonga Linena constituency, as they were more males, 69% participants than females 31% in the study as indicated by Figure 4.2.

4.3.2 Age group* highest educational level Cross tabulation

Table 4.1: Age group* highest educational level Cross tabulation of respondents from Mukwe constituency

N=239

		Highest educational level					**Total**
		Non	**Grade 10**	**Grade 12**	**Undergraduate**	**Postgraduate**	
Age	10-19 years	0	13	6	0	5	24
	20-30 years	5	46	33	13	34	131
	31-40 years	10	34	28	1	10	83
	41 years and above	0	0	1	0	0	1
Total		15	93	68	14	49	239

Source: Author's own analysis from survey data

Table 4.2: Age group* highest educational level Cross tabulation of respondents from Ndonga Linena constituency

N=160

		Highest educational level				Total
		Grade 10	Grade 12	Undergraduate	Postgraduate	
Age	20-30 years	30	20	10	0	60
	31-40 yeas	30	20	40	10	100
Total		60	40	50	10	160

Source: Author's own analysis from survey data

Table 4.1 above illustrates that most of the participants in the Mukwe constituency were those with grade 10 as their highest qualification, with 93 participants. Grade 12 participants were the second in representation with 68 participants, while undergraduate participants were the least with only 14 of the participants having undergraduate

qualifications. With regards to representation by age group, most of the participants are from the 20-30 years age group, with 131 participants, seconded by the 31-40 years age group with participants with 83 participants and only 1 participant is from the years and above age group. In the Ndonga Linena constituency, on the other hand as illustrated by **Table 4.2**, representation is near evenly distributed through the age groups. The majority, though have grade 10 as their highest qualification, with 60 participants, seconded by undergraduate s with 50 participants , Grade 12 with 40 participants and postgraduate with the least representation with 10 participants. In the Ndonga Linena constituency, participants were distributed in only age groups; the 20- 30 years age group with 60 participants and the 31-40 years age group with 100 participants.

4.3.3 Employment status

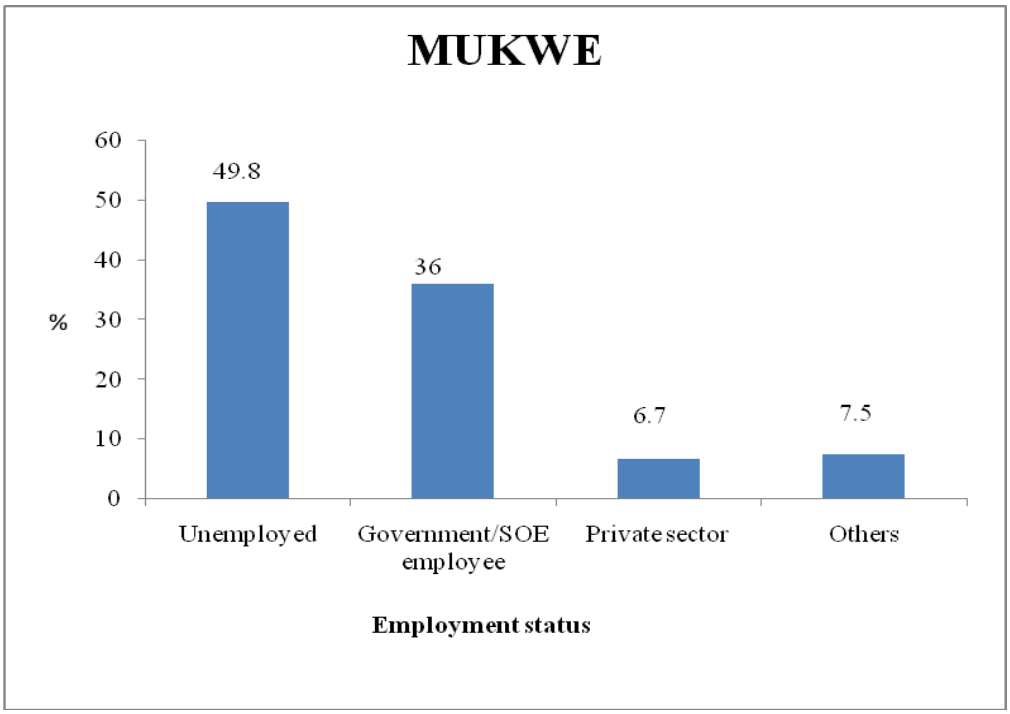

Figure 4.3: Employment statistics of respondents in Mukwe constituency

Source: Author's own analysis from survey data

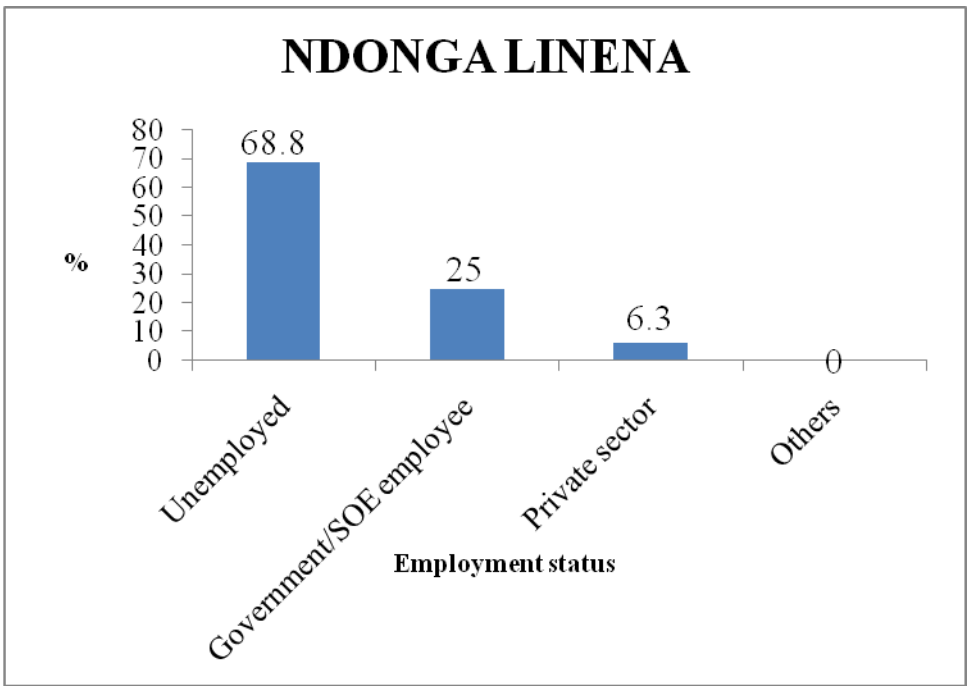

Figure 4.4: Employment statistics of respondents in Ndonga Linena constituency

Source: Author's own analysis from survey data

Figure 4.3 illustrates that out of 239 participants surveyed in the Mukwe constituency, 49.8% were unemployed, while 36% were employed by the government. Those who were employed in the private sector totalled 6.7%, while the segment representing the others was 7.5%. It is worth noting that one of the requirements for being a small-scale irrigation farmer in the Green Scheme is that the individual should be willing to a full time small scale irrigation farmer and thus should not be employed anywhere else. Most respondents already meet the entry requirement to being SSIFs in the Green Scheme. A much higher proportion of respondents from the Ndonga Linena constituency were unemployed, standing at 68.8% compared to the 49.8% responded from Mukwe constituency as illustrated by Figure 4.4. Private sector employees stood at 6.3%, quite like those from the Mukwe constituency with 6.7%.

4.4. Extent of community awareness of Green Scheme host constituency

4.4.1 Awareness of benefits brought by the Green Scheme project

Table 4.3: Level of awareness (%) of benefits brought by the Green Scheme in the two study constituencies

		MUKWE		NDONGA LINENA	
		Frequency	**Percentage**	**Frequency**	**Percentage**
Valid	**Yes**	170	71.1	110	68.8
	No	69	28.9	50	31.3
	Total	**N=239**	100.0	**N=160**	100.0

Source: Author's own analysis from survey data

Table 4.3 shows that out of 239 participants in the Mukwe constituency, 71.1% (170) of them are aware of the benefits brought by the Green Scheme project, while only 28.9% indicated that they are not aware of the benefit the Green Scheme have brought. The study did not however ask the responds on how strong they believe these benefits have been or the extent of these benefits, but rather just focused on mere awareness of such benefits, be it in form of employment, food security and any other kind of benefit derived because of the Green Scheme project. Similarly, most participants in the Ndonga Linena constituency were aware of the benefits the Green Scheme has brought, with 68.8% of them indicating they were aware and only 31.3% saying they were not aware. It is quite interesting to note that members of the communities in both the two constituencies see positive results of Green Schemes; this says a lot about their acceptance and perception of the Green Scheme project in their area.

4.4.2 Involvement in Subsistence farming or Knowledge in Crop Farming

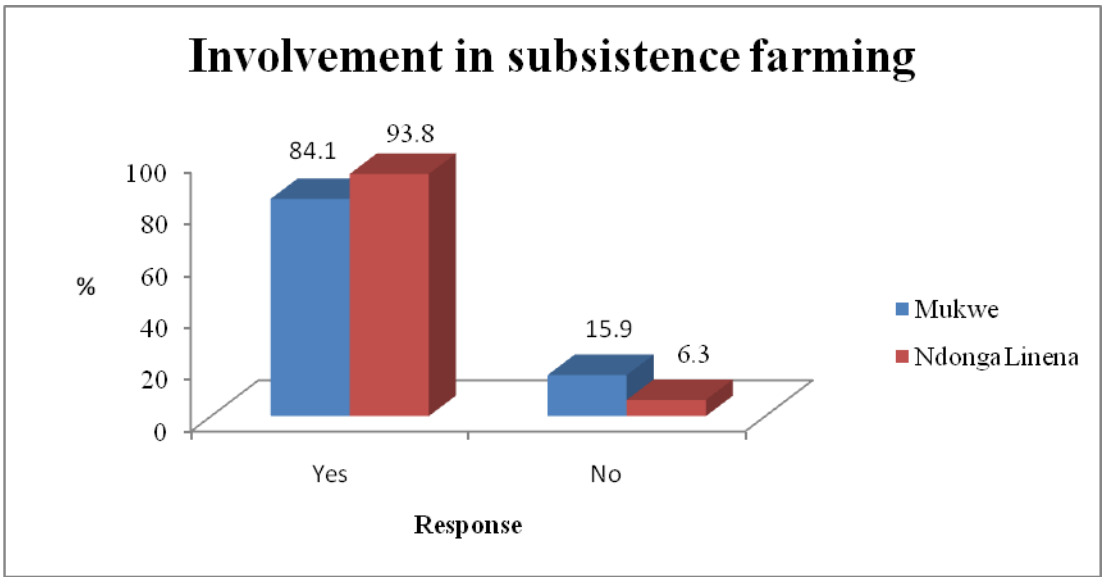

Figure 4.5: Involvement in subsistence farming

Source: Author's own analysis from survey data

Figure 4.5 shows that out of 239 participants in the Mukwe constituency, most them (84.1%) are already involved in subsistence farming or at least have knowledge in crop farming with only 15.9% indicating to not being involved in subsistence farming. Similarly, 93.8% of respondents from the Ndonga Linena constituency indicated they are involved in subsistence farming or at least have knowledge in crop farming, while only 6.3% of them said they are not at all involved in subsistence farming. This statistic all but confirms the already known fact that most rural communities in the North and North-Eastern regions are dependent on agriculture (NSA, 2014).

4.4.3. Do you know that you can become a SSIF in the Green Scheme?

Table 4.4: Awareness to becoming a SSIF in the GS

		MUKWE		NDONGA LINENA	
		Frequency	**Percent**	**Frequency**	**Percent**
Valid	**Yes**	108	**45.2**	60	**37.5**
	No	131	54.8	100	62.5
	Total	**N=239**	100.0	**N=160**	100.0

Source: Author's own analysis from survey data

Table **4.4** shows that out of 239 participants in the Mukwe constituency, a high proportion of them, 54.8% indicated that they were not aware that they could become SSIFs in the Green Schemes, while only 45.2% of them indicated they are aware that they can become SSIFs. It is intriguing to know that out of the 170 people who are aware of the benefits brought by the Green Scheme, 108 of them know that they can be involved as SSIFs, which represents 63.5% and a 36.5% decrease. This shows that even though individuals are aware of the benefits the Green Scheme projects have brought, they are at the same time not that aware of how they could participate on an individual basis. This on its own indicates a need for more public information disseminations. In the Ndonga Linena constituency, a higher proportion of individuals (62.5%) indicated they were not aware they could become SSIFs in the Green Scheme compared to those that responded similarly in the Mukwe constituency and a lesser proportion (37.5%) indicated they were aware of such a provision. Also, out of the 110 participants who are aware of the benefits brought by the Green Scheme, only 60 of them know that they can be involved as SSIF, which represents a 45.5% decrease.

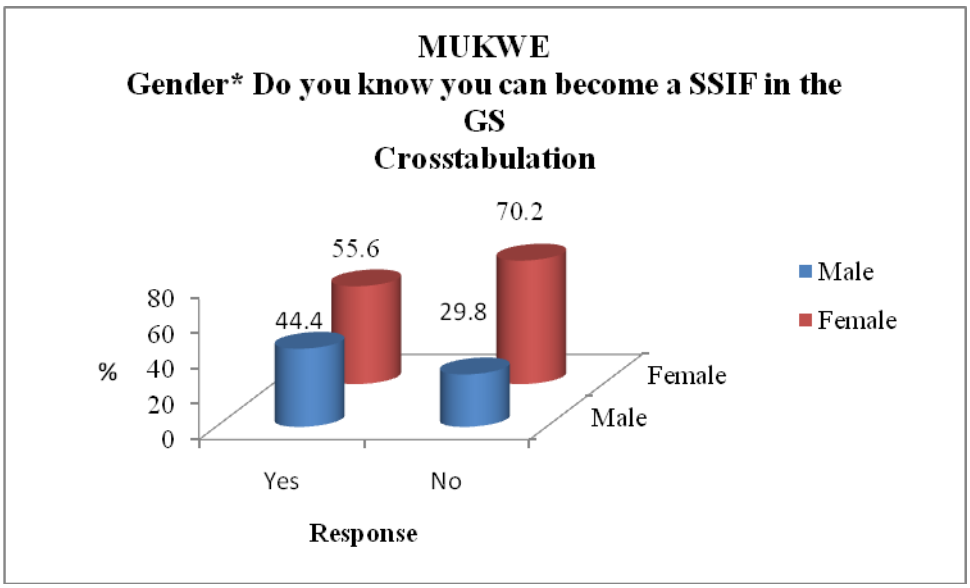

Figure 4.6: Gender and awareness to becoming a SSIF in the GS cross tabulation from Mukwe constituency

Source: Author's own analysis from survey data

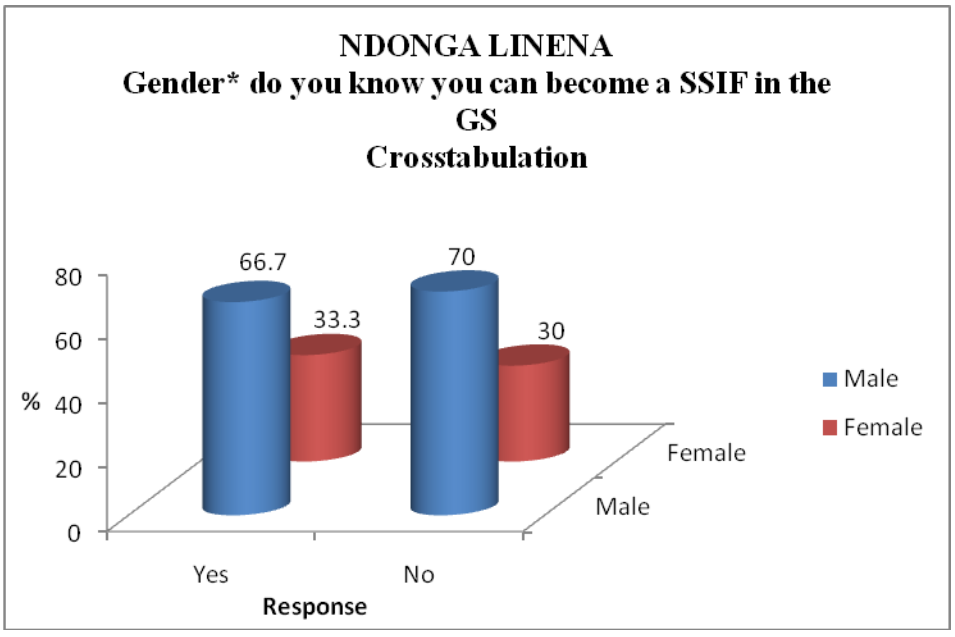

Figure 4.7: Gender and awareness to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency.
Source: Author's own analysis from survey data

Figure 4.6 shows that out of 108 participants in the Mukwe constituency who indicated that they were aware they could become SSIFs in the Green Scheme, most them are females, with 55.6% and 44.4% of them who similarly indicated so were male participants. Figure 4.7 illustrates an opposite pattern, with 66.7% of those who indicated that they were aware they could become SSIFs in the Green Scheme, being males and only 33.3% of those are females. Interesting enough, 70% of those who indicated they are not aware are males. In general, females seem more informed and aware of the provision of small scale farming units within the Green Scheme and that they could apply for occupation.

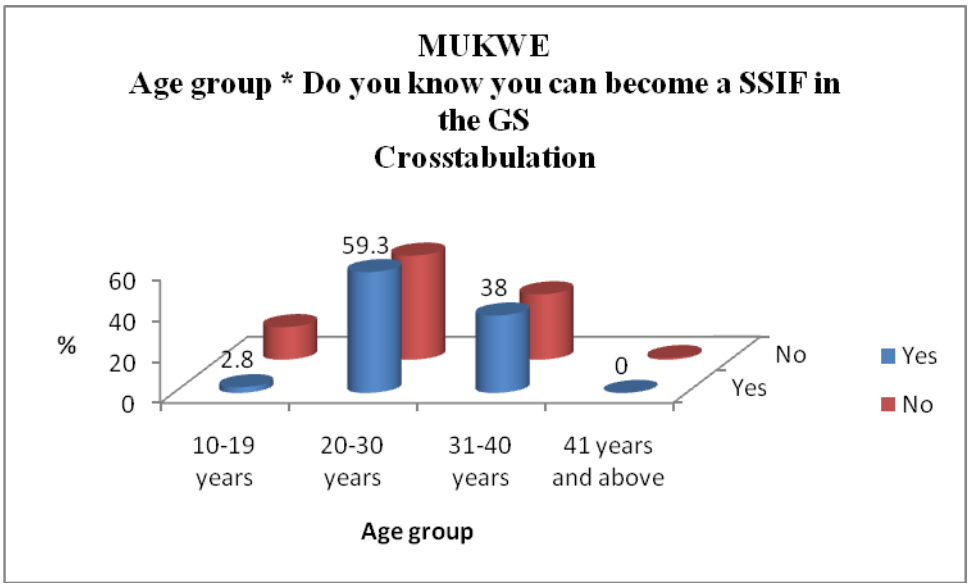

Figure 4.8: Age group and awareness to becoming a SSIF in the GS cross tabulation from Mukwe constituency.

Source: Author's own analysis from survey data

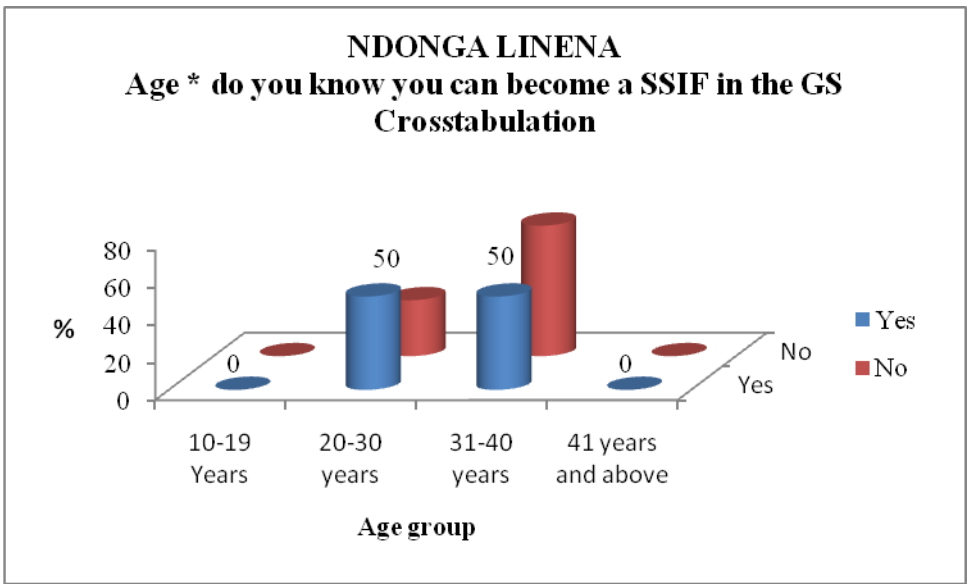

Figure 4.9: Age group and awareness to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency

Source: Author's own analysis from survey data

Figure 4.8 shows that out of 108 participants in the Mukwe constituency, who indicated that they were aware they could become SSIFs in the Green Scheme, most them, equating to 59.3% where between the age group 20-30 years, followed by the age bracket of 31-40 years with 38.0% representation. Only 2.8% out of the 24 participants from the age group of 10-19 years indicated they are aware, while the only 1 participant from the 41 and above age group was not aware of the initiative. In the Ndonga Linena constituency as shown by Figure, an even distribution was observed amongst the two age groups, with 50% each. In both constituencies, the most economically active age groups; 20-30 years and the 31-40 years are the most aware they could become SSIFs, which shows awareness has in a way reached the targeted population in that regard.

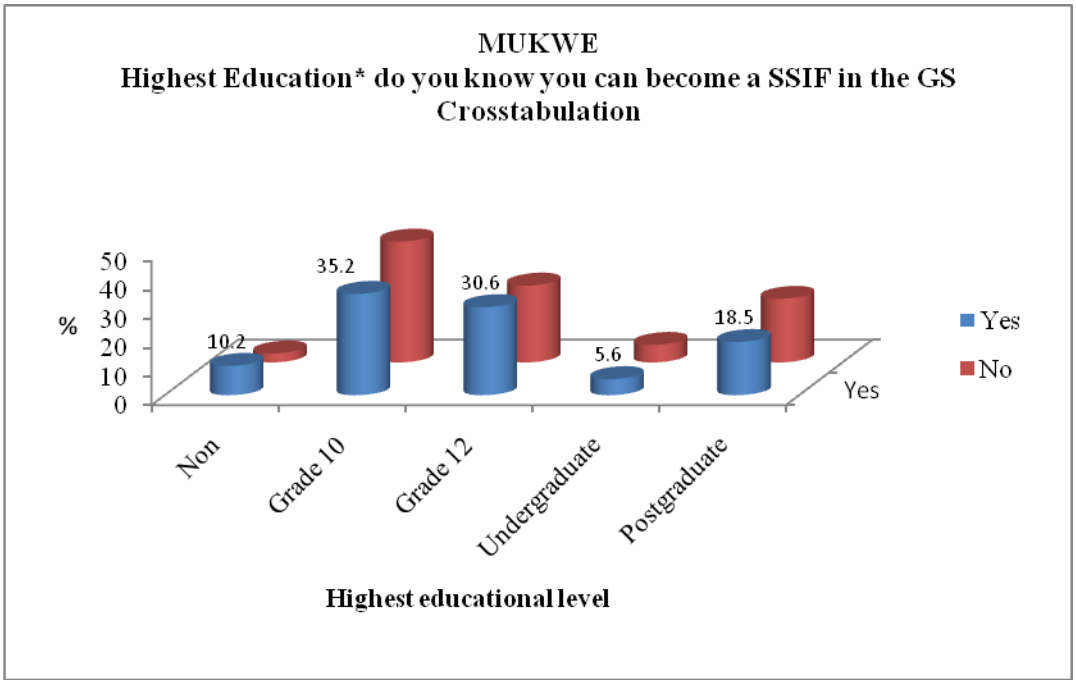

Figure 4.10: Highest educational level and awareness to becoming a SSIF in the GS cross tabulation from Mukwe constituency.

Source: Author's own analysis from survey data

Table 4.5: Chi-square test for highest educational level and awareness to becoming a SSIF in the GS cross tabulation from Mukwe constituency

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.216[a]	4	.184
Likelihood Ratio	6.313	4	.177
Linear-by-Linear Association	.904	1	.342
N of Valid Cases	239		

Source: Author's own analysis from survey data

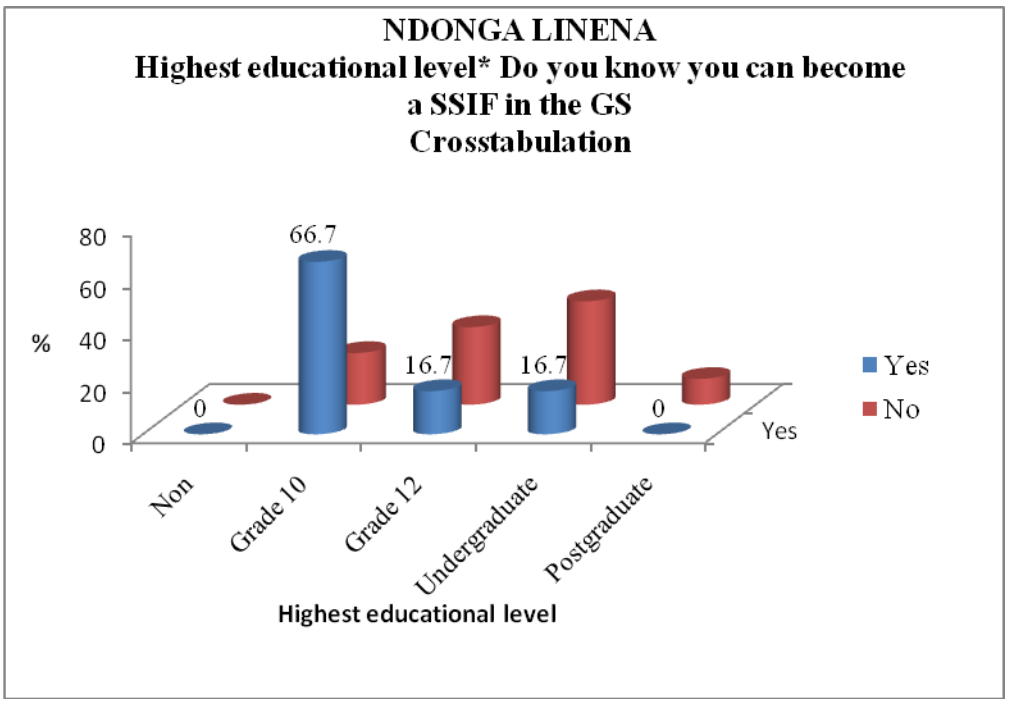

Figure 4.11: Highest educational level and awareness to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency.

Source: Author's own analysis from survey data

Table 4.6: Chi-square test for highest educational level and awareness to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.978[a]	3	.000
Likelihood Ratio	40.291	3	.000
Linear-by-Linear Association	32.332	1	.000
N of Valid Cases	160		

Source: Author's own analysis from survey data

Figure 4.10 shows that out of the 108 participants in the Mukwe constituency, who indicated that they were aware they could become SSIFs in the Green Scheme, majority of them, 35.2% have grade 10 as highest qualification, followed by those with grade 12 with 30.6%, while 18.5% of them have postgraduate qualifications. 10.2% of the

participants have no education. Using the Chi-Square test in Table 4.5, results showed that there was no significant relationship (X^2=6.216; p=0.184) between level of education and awareness of becoming a SSIF in the Green Scheme projects. Thus, the awareness to becoming a SSIF in the Green Scheme is not associated to participants' level of education.

Results from Figure 4.11 in the Ndonga Linena constituency show that, out of the 60 participants who indicated they are aware that they could become SSIFs in the Green Scheme, most them, 66.7% are individuals with grade 10 as their highest qualification, followed by participants with grade 12 and undergraduate participants with 16.7% positive respondents each. None of the postgraduate participants as well as those with no education responded to have known that they could become SSIFs in the Green Schemes. Using the Chi-Square test from Table, results showed that there was a significant relationship (X^2=36.978; p<0.01) between level of education and awareness of becoming SSIFs in the Green Scheme, with the less educated being more aware that they could become SSIFs, but not applicable to those with no education at all.

4.4.4. How did you know you can be Involved in the Green Scheme Project as a SSIF?

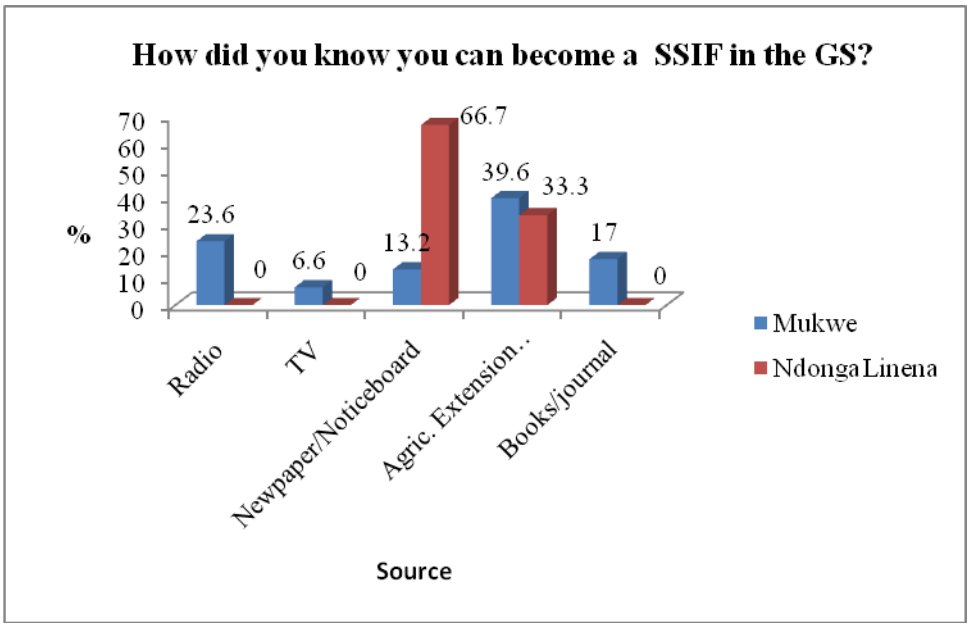

Figure 4.12: Mode of awareness about involvement in GS as SSIFs

Source: Author's own analysis from survey data

Figure 4.12 shows that out of the 108 respondents in the Mukwe constituency who indicated that they are aware they can become SSIFs within the Green Scheme, majority of them, 39.6% respondents became aware of this provision through agricultural extension workers/ persons. The second most common awareness method was radio with 23.6%, then followed by books with 17.0%, newspaper with 13.2 % and Television with 6.6% only. 2 respondents did not indicate their mode of awareness. The importance of face-to-face communication is emphasised as it has been shown to have been one of the most effective mode of information dissemination. Although it can be quite expensive and time consuming, it has several advantages, which includes its suitability for either group or individual meetings, provision for instant feedback and ability to

allow the data capture to gauge whether the participants understand what is being communicated. Radio advertisement is having the ability to capture a wide population in the Mukwe constituency as most households own radios and information is disseminated through the local languages, which does not exclude any segment of the population in the end. In the Ndonga Linena constituency, however, 66.7% of the respondents who indicated they are aware they can become SSIFs within the Green Scheme heard the information through newspaper/notice board, with the 33.3% having heard the information through extension workers/persons.

4.4.5. Have you ever applied to become a SSIF in the Green Scheme?

Table 4.7: Percentage (%) of respondents who have applied to become SSIF in the GS before

		MUKWE		NDONGA LINENA	
		Frequency	Percentage	Frequency	Percentage
Valid	No	239	100.0	50	31.3
	Yes	0	0	110	68.8
	Total	239	100.0	160	100.0

Source: Author's own analysis from survey data

Table 4.7 shows that out of 239 participants in the Mukwe constituency, no one has ever applied to become a SSIF before. This is because there has only been one intake of SSIFs so far and no SSIF has been upgraded to Medium Scale Irrigation Farmers. In the Ndonga Linena constituency, however, 31.3% (50 out of 160) of respondents indicated they had previously applied to become SSIFs in the Ndonga Linena Green Scheme. One

of the reasons for that is because the Ndonga Linena Green Scheme commenced operations later than the Shadikongoro Green Scheme, in September 2008.

4.4.6. Are you interested in becoming a SSIF in the Green Scheme?

Table 4.8: Interest to becoming a SSIF in the GS

		MUKWE		NDONGA LINENA	
		Frequency	Percent	Frequency	Percent
Valid	Yes	224	93.7	160	100.0
	No	15	6.3	0	0.0
	Total	239	100.0	160.0	100.0

Source: Author's own analysis from survey data

Table 4.8 shows that out of 239 participants in the Mukwe constituency, 93.7% are interested in becoming SSIF in the Green Scheme and only 6.3% shows no interest in becoming SSIF. Statistically as validated by the Kavango 2011 census regional report, 59.7% of the 4511 households in the Mukwe constituency depend on farming and engaged in some sort of agricultural practices (NSA, 2014) and historically, subsistence farming has been the main source of livelihoods to most of these households. Hence, it is natural to have most participants being interested in becoming SSIFs. All the participants in the Ndonga Linena constituency indicated they are interested in becoming SSIF in the Green Scheme projects.

4.4.7. Do you know the application procedure to becoming a SSIF in the Green Scheme?

Table 4.9: Awareness of application procedure to becoming a SSIF in the GS

		MUKWE		NDONGA LINENA	
		Frequency	Percent	Frequency	Percent
Valid	Yes	**24**	10.0	**60**	37.5
	No	215	90.0	100	62.5
	Total	239	100.0	160	100.0

Source: Author's own analysis from survey data

Table 4.9 shows that out of 239 participants in the Mukwe constituency, only 24 (10.0%) know the application procedure to becoming a SSIF in the Green Scheme. To put this into perspective, out of the 108 respondents who indicated that they have heard they can become SSIFs, only 24 of them, equating to 22% know the actual application procedure, this indicates a dire need for more awareness on the subject, especially with the government's intention to expand the Green Scheme Programme within the Harambee and NDP 5 era and concentrate efforts into increasing and improving agricultural productivity for smallholder farmers. In the Ndonga Linena constituency, however, a higher proportion of respondents indicated they are aware of the SSIF application procedure compared to Mukwe constituency. 37.5% (60 out of 160) of them responded positively. To put it into perspective, all the participants who indicated they know they could become SSIFs also know the application procedure and 50 out of the 60 (83.3%) of them have previously applied to become SSIFs in the Green Scheme.

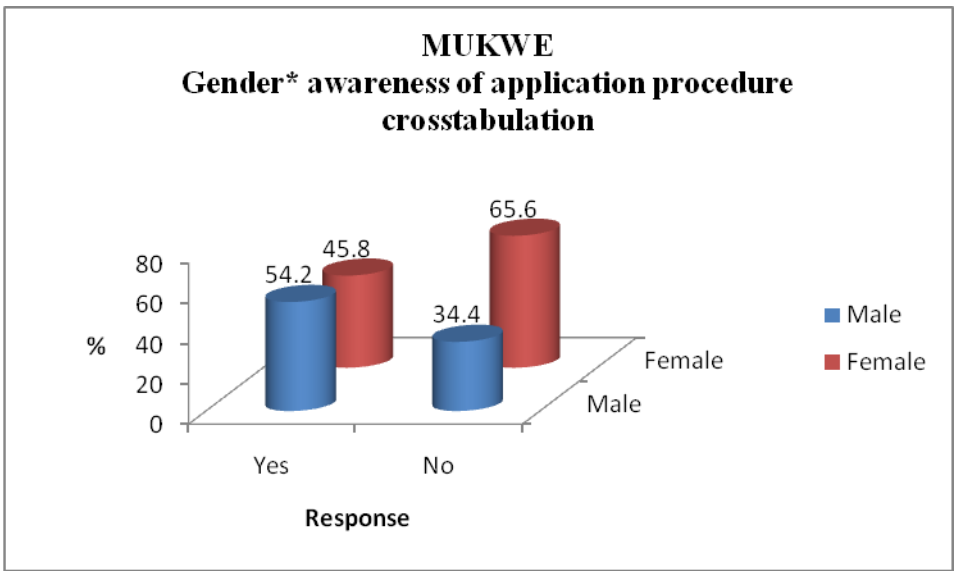

Figure 4.13: Gender and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Mukwe constituency

Source: Author's own analysis from survey data

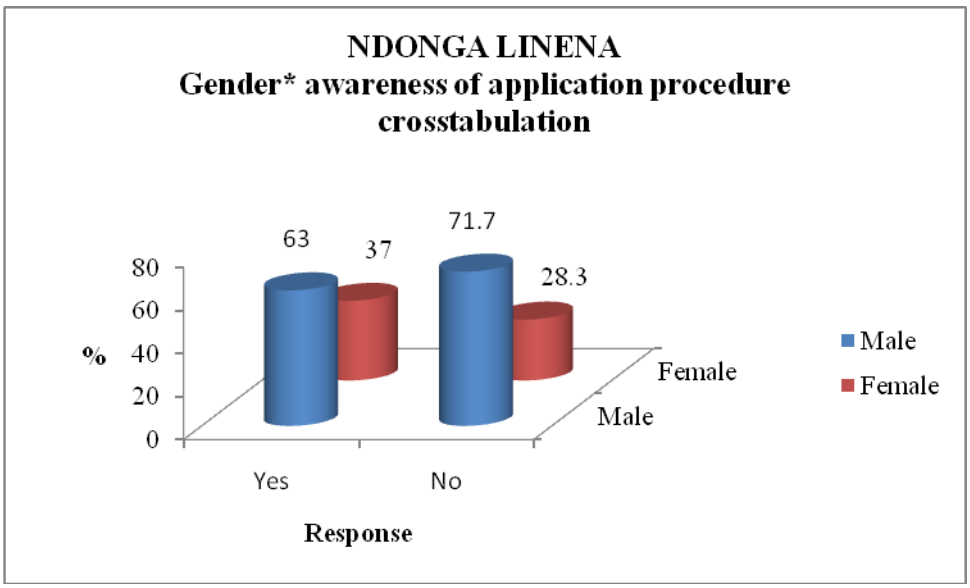

Figure 4.14: Gender and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency

Source: Author's own analysis from survey data

Figure 4.13 shows that out of 24 participants in the Mukwe constituency, who knows the application procedure to becoming a SSIF in the Green Scheme, 54.2% of them are females and 45.5% were males. In the Ndonga Linena constituency, on the other hand, 63% of those aware of the application procedure are males, with 63% and the remaining 37% are females as illustrated by Figure 4.14.

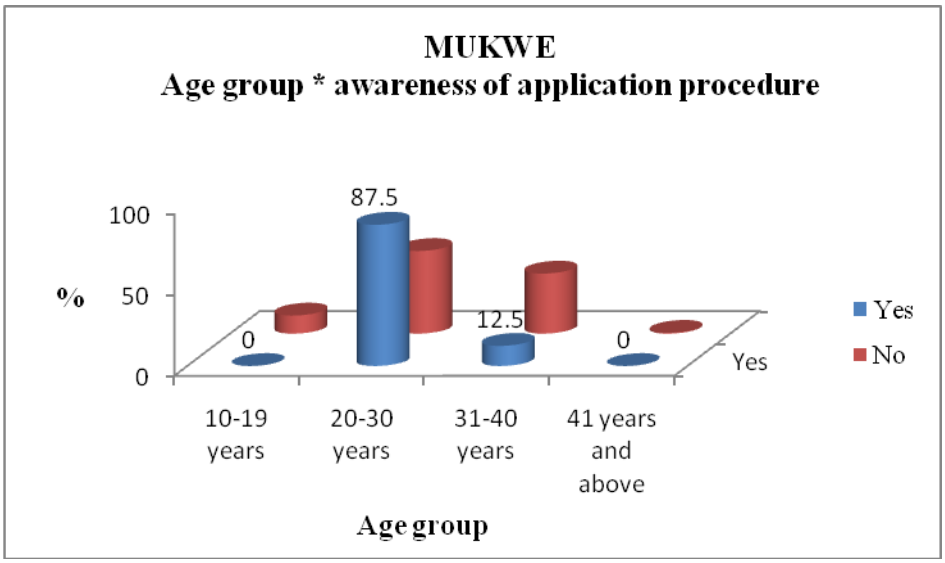

Figure 4.15: Age group and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Mukwe constituency

Source: Author's own analysis from survey data

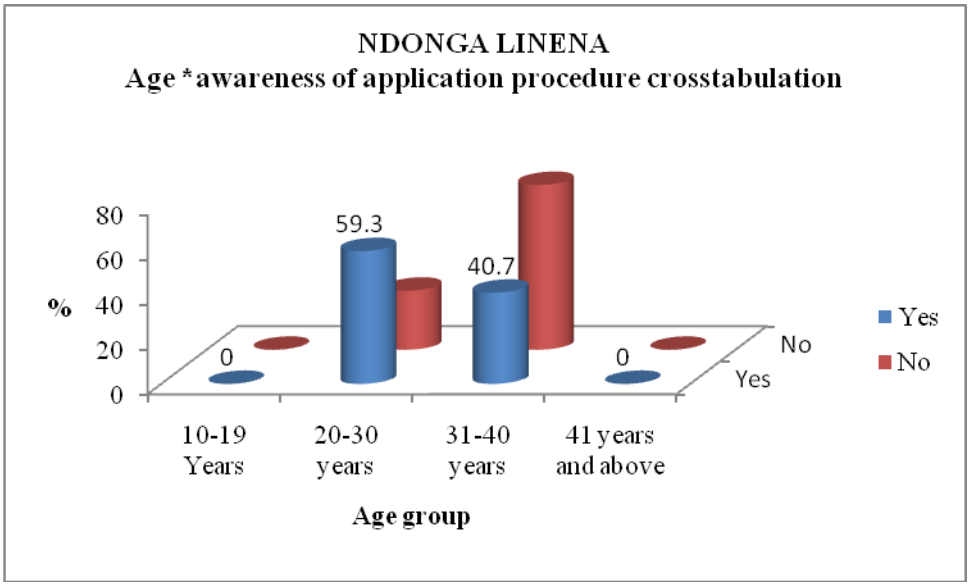

Figure 4.16: Age group and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency

Source: Author's own analysis from survey data

Figure 4.15 shows that out of the 24 participants in the Mukwe constituency, who knows the application procedure to becoming a SSIF in the Green Scheme, 87.5% of them are from the age group of 20-30 years, with the other 12.5% from the 31-40 years age group. Similarly, most participants from the Ndonga Linena constituency who knows the application procedure come from the age group of 20-30 years, with 59.3% and then 40.7% from the 31-40 years age group as depicted by Figure 4.16.

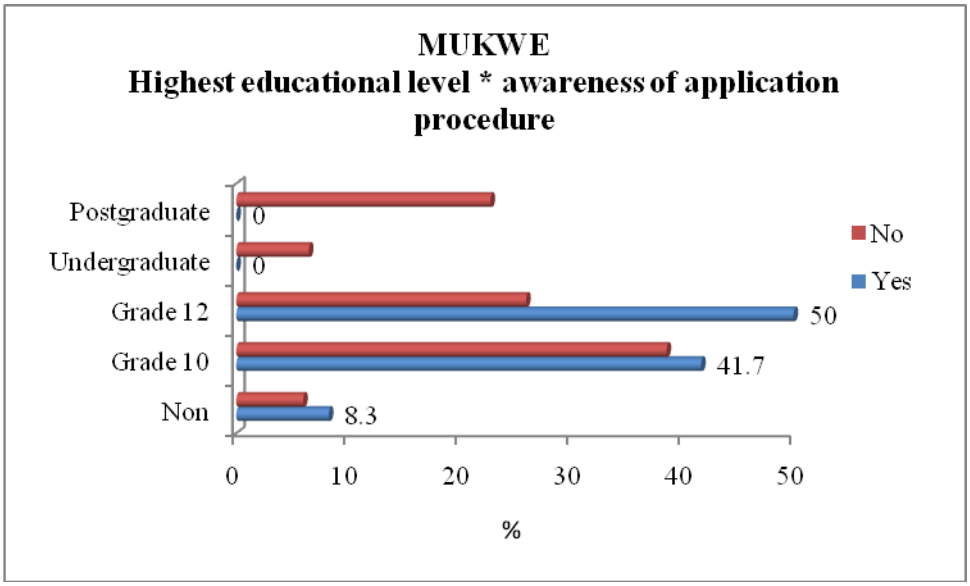

Figure 4.17: Highest educational level and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Mukwe constituency

Source: Author's own analysis from survey data

Table 4.10: Chi-square test for highest educational level and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Mukwe constituency

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.618[a]	4	.020
Likelihood Ratio	17.188	4	.002
Linear-by-Linear Association	5.057	1	.025
N of Valid Cases	239		

Source: Author's own analysis from survey data

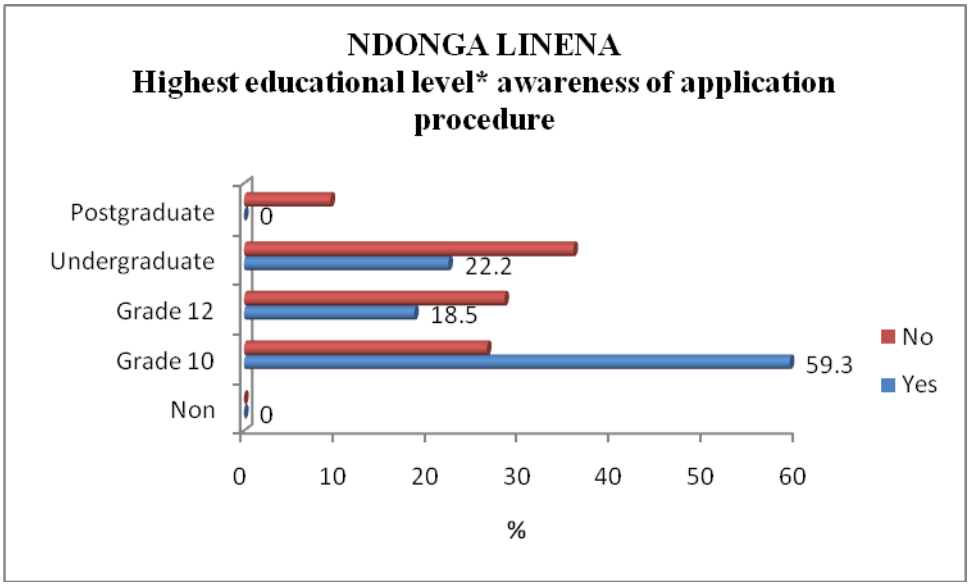

Figure 4.18: Highest educational level and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency

Source: Author's own analysis from survey data

Table 4.11: Chi-square test for highest educational level and awareness of application procedure to becoming a SSIF in the GS cross tabulation from Ndonga Linena constituency

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.881[a]	3	.000
Likelihood Ratio	21.591	3	.000
Linear-by-Linear Association	16.257	1	.000
N of Valid Cases	160		

Source: Author's own analysis from survey data

Figure 4.17 shows that out of the 24participantsin the Mukwe constituency, who know the application procedure to becoming a SSIF in the Green Scheme, most them have grade 12 as their highest educational level, with 50%, seconded by those with grade 10 with 41.7%. None of undergraduate and postgraduate participants are aware that they

could become SSIFs in the Green Schemes. Recruitment as a SSIF in the Green Scheme requires that an individual becomes a full time SSIF and thus should not have any other employment elsewhere and people with higher education tend to not settle for that. Using the Chi-Square test from Table 4.10, results shows that there was a significant relationship (X^2 =11.618; p=0.020) between level of education and knowing the application procedure to becoming a SSIF in the Green Scheme, thus, awareness of application procedure is associated with participants' educational level, with the less educated more aware of the application procedures to being a SSIF in the Green Scheme projects.

Results from the Ndonga Linena constituency as illustrated by Figure 4.18 show that, out of the 60 participants who indicated they are aware that they know the application procedure to becoming a SSIF in the Green Scheme, 59.3%are individuals with grade 10 as their highest qualification, followed by participants with undergraduate qualification with 22.2% and then grade 12 participants with 18.5% positive responses. None of the postgraduate participants as well as those with no education responded to know that they could become SSIFs in the Green Scheme. Using the Chi-Square test from Table 4.11, results shows that there was a significant relationship (X^2 =18.881; p <0.05) between participants' level of education and knowing the application procedure to becoming a SSIF in the Green Scheme projects.

4.4.8 Suggested improvement to the application procedure

In this section of the same semi-structured questionnaire, participants were asked to give their opinions on how to improve the application procedure to becoming a SSIF in the Green Scheme in their constituencies, respectively. ATLAS.ti software was used to analyse the primary responses. The software assists in systematically grouping aspects that are of interest to the research and ultimately comes up with themes. These themes were then expanded to have more wording. Each respondent's response was then assigned to a relevant theme in excel and exported to SPSS for quantification. The following main themes were derived;

Qualification criteria

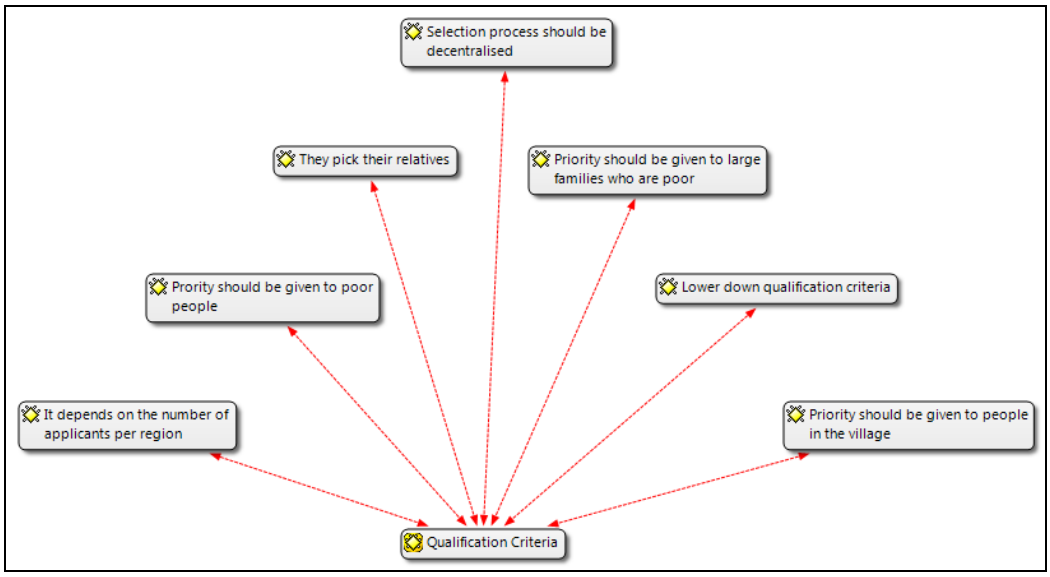

Figure 4.19: Quotations for qualification criteria

Source: Author's own analysis from survey data

Qualification Criteria was associated with the issue of priority being given to poor large families, the need to decentralise the application process and the lowering of the qualification criteria to afford everyone applying for the scheme the opportunity to qualify. The majority suggested that priority should be given to applicants who were poor, have large families and originating from the village where the Green Scheme is hosted. Participants also suggested that the selection process should be decentralized to be accessed by most qualifying individuals, who are otherwise not privileged enough to get the information.

Application Procedure

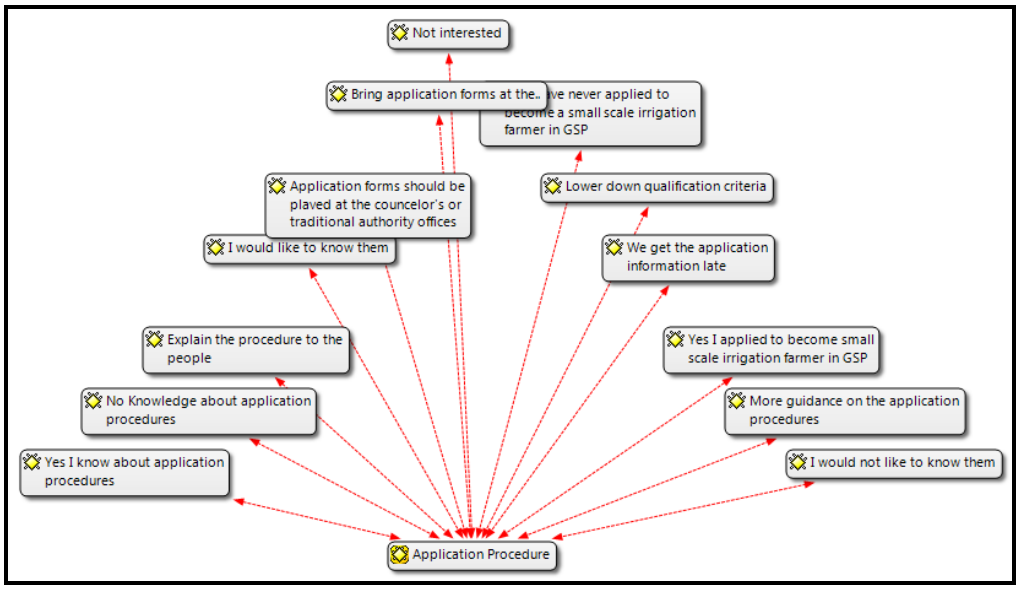

Figure 4.20: Quotations for application procedure

Source: Author's own analysis from survey data

Application procedure is associated with the following quotations; Participants raised that they had no knowledge about the procedures, thus there exists a need to explain the

application procedure. Additionally, participants raised that the application forms need to be placed within their reach, i.e. the councillor's office and/or traditional authority offices.

Information Gathering/dissemination

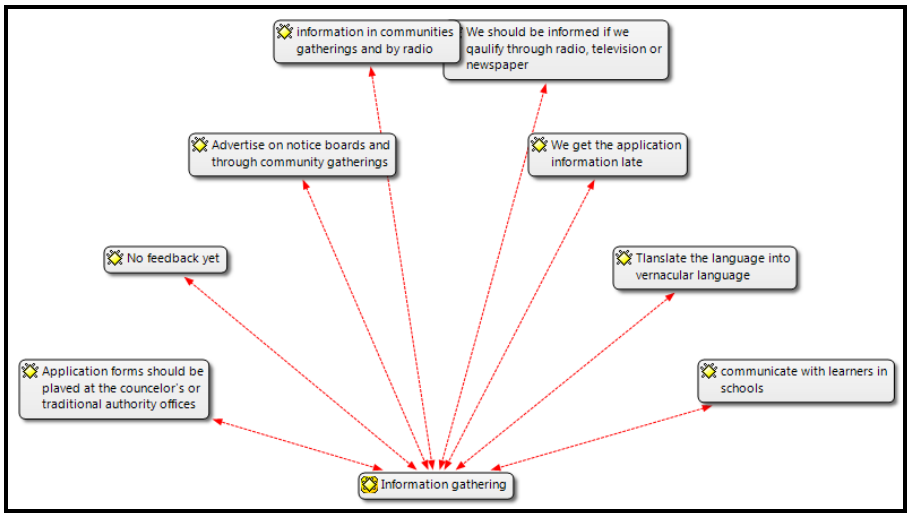

Figure 4.21: Quotations for information gathering/dissemination

Source: Author's own analysis from survey data

With regards to information gathering or rather dissemination, respondents raised the point that application forms to be SSIFs in the Green Schemes should be placed at the constituency councillor's office or traditional authority's office, for ease of access. Also, Green Scheme implementers and/or extension workers need to inform communities through gatherings and local radio stations. Some participants suggested that information brochures, if they exist, should be translated in vernacular languages and then decentralised and that such beneficial information should be communicated to learners,

especially those in the agriculture field of study. There were also concerns that information reaches the community members late.

Selection process

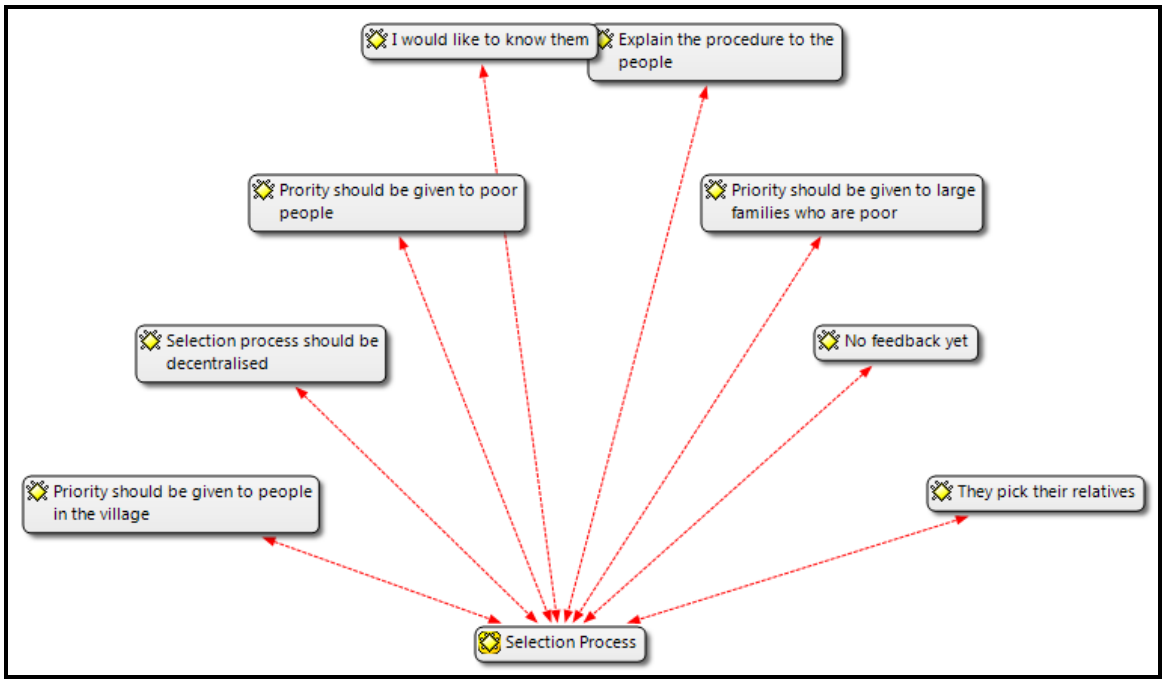

Figure 4.22: Quotations for selection process

Source: Author's own analysis from survey data

Selection criteria was associated with the above quotations, with most participants indicating that the selection criteria should place priority on the locals and that the level of poverty needs to be a determining factor. Some participants pointed to unconfirmed nepotism and said recruitment had been biased and relatives of the selecting panellists were unfairly chosen.

Suggested improvements to the application Procedure for recruitment as a SSIF in the Green Schemes?

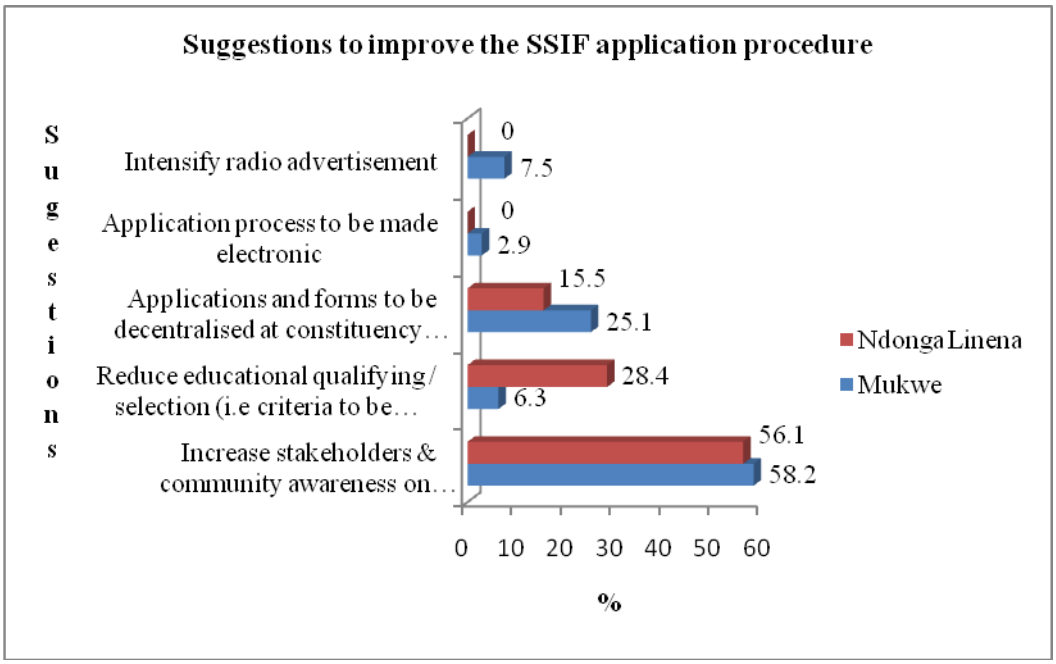

Figure 4.23: Respondents' suggestions to improving SSIF application procedure

Source: Author's own analysis from survey data

Figure 4.23 shows that out of 239 participants in the Mukwe constituency, 58.2% of them feel increased stakeholder and community awareness on the application process will improve the application procedure. The importance of extension work and face to face community engagements is once again emphasised as it leaves a lasting real impact on the participants. 25.1% of participants suggested application forms as well as application invitations need to be decentralised at constituency agricultural office, traditional authority and /or village headman. This stems from the fact that, 54.8% of participants have no idea that they could become SSIFs in the Green Schemes and this could be because information is not brought closer to the people. 7.5% of participants

feels intensifying radio advertisements would improve the application procedure as more deserving applicants would be reached to apply. Radio advertisements are done in vernacular languages through the local radio stations, this does not eliminate any segment of the population because of language.

A study by Tologbonse et.al., (2008), found that the language barrier and lack of awareness on existence of different information sources were amongst the challenges facing small scale farmers. Local radio advertisements, just like face to face engagement in vernacular language bridges this gap. 6.3% of participants suggested that the educational qualifying criteria/ selection criteria for recruitment into a SSIF be reduced and/or be strictly experience in crop production. With the saying "experience is the best teacher"; subsistence agricultural production skills hardly come with one's educational background but rather through practical engagement into the production thereof. For this reason, individuals with no education should not be excluded from recruitment into the Green Schemes as SSIFs if they have a proven background in subsistence crop production. 2.9% of participants suggested the application process be made electronic to cater for individuals who cannot access the application forms physically. Similarly, most participants in the Ndonga Linena constituency also feel intensifying the stakeholder and community awareness will be the first step towards improving the application procedure, with 56.1% of them indicating so. 28.4% of them suggested that the qualifying and selection criteria be reduced to favour the underprivileged locals.

4.5. Background information of SSIFs in the Shadikongoro and Ndonga Linena GS projects

In this survey, small scale irrigation farmers already integrated into the two Green Scheme projects were queried on the extent of capacity building from the commercial farmer. Areas such as training needs as well as suggestions on what should be changed in the current Green Scheme farming model were covered in this set of questionnaires. Primary data was collected to determine the views and opinions of the SSIFs in the two Green Schemes.

Following are the demographics of the respondents. A total of 11 SSIFs from the Shadikongoro Green Scheme project participated in this survey, equating to a 78.6% response rate. From the Ndonga Linena Green Scheme project, 24 SSIFs participated in the survey, equating to a 100% response rate in terms of the expected sample.

4.5.1. Gender

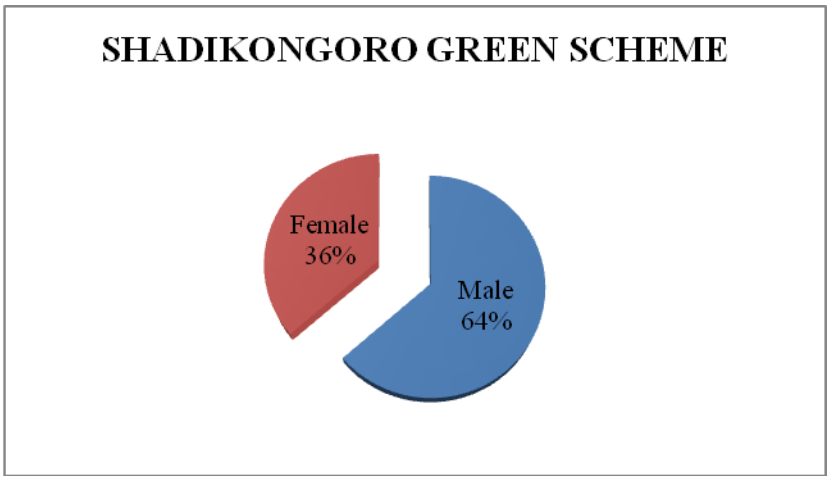

Figure 4.24: Gender statistics of participant SSIFs in the Shadikongoro GS

Source: Author's own analysis from survey data

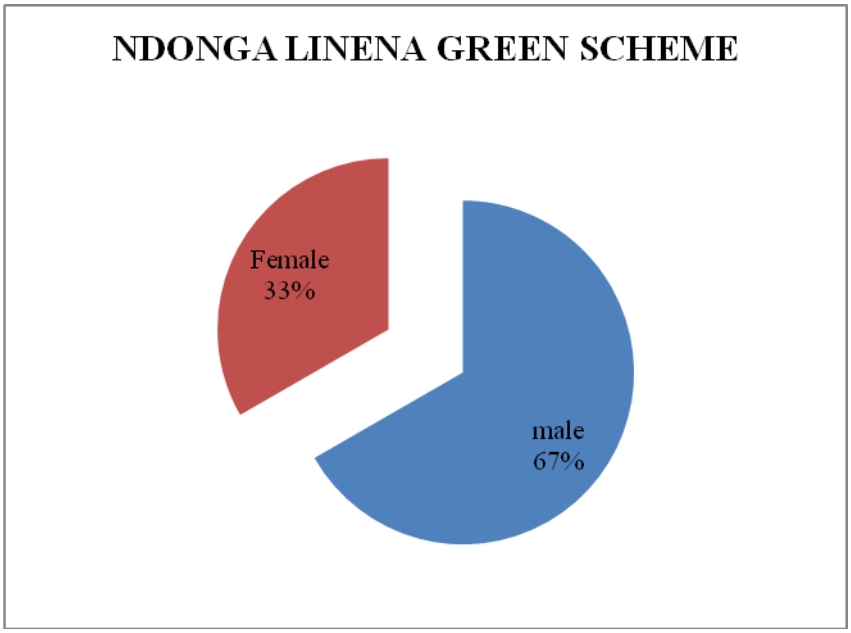

Figure 4.25: Gender statistics of participant SSIFs in the Ndonga Linena GS

Source: Author's own analysis from survey data

Figure 4.24 indicates that 64% of the surveyed SSIFs in the Shadikongoro Green Scheme are males and 36% are females. It clearly shows that, the ShadikongoroGreen Scheme project has more male SSIFs than females.A similar patterrn is observed in the Ndonga Linena Green Scheme project, with 67% of the SSIFs being males and 33% females as illustrated in Figure 4.25.

4.5.2. Age group* Highest educational level

Table 4.12: Age group * highest educational level crosstabulation of SSIF from Shadikongoro GS

Age group * highest educational level cross tabulation

N=11

		Highest educational level		Total
		Grade 10	Grade 12	
Age	31-40 years	0	6	6
	41 years and above	1	4	5
Total		1	10	11

Source: Author's own analysis from survey data

Table 4.13: Age group * highest educational level crosstabulation of SSIF from Ndonga Linena GS

Age group * highest educational level cross tabulation

N=24

		Highest educational level		Total
		Grade 10	Grade 12	
Age	31-40 years	5	13	18
	41 years and above	1	5	6
Total		6	18	24

Source: Author's own analysis from survey data

As illustrated in Table 4.12, 6 of the 11 SSIFs from the Shadikongoro Green Scheme project are in the 31-40 years age bracket, with the other 5 being in the 41 years and above age groups. Education wise, 10 out of the 11 have Grade 12 as their highest qualification and the remaining 1 has Grade 10. Results from the Ndonga Linena Green Scheme project, show a similar pattern with the SSIFs spread between the same two age brackets as in the Mukwe constituency; 18 of them are from the 31-40 years age group and the remaining 6 are from the 41 years and above. Similarly, the majority of the

SSIFs have Grade 12 as their highest educational level, with 18 out of the 24 and the remaining 6 have Grade 10 as illustrated by **Table 4.13.** In both Green Scheme projects, none of the SSIFs have educational level apart from Grade 10 and 12.

4.6. Extent of capacity building of SSIFs within the Shadikongoro and Ndonga Linena GS projects

4.6.1. How long have you been a SSIF?

Table 4.14: Duration since integrated as SSIF in GS

N=11

		SHADIKONGORO GREEN SCHEME		NDONGA LINENA GREEN SCHEME	
		Frequency	Percent	Frequency	Percent
Valid	More than 5 years	11	100.0	24	100.0

Source: Author's own analysis from survey data

Table 4.14 above illustrates that 100% of the SSIFs in both the Shadikongoro and Ndonga Linena Green Scheme projects have been in the scheme for more than 5 years. This is because there has only been one recruitment so far and none of the SSIFs have been upgraded to MSIF.

4.6.2. How did you hear about applying to be a Small-Scale Irrigation Farmer?

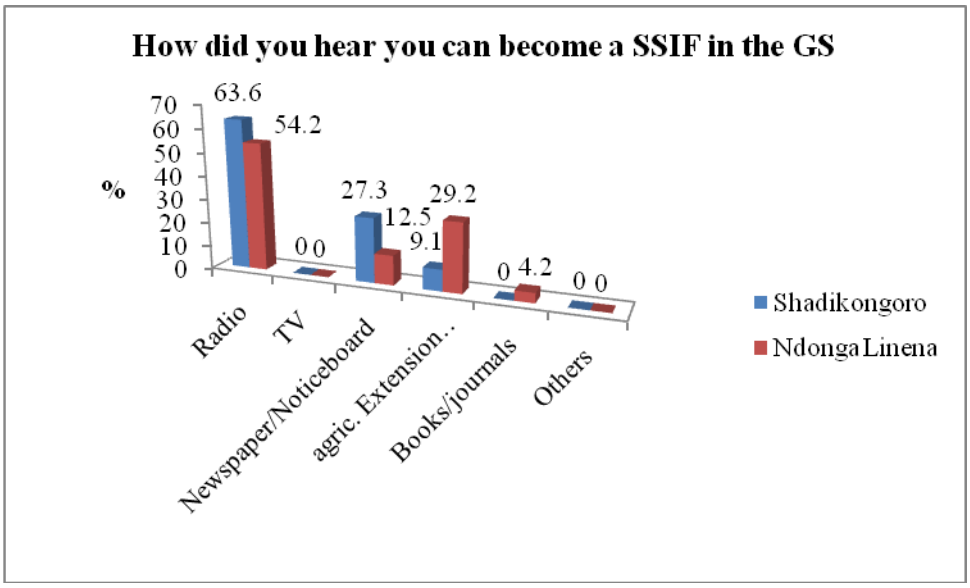

Figure 4.26: Mode of awareness to becoming a SSIF in GS

Source: Author's own analysis from survey data

Figure 4.26 illustrates that, in both the Shadikongoro and Ndonga Linena Green Scheme projects, the majority of the SSIFs got aware about becoming SSIFs through the radio, accounting for 63.6% and 54.2% respectively. Newspaper/notice board accounted for 27.3% of SSIFs in the Shadikongoro Green Scheme project, while agricultural extension worker/persons was the second in terms of proportion, accounting for 29.2% of SSIFs in the Ndonga Linena Green Scheme project.

4.6.3. Interaction between SSIFs

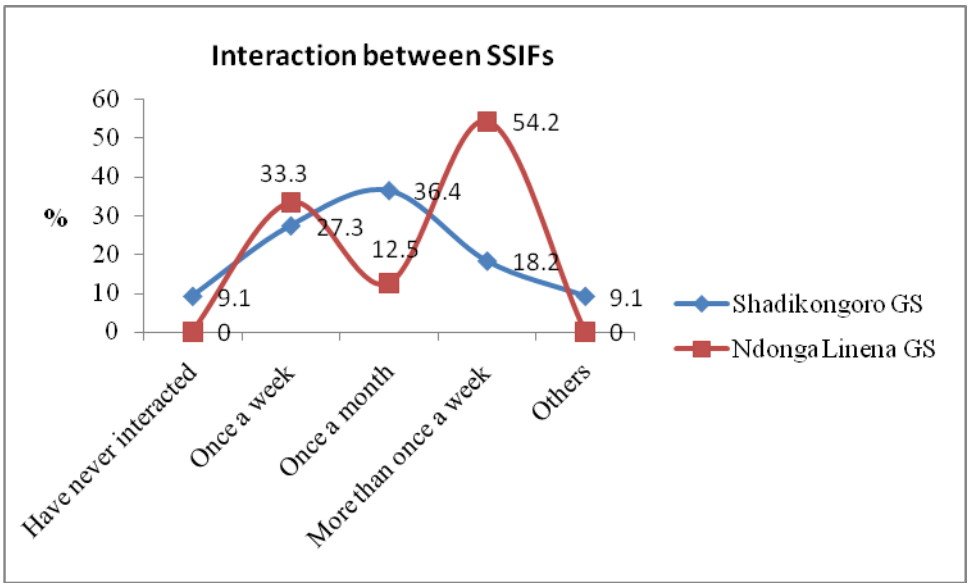

Figure 4.27: Interaction amongst SSIFs

Source: Author's own analysis from survey data

Figure 4.27 illustrates that there is a greater interaction among SSIFs in the Ndonga Linena Green Scheme project than in the Shadikongoro Green Scheme project, with 54.2% of them indicating that they interact with each other more than once a week, while only 18.2% indicated so in the Shadikongoro Green Scheme project. The majority of SSIFs in the Shadikongoro Green Scheme project indicated that they interact at least once a month with 36.4% of them indicating so. 9.1% of SSIFs in the Shadikongoro Green Scheme project indicated they have never interacted amongst each other. In general, there is at least some interaction between SSIFs in both Green Scheme, which is good in terms of sharing knowledge, challenges and solutions amongst themselves.

4.6.4. Need for interaction between SSIFs

Table 4.15: Need for interaction between SSIFs

Do you see the need for you to interact with fellow SSIFs?

		SHADIKONGORO GS		NDONGA LINENA GS	
		Frequency	Percent	Frequency	Percent
Valid	Yes	8	72.7	24	100
	No	3	27.3	0	0
	Total	11	100.0	24	100.0

Source: Author's own analysis from survey data

Table 4.15 illustrates that 72.7% of SSIFs indicated that they see the need to interact with fellow SSIFs, with 27.3% indicating they do not see the need. All the SSIFs in the Ndonga Linena Green Scheme project indicated they see the need for interaction between themselves.

4.6.5. Interaction with commercial farmer

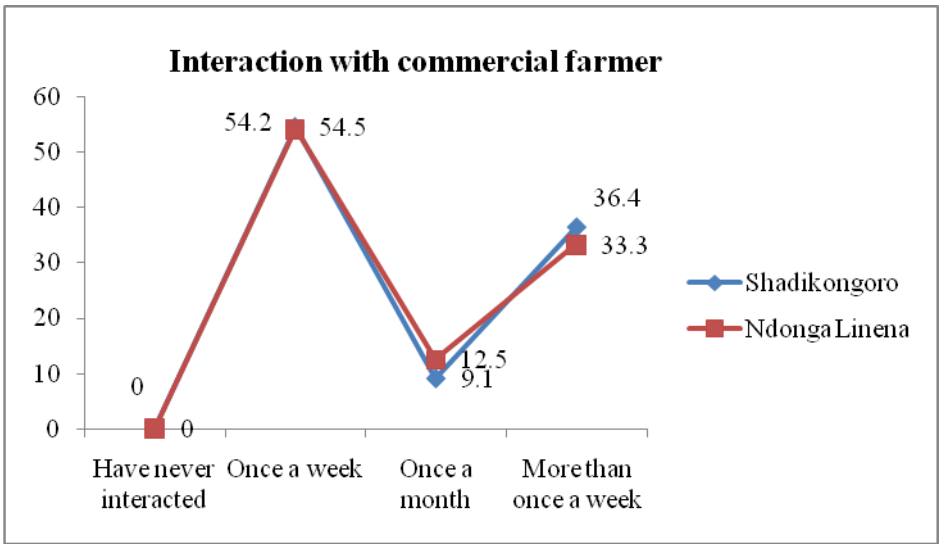

Figure 4.28: Interaction of SSIFs with commercial farmer in the GS

Source: Author's own analysis from survey data

Figure 4.28 illustrates that the majority of SSIFs in both the Shadikongoro and Ndonga Linena Green Scheme projects indicated they interact with the commercial farmer at least once a week, accounting to 54.5% and 54.2% respectively. A similar pattern is also observed with 36.4% of SSIFs in the Shadikongoro Green Scheme project indicating they interact with the commercial farmer more than once a week and 33.3% of SSIFs in the Ndonga Linena Green Scheme project indicating so. None of the SSIFs indicated that they have never interacted with the commercial farmer in their respective project, this shows there is some flow of information between the SSIFs and the commercial farmer.

4.6.6. Training undertaken

Table 4.16: Whether training has been undertaken since becoming SSIFs

Have you undergone training since becoming a SSIF?

		SHADIKONGORO GS		NDONGA LINENA GS	
		Frequency	Percent	Frequency	Percent
Valid	Yes	11	100.0	24	100.0

Source: Author's own analysis from survey data

When asked whether they have attended training since becoming SSIFs, all the SSIFs indicated they have. It is a prerequisite that all SSIFs undertake the National Green Scheme Training Programme offered by the Mashare Irrigation Training Centre (MITC) aimed at training the Small-Scale Irrigation Farmers (SSIFs) at least after being recruited into the Green Scheme if not prior.

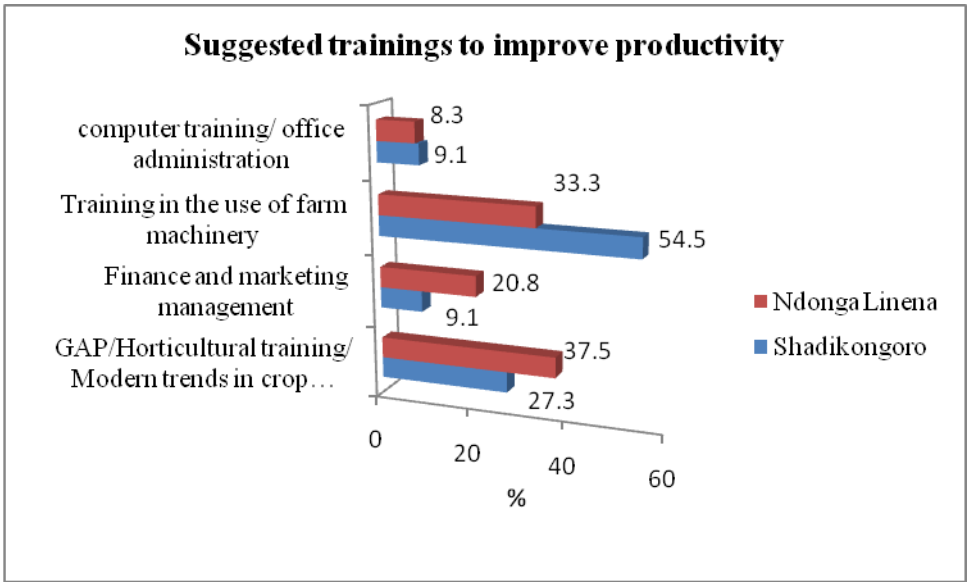

Figure 4.29: Suggested training to improve SSIF agricultural productivity

Source: Author's own analysis from survey data

Figure 4.29 illustrates that majority of the SSIFs in the Shadikongoro Green Scheme project suggested and believes that they need training in the use of modern farm machinery (54.5%), more specifically the operation of tractors will improve their productivity indefinitely. 27.3% of them believes that more trainings on Good Agricultural Practice (GAP), which encompasses modern trends and technologies in horticultural production will improve their on-farm productivity. The remaining 18.2% suggested computer/ office administration and finance, bookkeeping and marketing management trainings. The majority of SSIFs in the Ndonga Linena Green Scheme project, on the other hand, suggested that they need GAP trainings (37.5%). They cited that GAP training will help them meet quality standards as set by the Agricultural Marketing and Trade Agency (AMTA) and help take preventative measures against disease outbreaks. 33.3% of them suggested training in the use of modern farming machinery, while 20.8% suggested finance, book keeping and marketing trainings and

only 8.3% suggested computer and office administration trainings. Overall, the SSIFs clearly highlighted the need for capacity building in improving their productivity.

4.6.7. Service provision rating of commercial farmer

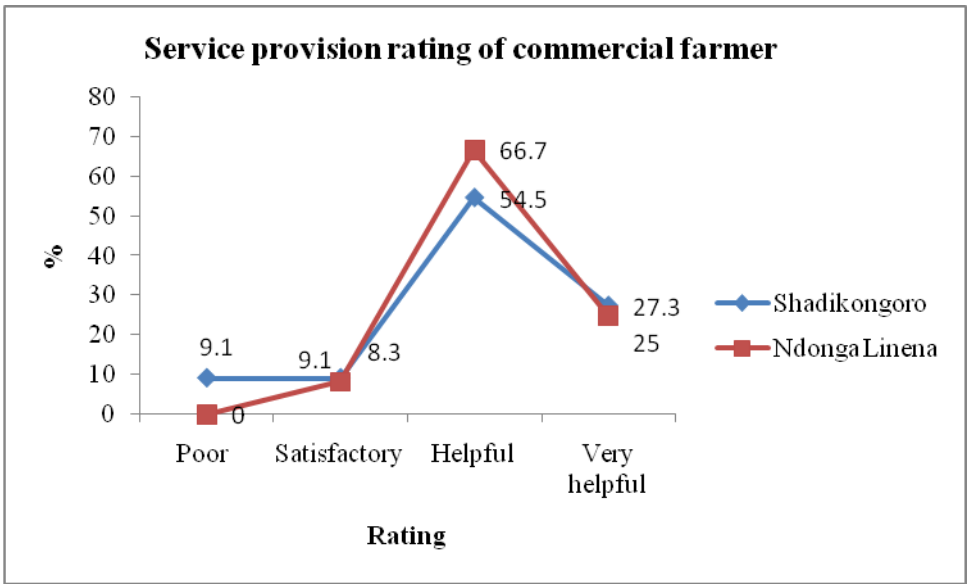

Figure 4.30: Service provision rating of commercial farmer by the SSIFs

Source: Author's own analysis from survey data

When asked to rate the services of the commercial farmer, the majority of the SSIFs indicated that the services provided by the commercial farmer had been helpful, with 66.7% of them in the Ndonga Linena Green Scheme project indicating so and 54.5% from the Shadikongoro Green Scheme project rating similarly. 18.2% of SSIFs in the Shadikongoro Green Scheme project rated the service of the commercial farmer, poor and satisfactory and cited that timing and management between land preparation and planting has not been optimal and there are no monthly briefings on each month's expenditure, so it assists them into planning accordingly. 8.3% of the SSIFs in the

Ndonga Linena Green Scheme project rated the service of their commercial farmer, satisfactory. Overall, majority of the SSIFs in both Green Scheme projects seem satisfied with the service delivery of their respective commercial farmer as shown by Figure **4.30**.

4.6.8. Suggested changes in the Green Scheme farming model?

SSIFs were queried on how and what they wished to change in the current Green Scheme model. Their opinions we then themed and quantified in SPSS and Microsoft excel as follows;

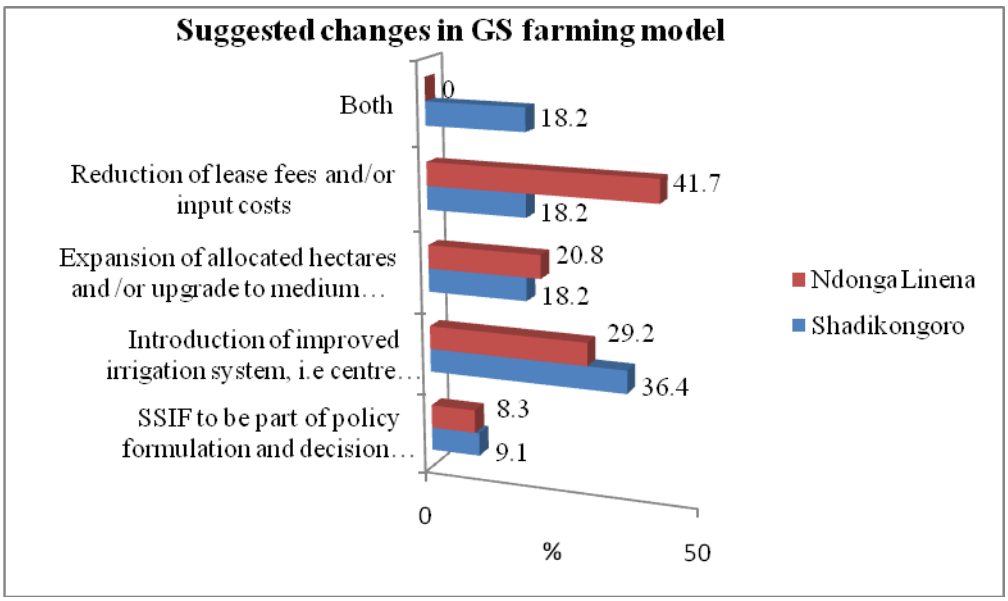

Figure 4.31: Suggested changes in GS model by SSIFs

Source: Author's own analysis from survey data

Figure 4.31 illustrates that the majority of SSIFs in the Shadikongoro Green Scheme project, 36.4% suggested an improved irrigation system needed to be introduced. They further went on to suggest that the dragline irrigation system be replaced with a centre pivot irrigation system in that regard. 18.2% suggested that the hectares allocated to

them either need to the expanded or they should be upgraded to medium scale irrigation farmers. 18.2 % further suggested that lease fees and/or input costs need to be reduced. In the same vein, they further went on to suggest that government subsidise agricultural inputs, as it is very expensive now and leads to farmers not making net profits. Quite interestingly, 9.1% of them suggested they become part of Green Scheme's decision making and policy formulations.

Results from the Ndonga Linena Green Scheme shows that, the majority (41.7%) would like to see a reduction in lease fees and/or input prices, seconded by an introduction of improved irrigation system over the existing drag line irrigation system and expansion of allocated hectares and/or upgrade to MSIFs with 20.8%. Only 8.3% of them suggested they become part of Green Scheme decision making and policy formulations.

4.7. Discussion

As mentioned earlier, the following sub objectives guided this study and discussions thereof:

- To assess the selected communities' awareness and knowledge on the provision of farming units to small scale farmers within the Green Scheme projects
- To assess the extent of small scale farmers integration into the Green Scheme Projects in the Kavango regions
- To assess the extent of capacity building of small scale farmers as per the objective of the Public-Private partnership model

- To identify points of intervention to improve the adopted Public-Private Partnership model

4.7.1. Assessment of the selected communities' awareness and knowledge on the provision of farming units to small scale farmers within the Green Scheme projects

The two constituencies which were surveyed in this regard are the Mukwe and the Ndonga Linena constituencies, which house the Shadikongoro and the Ndonga Linena Green Scheme projects respectively. This section of the study was captured by the following sub sections and questions within the questionnaire; Awareness of benefits brought by the Green Scheme project within the constituency; awareness and knowledge that they could become SSIFs in the Green Schemes and then knowledge of application procedure to becoming a SSIF.

The findings from the Mukwe constituency show that 71.1% of participants are aware of the benefits derived from the Green Scheme project. In the Ndonga Linena constituency, on the other hand, 68.8% of participants responded positive in that regard. The Green Scheme policy lists rural communities and emerging commercial irrigation farmers as part of the target groups, the Green Scheme Programme was designed to benefit (MAWF, 2008). It is thus, a good statistic to note that communities have acknowledged the benefits derived from the same initiative. When queried on whether they know they can become SSIFs within the Green Scheme projects, only 45.2% of the participants within the Mukwe constituency indicated they were aware and a lower proportion from the Ndonga Linena constituency (37.5%) indicated so.

A lot still needs to be done in terms of passing relevant information to the rural communities. It is indeed one thing for government to introduce pro-poor development, but it is another thing to make sure the target groups are aware of such developmental initiatives to ensure they benefit. In this regard, the challenge is for Agricultural Extension workers, AGRIBUSDEV employees and all Green Scheme implementers to ensure that information regarding this very important initiative is passed down to the communities, especially now that the government intends to expand the Green Schemes within the period of NDP 5. The Namibian government emphatically lists increasing agricultural production as well as enhancing smallholder or communal farmers' productivity as strategies to achieving its desired strategic outcomes in terms of food production and poverty reduction within the NDP 5 period (NPC, 2017).

Furthermore, results from the Mukwe constituency show that more females (55.6%) know that they can become SSIFs than males (44.4%), while more males (66.7%) are aware of such provisions than females (33.3%) in the Ndonga Linena constituency. Awareness on becoming an SSIF is thus not associated to gender. In the Mukwe constituency, the 20-30 years age group, seconded by the 31-40 years age bracket is more aware that they could become SSIFs in the project. While, in the Ndonga Linena constituency, majority of those aware are from the 20-30 years and the 31-40 years age brackets. Awareness is thus reaching the target age groups in this regard.

In terms of awareness with regards to educational level, results in the Mukwe constituency indicated that, participants with grade 10 and then grade 12 as their highest educational levels are more aware they can become SSIFs compared to the more

educated participants and those with no education at all, however, using the Chi-Square test, the same results shows that there was no significant relationship (X^2=6.216; p= 0.184) between level of education and awareness of becoming a SSIF in the Green Scheme project. Thus, the awareness to becoming a SSIF in the Green Scheme project is not associated to participants' level of education. In the Ndonga Linena constituency, on the other hand, results show a similar pattern with the majority of those aware being participants with grade 10 highest educational level. On the contrary, results showed that there was a significant relationship (X^2 =36.978; p<0.01) between level of education and awareness of becoming SSIFs in the Green Scheme project, with the less educated being more aware that they could become SSIFs, but not applicable to those with no education at all.

In both constituencies, newspapers/ notice boards and agricultural extension workers/persons seem to be two of the most effective awareness modes. In terms of awareness on the application procedure to becoming a SSIF, only 10% (24) of the participants indicated to be aware of the application procedure in the Mukwe constituency and it is near evenly distributed amongst gender. In the Ndonga Linena constituency, on the other hand, 37.5% indicated they are aware of the application procedure, with 63% of those being males. Thus, overall, more males are aware of the application procedure than females. In both the Mukwe and Ndonga Linena constituencies, the 20-30 years age group is more aware of the application procedure. This is the age bracket with most out of school individuals looking for opportunities to venture in. In terms of highest educational level, the majority of those who knows the application procedure in the Mukwe constituency are participants with grade 12,

seconded by those with grade 10 and lastly, those with no education at all. Using the Chi-Square test, results show that there was a significant relationship (X^2=11.618; p=0.020) between level of education and knowing the application procedure to becoming a SSIF in the Green Scheme project, thus, awareness of application procedure is associated with participants' educational level, with the less educated more aware of the application procedures to be a SSIF in the Green Scheme projects. In the Ndonga Linena constituency, results show that, out of the 60 participants who indicated they are aware that they know the application procedure to becoming a SSIF in the Green Scheme project, the majority are individuals with grade 10 as their highest qualification, seconded by participants with undergraduate qualification then grade 12 participants. Using the Chi-Square test, results show that there was a significant relationship (X^2 =18.881; p<0.01) between participants' level of education and knowing the application procedure to becoming a SSIF in the Green Scheme. Awareness of application procedure is thus associated with an individual's level of education.

In summary, with regards to this objective, the study reveals that there is an awareness gap that needs to be filled with regards to community awareness and different methods of information dissemination will have to be intensified to address that awareness gap, enhance participation into the Green Scheme project and ultimately reduce poverty and ensure food security. The study also revealed that, awareness is somewhat associated to participants' level of education, with the less educated being more aware than the better educated and individuals with no education at all.

4.7.2. To assess the extent of small scale farmers integration into the Green Scheme projects in the Kavango regions

Results show that all the SSIFs in the two Green Scheme projects have been SSIFs for more than five years, thus they have not been any recruitment of SSIFs in over five years. Interview with the Farm manager of the Shadikongoro Green Scheme project revealed that, at inception, the number of SSIFs were 30. These set of SSIFs left due to the challenge of a lack of housing at the project and then later increased to 6 and now 14. Currently, all SSIFs are now housed at the Green Scheme project this helps soothe their integration into the system. The Ndonga Linena Farm manager indicated that the number of SSIFs has decreased from 29 to 26 as those that left got different types of employment elsewhere. Initially, small scale farmers should graduate to medium scale farmers after a period of 5 years, but this, however, does not happen.

There are initiatives currently employed in the Green Scheme projects to help integrate the recruited SSIFs and these include; Co-designing of cropping programs by AGRIBUSDEV farm level experts, for example, Agronomists and Farm managers; exposure trips to other projects are done as well as trainings on Good Agricultural Practice (GAP). Furthermore, SSIFs are offered ploughing and planting services, spraying and watering services to their plots in addition to the provision of housing at the project site.

In summary, integration of SSIFs in the Green Scheme projects will need to be re-enforced as currently, they have not been recruitment in over 5 years and no SSIF has been promoted to MSIF as initially set. Increased integration efforts will result in more SSIFs empowered and ultimately increase agricultural productivity and reduce poverty.

4.7.3. To assess the extent of capacity building of small scale farmers as per the objective of the Public-Private partnership model

In this objective, SSIFs in the two Green Schemes, namely; Shadikongoro Green Scheme project and the Ndonga Linena Green Scheme project were asked to give opinions with regards to the capacity building section of this study. The following sub sections were used in addressing this objective, such as; interaction between SSIFs and with the commercial farmer; training undertaken vis-à-vis training needs as well as service ratings of the commercial farmer. In both study Green Scheme projects, there is at least some interaction amongst SSIFs, with the majority of SSIFs in the Shadikongoro Green Scheme project indicating that they at least interact once a month, and the majority in the Ndonga Linena Green Scheme project indicating that they interact more than once a week. This is especially good in terms of sharing knowledge, challenges and solutions amongst themselves. Nearly all the SSIFs see the need for interacting amongst one another; this shows that they value the transfer of knowledge and skills. The majority of SSIFs in both study Green Scheme projects indicated that they interact with the commercial farmer at least once a week. Results show that there is more interaction of SSIFs with the commercial farmer than with themselves.

With regards to trainings undertaken, all SSIFs indicated they have attended training in especially horticultural production. It is a prerequisite that all SSIFs undertake the National Green Scheme Training Programme offered by the Mashare Irrigation Training Centre (MITC) aimed at training the Small-Scale Irrigation Farmers (SSIFs) at least after being recruited into the Green Scheme if not prior. SSIFs suggested several types of training needs believed to substantially improve their productivity and these include: Good Agricultural Practice (GAP); Finance, bookkeeping and marketing; Use of modern farm machinery and computer/office administration. The majority of SSIFs believes training in the use of modern farm machinery, for example, tractors will indefinitely enhance their productivity, while the majority of SSIFs in the Ndonga Linena Green Scheme suggested continuous trainings on Good Agricultural Practice (GAP), with special emphasis on modern trends on crop production will keep them well on par with the advancing technologies and ultimately improve their productivity. In fact, a study by Fiebiger et al (2010) listed a *lack of production knowledge and know-how related to post-harvest handling to optimise and control production* as one of the challenges faced by SSIFs in the communal areas of Northern Namibia. The importance of trainings in bridging this knowledge gap cannot be over emphasised.

When asked to rate the services of the commercial farmer, the majority of the SSIFs indicated that the services provided by the commercial farmer has been helpful. However, all the SSIFs had suggested training was needed to enhance their on-farm productivity.

In summary, even though there is already knowledge and skills transfer taking place in the Green Scheme projects, this study illustrated the need to intensify this capacity building process. The SSIFs suggested several training needs that will improve their productivity.

4.7.4. To identify points of intervention to improve the adopted Public-Private Partnership model

To identify points of intervention, every aspect of the study was analysed to draw out concerns, shortcomings and suggestions in the currently utilised PPP model. To begin with, SSIFs were queried on how and what they wished to change in the current Green Scheme model. The suggestions were classified and themed as follows;

- **Reduction of lease fees and/or input costs**. SSIFs complained that the current lease fee is a little too high, especially in times of bad harvests, thus suggested it be reduced. This lease fee currently stands at N$12000/annum. Additionally, concerns over input costs were raised. The possibility of government subsidising these agricultural input costs could be an intervention in this regard. Most of these inputs are imported from South Africa and thus monopolised; government could curb this by operating an agriculture input centre in either one of the already existing Green Scheme projects or an entirely new one to locally produce essential agricultural inputs. This will ensure SSIFs reduce expenditure on inputs and ultimately generate profits.
- **Expansion of allocated hectares and/or upgrade to MSIF.** SSIFs within the study Green Scheme projects raised concerns of them not being upgraded to

MSIFs after a period of 5 years as was initially set. They further suggested that their allocated hectares be expanded if they cannot be upgraded to MSIFs. One of the challenges facing SSIFs is the lack of access to credit facilities; upgrade to MSIFs will ensure these SSIFs have access to credit facilities.

- **Introduction of improved irrigation systems**. SSIFs suggested that the existing dragline irrigation system be replaced with a centre pivot irrigation system. The centre pivot irrigation system is considered a highly efficient system and helps conserve water than the most irrigation systems.
- **SSIFs to be part of Green Scheme policy formulation and decision making.** Decision making within the Green Scheme Programme need to take a bottom-up approach and ensure that decisions that affects the programme involves intended beneficiaries. This will ensure that collective decisions are made.

Additionally, SSIFs surveyed recommended training in Good Agricultural Practice (GAP) and in the same vein, raised concerns about not meeting quality standards set by AMTA. The role of AMTA is this regard will need to be intensified. Capacity building on GAP to ensure adherence to quality standards will be helpful in entering the high value markets. With regards to capacitating the SSIFs, the model of training of trainers could be used. Another avenue to improve this model is to form SSIF cooperatives to enable them to access financial institutions as a cooperative. The first step in this regard would be to promote the use of bank accounts amongst these SSIFs as also recommended by Fiebiger et al (2010).

4.8. Summary of chapter

This chapter presented research results and interpretations per Green Scheme and as a cluster and then discussed the research findings. Discussions were guided by the study objectives. The study found that there is an awareness gap that needs to be addressed with regards to community awareness and different methods of information dissemination will have to be identified to address that awareness gap. The study also revealed that, awareness is somewhat associated with the participants' level of education, with the less educated being more aware than the better educated and individuals with no education at all. With regards to integration of SSIFs in the Green Scheme, results indicated that efforts to integrate them will need to be re-enforced as currently, they have not been any recruitment in over 5 years and no SSIF has been promoted to MSIF as initially set. Capacity building of SSIFs also need to be intensified, even though the study indicated that there is already knowledge and skills transfer taking place in the Green Scheme projects. Furthermore, this study clearly identified points of interventions to help improve the adopted Green Scheme farming model. The subsequent chapter looks at the conclusion and then suggests recommendations according to the study findings.

CHAPTER 5

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

Chapter five outlines the summary, conclusions and recommendations which have been deduced from the preceding chapter, which discussed the research findings. The conclusions are guided by the findings of the study. The chapter begins with the contributions to knowledge, followed by the recommendations and finally the suggestions for further studies based on the study limitations.

5.2. Summary

Below is a summary of the study:

5.2.1. Objectives of the study

The main objective of this study was to evaluate the Green Scheme projects in the Kavango region with specific emphasis on the integration and capacity building of small scale farmers as well as the awareness of local communities on the provision of farming units to small scale farmers within the Green Scheme projects to which they could participate. The two selected Green Scheme projects were: the Shadikongoro and the Ndonga Linena Green Scheme projects, thus the two constituencies from which community members were sampled from are the Mukwe and the Ndonga Linena constituency, respectively.

The following were the specific objectives of the study:

- To assess the extent of capacity building of small scale farmers as per the objective of the Public-Private partnership model

- To assess the extent of small scale farmers integration into the Green Scheme Projects in the Kavango regions
- To assess the selected communities' awareness and knowledge on the provision of farming units to small scale farmers within the Green Scheme projects
- To identify points of intervention to improve the adopted Public-Private Partnership model

5.2.2. Research methods

This research was a mixed approach research as both qualitative and quantitative research methods were utilized. The methods of collecting data were by means of semi-structured questionnaires and face to face interviews, assisted by document reviews. On community awareness, 239 participants were surveyed in the Mukwe constituency, while 160 participants responded to the same survey in the Ndonga Linena constituency. 11 SSIFs were queried in the Shadikongoro Green Scheme project and 24 from the Ndonga Linena Green Scheme project. Data was collated in Microsoft excel and analysed using the Statistical Package for Social Sciences (SPSS). Analysed results from SPPS were then used to create graphs in Microsoft Excel. The ATLAS.ti software was used to draw themes from qualitative responses of the community awareness questionnaires. The results were interpreted using frequencies tables, charts and chi-square tests.

5.3. Conclusions

The study revealed that most community members are unaware on how they could personally participate in the Green Schemes. For example, a much lesser proportion of them know the application procedures to becoming an SSIF in the Green Schemes. The study revealed the need for more intensified information dissemination. Using the Chi-Square tests, results in the two studied constituencies revealed that there is a significant relationship ($p=0.020$ and $p<0.05$) between the level of education and knowing the application procedure to becoming a SSIF in the Green Scheme, thus, awareness of application procedure is associated with participants' educational level, with the less educated more aware of the application procedures to be a SSIF in the Green Scheme projects.

In terms of integration, it was observed that the SSIFs in the Green Scheme are being assisted in many ways by the commercial farmer, but more still needs to be done. The study also revealed that there have not been opportunities for community members to be recruited and integrated as SSIFs in the Green Scheme projects for the past 5 years, a statistic that needs to change if the Green Schemes are to serve the rural communities. Furthermore, the study revealed that the SSIFs in the Green Schemes need capacity building initiatives, such as training in Good Agricultural Practice (GAP) to improve their productivity. Empowered SSIFs in the Green Scheme will pass on the knowledge gained to their families and fellow community members and ultimately ensure food security.

Finally, the study identified points of intervention to improving the adopted farming model as follows: Reduction of lease fees and agricultural input costs; expansion of allocated hectares if not the systematic promotion of SSIFs to MSIFs; Introduction of improved irrigation systems; involvement of SSIFs as part of Green Scheme policy formulation and decision making; possible training of trainers, targeting Green Scheme implementers and the formation of SSIF cooperatives.

5.4. Recommendations

In view of the objectives, findings and conclusions of this study, the following recommendations were made:

1. AGRIBUSDEV needs to work closely with the Directorate of Agricultural Production, Extension and Engineering Services in the Ministry of Agriculture, Water and Forestry (MAWF) to develop awareness programmes on opportunities that the Green Scheme Programme (GSP) offers. This programme should mostly target rural small holder farming communities.
2. The application process to becoming a SSIF in the Green Scheme and any other information beneficial to rural communities will have to be decentralized at their lowest possible office.
3. AGRISBUSDEV and the Directorate of Agricultural Production, Extension and Engineering Services in the Ministry of Agriculture, Water and Forestry (MAWF) to assist SSIFs in forming cooperatives and encourage SSIFs to use

bank accounts to enhance their chances of accessing financial institutions for funding.

4. Government could possibly subsidize the cost of agricultural inputs for the SSIFs as it is very expensive. Alternatively, and in the long run, government could start an agricultural inputs centre to locally produce these inputs.
5. A skills transfer programme must be developed for each Green Scheme project and host constituency, where training and development, capacity building are offered to both the SSIFs in the Green Scheme and the local communities so that they may be capacitated based on yearly need-gap analysis. This could also be done, through training of trainers, who will in turn train the SSIFs.

5.5. Limitations and recommendations for future study

The study was limited to only three factors, which are; awareness, integration and capacity building of small scale farmers and not the overall evaluation of the selected Green Scheme projects, the researcher therefore recommends for a study to evaluate areas of Green Scheme projects considered to influence food security and overall socio-economic contribution that this study did not cover. Additionally, the researcher also recommends a subsequent study on community acceptance and perception of Green Scheme projects in the Kavango region. That subsequent study will complement the findings from this study and determine in totality, how the areas of awareness, integration and capacity building will be addressed taking into consideration the current perceptions and views that community members have on the Green Scheme projects.

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APPENDIX A: COMMUNITY AWARENESS QUESTIONNAIRE

My name is OswaldSiku Mughongora, an MBA (Natural Resource Management) student at Namibia Business School. The reason for my visit to the Kavango regions is to conduct an evaluation of the Green Scheme Projects in the Kavango regions, in terms of awareness, integration and capacity building of small scale irrigation farmers. The purpose of this research is purely academic, and it will not be used for any commercial gain.

The overall aim of this research is to gather information that would help improve the Green Scheme project's socio-economic contribution to the livelihood of rural communities. This specific questionnaire seeks to assess the selected communities' awareness and knowledge about the provision of farming units to small scale irrigation farmers within the Green Scheme projects. This is an initiative designed to benefit the rural communities, thus their awareness of it, is of major importance to that effect. The results will assist in identifying points of intervention to improve the adopted Public-Private Partnership model, while ensuring future participation of uninformed individuals into the incentive.

PART A: BACKGROUND INFORMATION

1. Gender:

- ☐ Male
- ☐ Female

2. Marital status

- ☐ Single
- ☐ Married
- ☐ Divorced/Widow/Widower

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3. Age:

- ☐ ≤ 19 years old
- ☐ 20-30 years old
- ☐ 31-40 years old
- ☐ 41 years old or more

4. Household / family size

- ☐ 1 - 5 people
- ☐ 6 - 10 people
- ☐ 11 people or more

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5. Highest educational level:

- ☐ Non
- ☐ ≤ Grade 10
- ☐ Grade 12 certificate
- ☐ Under graduate *(university, Technikon, training college etc.)*
- ☐ Postgraduate

6. Employment status

- ☐ Unemployed
- ☐ Government / State-owned Enterprise employee
- ☐ Private
- ☐ Others: (specify)……

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7. CONSTITUENCY……

PART B: INTERVIEW QUESTIONS

8. Are you aware of benefits brought by the Green Scheme projects to your community?

☐ Yes
☐ No

9. Are you involved in subsistence farming or at least have knowledge in crop farming?

☐ Yes
☐ No

10. Do you know that you can become a small-scale irrigation farmer in the Green Scheme projects?

☐ Yes
☐ No

If you answered yes, continue with question 10.1

If your answer was no, skip to question 12

10.1. How did you hear you can be involved in the Green Scheme projects as a small-scale irrigation farmer?

☐ Radio
☐ TV
☐ Newspaper
☐ Books, journals
☐ Others ……

11. Have you ever applied to become a small-scale irrigation farmer in the Green Scheme projects?

☐ Yes. If yes, why was your application unsuccessful?

☐ No. Ifno, why are you not interested in applying?

---

12. Are you interested in becoming a small-scale irrigation farmer within the Green Scheme projects?

☐ Yes
☐ No

13. Do you know of the application procedure to become a small-scale irrigation farmer in the Green Scheme projects?

☐ Yes. If yes, what is the application procedure?

☐ No. If no, would you love to know the application procedure?

14. How can the application procedure to becoming a small-scale irrigation farmer in the Green Scheme project be improved?

15. Any other comment?

APPENDIX B: SMALL SCALE IRRIGATION FARMERS (SSIFS) QUESTIONNAIRE

My name is Oswald Siku Mughongora, an MBA (Natural Resource Management) student at Namibia Business School. The reason for my visit to the Kavango regions is to conduct an evaluation of the Green Scheme Projects in the Kavango regions, in terms of awareness, integration and capacity building of small scale irrigation farmers. The purpose of this research is purely academic, and it will not be used for any commercial gain. The research is guided by four objectives, with an overall aim to gather information that would assist in improving the Green Scheme project's socio-economic contribution in line with the Harambee Prosperity Plan and these objectives are:

- To assess the extent of small scale irrigation farmers' integration into the Green Scheme Projects in the Kavango regions
- To assess the extent of capacity building of small scale irrigation farmers as per the objective of the Public-Private partnership farming model
- To evaluate the satisfaction of small scale irrigation farmers with regards to technology transfer offered by the commercial (Private) farmer employed in the Public-Private Partnership model
- To identify points of intervention to improve the adopted Green Scheme farming model

PART A: BACKGROUND INFORMATION

1. Gender:

- ☐ Male
- ☐ Female

2. Marital status

- ☐ Single
- ☐ Married
- ☐ Divorced/Widow/Widower

---

3. Age:

- ☐ 10-19 years old
- ☐ 20-30 years old
- ☐ 31-40 years old
- ☐ 41 years old or more

4.Household / family size

- ☐ 1 - 5 people
- ☐ 6 - 10 people
- ☐ 11 people or more

---

5. Highest educational level

- ☐ ≤ Grade 10
- ☐ Grade 12
- ☐ Under graduate *(university, Technikon, training college etc.)*
- ☐ Postgraduate

6. Employment status

- ☐ Unemployed
- ☐ Government employee
- ☐ State-owned Enterprise employee
- ☐ Private
- ☐ Others: (specify)……

7. Name of Green Scheme Project……

PART B: INTERVIEW QUESTIONS

8. How long have you been a small-scale irrigation farmer?

- ☐ Less than a year
- ☐ 1-5 years
- ☐ More Than Five Years

9. How did you hear about applying to be a small-scale irrigation farmer?

- ☑ Radio
- ☐ TV
- ☐ Newspaper
- ☐ Books, journals
- ☐ Others

10. Are you aware how many small-scale irrigation farmers are you in total in this Green Scheme project?

- ☐ Yes
- ☐ No
- ☐ If yes, how many are you?

☐if no, why do you think is the reason you do not know?

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11. How often do you interact with fellow small-scale irrigation farmers in the project?

- ☐ Have never interacted
- ☐ Once a week
- ☐ Once a month
- ☐ Others, Specify

---

12. Do you see the need for you to interact with fellow small-scale irrigation farmers in the project?

- ☐ Yes. If yes, explain what need it is?

- ☐ No

13. Do you know the commercial (private) farmer in the project?

- ☐ Yes

☐ No

14. How often do you interact with the commercial (private) farmer in the project?

☐ Have never interacted
☐ Once a week
☐ Once a month
☐ Others, Specify

_____

15. Have you undergone training since becoming a small-scale irrigation farmer?

☐ Yes
☐ No

16. What trainings and skills transfer have you undergone so far?

_____

_____

_____

_____

17. How would you rate the services you receive from the commercial (private) farmer?

☐ Poor
☐ Satisfactory
☐ Helpful
☐ Very helpful

18. If your answer to 18 was; poor and/ or satisfactory, what do you suggest the commercial (private) farmer can do to improve their service delivery to you?

_____

_____

19. What training do you think you still need to increase your production?

_____

_____

_____

_____

20. Overall, has the Green Scheme project been helpful to you?

☐ Yes
☐ No

21. What would you like to be changed in the current Green Scheme farming model?

22. Any other comment?

APPENDIX C: FARM MANAGER'S INTERVIEW QUESTIONS

INTRODUCTION

My name is Oswald Siku Mughongora, an MBA (Natural Resource Management) student at Namibia Business School, University of Namibia. This interview is part of an evaluation of the Green Scheme Projects in the Kavango regions, in terms of awareness, integration and capacity building of small scale farmers. The overall aim of this research is to gather information that would assist in improving the Green Scheme project's socio-economic contribution in line with the Harambee Prosperity Plan, guided by the following objectives:

- To assess the extent of small scale farmers' integration into the Green Scheme Projects in the Kavango regions
- To assess the extent of capacity building of small scale farmers as per the objective of the Public-Private partnership farming model
- To assess the selected communities' knowledge and awareness about the provision of farming units to small scale farmers within the Green Scheme projects
- To identify points of intervention to improve the adopted Green Scheme farming model

INTERVIEW QUESTIONS

1. How many small-scale farmers were there when the Green Scheme Programme started?

2. How has the number of small scale farmers changed over the years and to what would you associate the change?

3. How often are small-scale farmers integrated (recruited) into the Green Scheme projects? How will you rate this interval of integration (recruitment)?

4. What is the medium/method currently used to invite small scale farmers' applications?

5. How will you rate the local communities on their awareness that they can participate in Green Scheme projects as small-scale farmers?

6. Taking into consideration the fact that, preference for integration (recruitment) as a small-scale farmer is given to rural communities residing near the projects, most preferably unemployed individuals. Do you think the current application method really captures the target group? What other advertisement medium/methods can be used to effectively and efficiently reach the target group?

7. What is the selection criteria used for small scale farmers' integration (recruitment) into the Green Scheme projects?

8. Do you think preference is given to local communities in terms of small-scale farmers' selection?

□ Yes.

□ No. If no, explain?

9. What preferential criteria are being used in cases where more than one local community member applies?

10. Have the local communities really benefited from the Green Scheme projects?

11. Has the productivity of small scale farmers in the Green Scheme projects improve over the years?

□ Yes
□ No

12. To what will you attribute the improvement in productivity to?

13. How will you rate the services of the commercial (private) farmer to the small-scale farmers in the Green Scheme projects?

14. How can the service delivery of the commercial (private) farmer to small scale farmers be improved?

15. What mechanisms are currently there to help small scale farmers to become successful?

16. What should be done to further improve the productivity of small scale farmers in the Green Scheme projects to effectively contribute towards food security?

17. Overall, has the Green Scheme Programme been successful?

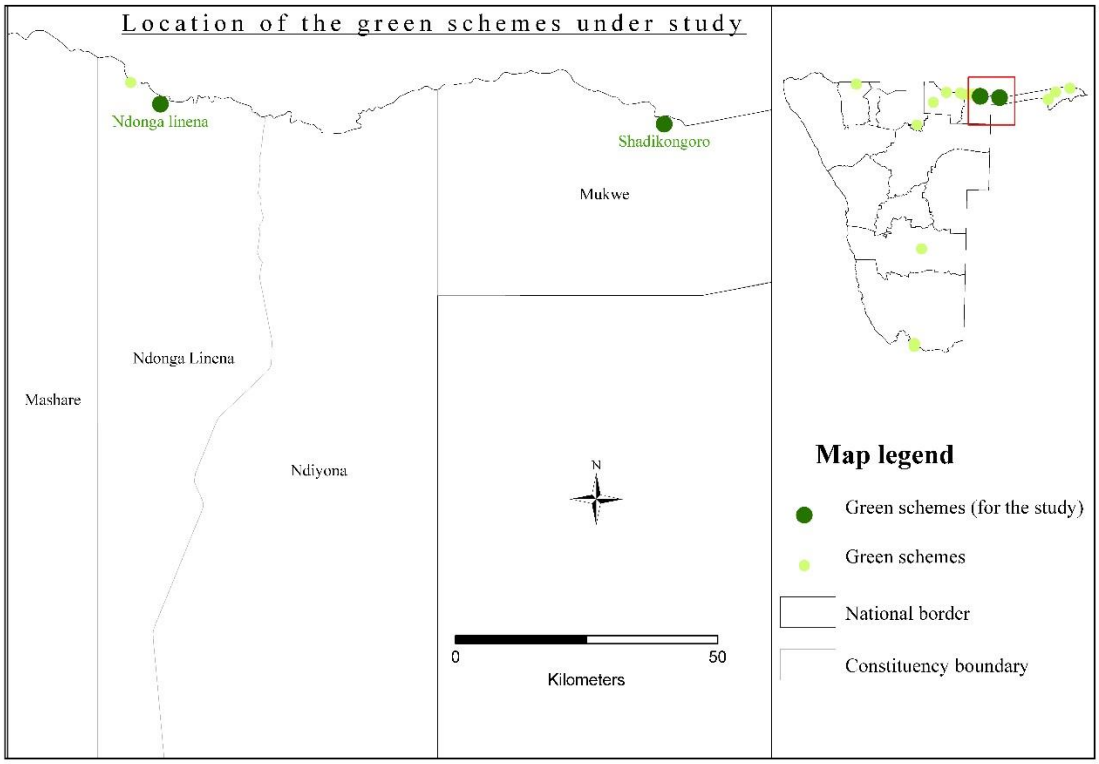
☐ Yes
☐ No

Elaborate on your choice

18. What would you like to be changed and/or improved in the current Green Scheme programme?

19. Any other comments?

APPENDIX D: LOCATION OF GREEN SCHEME PROJECTS UNDER STUDY



Source: Author's own construct using Arc Map

APPENDIX E: LANGUAGE & COPY-EDITTING CERFICATE

Dr.GM

The Rev. Dr. Greenfield Mwakipesile
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CONTACT

PO Box 40529,
Ausspannplatz,
Windhoek,
Namibia

LANGUAGE & COPY-EDITING CERTIFICATE

13th December 2017

RE: LANGUAGE, COPYEDITING AND PROOFREADING OF OSWALD SIKU MUGHONGORA's THESIS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE OF THE UNIVERSITY OF NAMIBIA

This letter serves to confirm that I copyedited and proofread **OSWALD SIKU MUGHONGORA's** Thesis for the degree of **MASTER OF BUSINESS ADMINISTRATION** entitled: **AN EVALUATION OF GREEN SCHEME PROJECTS IN THE KAVANGO: THE AWARENESS, INTEGRATION AND CAPACITY BUILDING OF SMALL SCALE FARMERS**

I declare that I professionally copyedited and proofread the thesis and removed mistakes and errors in spelling, grammar and punctuation. In some cases, I improved sentence construction without changing the content provided by the student. I also removed some typographical errors from the thesis and formatted the thesis so that it complies with UNAM's guidelines.

I am a trained language and copy editor and have edited many Postgraduate Diploma, Masters' Thesis, Dissertations and Doctoral Dissertations for students studying with universities in Namibia, Zimbabwe, Swaziland and South Africa.

Please feel free to contact me should the need arise.

Yours Sincerely,

The Rev. Dr. Greenfield Mwakipesile