

**IMPLICATIONS OF FOOD VALUE CHAIN SUPPORT STRUCTURES FOR  
WATER RESOURCE MANAGEMENT BY SMALLHOLDER FARMERS IN  
THE EASTERN CAPE PROVINCE**



**University of Fort Hare**  
*Together in Excellence*

**A Dissertation Submitted in Fulfilment of the Requirement for the Degree of  
Master of Science in Agriculture (Agricultural Economics)**

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## ABSTRACT

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*Smallholder agriculture is faced with so many challenges despite all the policies and programmes that have been channelled towards ensuring improvement in this sector. Improving smallholder agricultural productivity requires that smallholder farmers gain access to reliable and adequate farmer support services such as physical infrastructures like good road network, functional irrigation facilities, extension services, finance and efficient marketing system. However, these support services are lacking in a vast majority of the rural communities in which the smallholder farmers live and work. This study is centred on governance within the food value chains, with specific focus on butternuts and chicken value chains; with a view to identifying those factors preventing smallholder farmers from accessing the mainstream market.*

*Ciko and Mbozi villages in Mbashe local municipality were used as the research sites for the study. Data were collected across the two villages through sampling of 100 individual farming households based on random selection; questionnaires and checklist of questions were used as tools to access information from farmers through focus group discussions, personal interviews and key informants. In addition, Ciko Santrini project and foundation community project, which are the two agricultural community projects located within the study area were also investigated. Conceptual and analytical frameworks were employed in the research analysis. Williamson's 4-level of social analysis and the sustainable livelihood frameworks were used to conceptualize the analysis.*

*Inferential analysis was carried out using binary logistic regression and discriminant analysis with focus on butternuts and chicken production among the smallholder farmers in the study area to determine factors that could encourage farmers 'access markets. The results showed that factors such as; assistance from government agency, partnerships with private and public institutions and farmers' decision due to access to information were significant at 1% level for both butternuts and chicken production. On the other hand, factors such as provision of input subsidy and farmers' membership of agricultural development projects are significant at 5% level. The findings suggest that adoption of any or combination of the significant factors could serve as good support structures for farmers and they could directly help them market their produce efficiently.*

**Key words:** support structures, governance, food value chain; Williamsons' 4-level of social analysis, smallholder farmers, sustainable livelihood framework, market access, binary logistic regression model and discriminant analysis, Eastern Cape Province.

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## DECLARATION

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I, STEVEN ALABA AROWOLO hereby declare that the work contained in this thesis is my own and that other scholars' work referred to here have been duly acknowledged. I also declare that this thesis is original and has not been submitted elsewhere for a degree.

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Steven A. Arowolo

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Date

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## LIST OF ABBREVIATIONS

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ARDRI	Agriculture and Rural Development Research Institute
DAFF	Department of Agriculture, Forestry and Fisheries
DFID	Department for International Development funds
DoSD	Department of Social Development
ECDA	Eastern Cape Department of Agriculture
ECRDS	Eastern Cape Rural Development Strategy
FAO	Food and Agricultural Organization
FCP	Foundation Community Project
GDP	Gross Domestic Product
INR	Institute of Natural Resources
MDGs	Millennium Development Goals
NEPAD	New Partnership for Africa's Development
NIE	New Institutional Economics
SLF	Sustainable Livelihoods Frameworks
UFH	University of Fort Hare
WRC	Water Research Commission
WUA	Water Users Association
SPSS	Statistical Package for social scientists

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**DEDICATION**

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**To**

*God; the Alpha and the Omega*

*And the three special people in my life;*

*Afolake, Daniel and Emmanuel*

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**1.1 Background**

The South African agro-food complex, which consists of primary production plus the input and agro-processing sectors, accounts for around 14 percent of the GDP, but very little of this emanates from the smallholder sector (FAO, 2004). According to Hyden (1986), most farmers in developing countries, which include the smallholder sector in South Africa, are “resource poor”; they lack access to land, water, implements, and labour and/or management skills necessary to farm successfully.

Scherr *et al.*, (2010) observed that roughly half of the 1 billion hungry in 2009 were smallholder farmers, 22% are rural landless, 20% are the urban poor, and 8% are populations that depend mainly on natural resources, such as fishers, herders, and forest dwellers. A significant percentage of these ‘poor and hungry’ are concentrated in Sub-Saharan Africa. Development of smallholder agriculture among the rural poor should form the major priority of most African countries; this becomes necessary if these countries are to meet the Millennium Development Goals (MDGs) of halving poverty and extreme hunger by 2015. It has often been mentioned that much of the current problems on the continent of Africa arise from the fact that it was largely by-passed by the immense benefits that resulted from the Green Revolution that significantly transformed livelihoods in Asia. One compelling reason for this situation is the significance difference in the nature and degree of support structures serving farmers in the two geographical settings.

In terms of agricultural production, the biggest difference between Africa and Asia is that Asia has had a high and rising food production per capita during recent decades, whereas Africa has low and falling food production per capita. The Asian countryside is densely populated, with a relatively extensive road network that can carry fertilizer to the farms and farm outputs to the markets. Farmers use fertilizers and irrigation, and crop yields are high (Sachs, 2005). Farmers will be able to contribute significantly to the economy, if these support structures are fully operational; they will be able to move from merely feeding themselves, to participating actively in the mainstream economy.

Support structures are vital components of value chain analysis. In order to make food production efficient, good support structures must be put in place; the issue is not just how to produce food but how do farmers get good dividends from their food production activities.

Oettle *et al.* (1998) argues that smallholders tend to make use of common property resources such as grazing, firewood, water, wild foods and medicines, and smallholder livelihoods can become unsustainable if these are mis-managed; these common property resources tend to be under-valued by external planners. Rural livelihoods, perhaps especially for the poor, are made up of a whole range of components, many of which are dependent on common pool of resources such as water, fuel wood, gathered foods and medicines, thatch, wildlife and building materials. Although these components are not directly related to agriculture, they are seriously affected by agriculture and other land use practices, and therefore must be critically considered.

A good understanding of both the social and environmental dynamics of rural areas is needed in order to develop strategies for sustainable poverty alleviation. Sustainable and profitable smallholder agriculture can only be one component in a strategy for eradicating rural poverty; however it is a vitally important component. The wrong policies could exacerbate poverty and cause long term damage to the resource base of rural communities and ultimately the country (Oettle et al, 1998).

More so, a better understanding of the institutional environment where these farmers are domicile is very significant to how efficiently they will perform. If there are institutional constraints to productive activities; these farmers will not be able to make significant progress in terms of effective resource utilisation and market participation. This study focuses on resource utilisation and the nature of support structures available to these farmers, with a view to investigating what might be preventing these smallholder farmers from participating in the mainstream economy.

## **1.2 Problem statement**

Eastern Cape agricultural sector is not only relatively small but its contribution to the provincial GDP has been steadily declining since 1998. Agriculture contributed 2.2% to the province's GDP in 2007, this is a reduction when compared to 2.7% in 1998. The province recorded an average real decline in agricultural output of 0.1% per annum from

1995 to 2005 compared to an average output growth of 2.9% per annum for the economy as a whole. The poor output performance of the sector is a reflection of the steady decline in agricultural employment during the period under review (ECRDS, 2010). This portends great danger for food security in this province where a significant percentage of rural households depend on agriculture for their livelihood.

Backeberg, *et al.* (1996) argued that only 37 percent of farmers in South Africa can be considered commercially oriented. Research has further revealed that smallholder farmers can make the transition from subsistence oriented to market oriented production if suitable institutional reforms, particularly with respect to land tenure, are developed (Van Averbeke, *et al.*, 1998). Van Zyl and Vink (1992) observed that increases in agricultural production have large positive impacts on growth, employment and the balance of payments. According to van Zyl and Vink (1988), agriculture also has a strong multiplier effect on employment and input-output analysis indicates that more jobs are created in agriculture with increased production than in any other sector of the economy.

Increasing smallholder agricultural productivity is vital, in view of the increasing scarcity of available land for cultivation which makes meeting the demand for increased agricultural production very difficult. Thus, smallholder farmers should be supported to produce more from the existing land. Without a doubt, prospects for increasing agricultural production through land expansion are not feasible, if the existing lands are not sufficiently utilised due to lack of support services.

It is important for farmers to participate in the market economy due to the many advantages that could spring from it. Such market participation could encourage rural employment and income generation among the rural communities. Lack of access to market information is also part of the problems facing these farmers; they lack access to vital information that could be of immense benefit to them in participating in the mainstream economy.

The physical capital that could impact positively on the productive capacity of these farmers is of critical importance to these smallholder farmers. Similarly, the social capital within the farming community that could facilitate a good working environment for these farmers should be strengthened. In most rural communities, there are norms, customs and traditional beliefs that could have direct or indirect impact on the productive capabilities of

these farmers. There are few areas where these issues are more important than in the individual and collective use of resources, especially when such social initiative is not given the needed support.

Few studies, if any, have specifically examined the role of social and physical capital in mediating livelihood activities under alternative modes of organization of production and in the context of the current agricultural restructuring programme going on in South Africa. Irrigation agriculture at the smallholder level has been identified as an important tool for rural transformation but the nature of the resource involved (water) makes it mandatory that differences between individual and collective use of the resource are considered and factored in development programming. This study will therefore be one opportunity to attempt to fill this gap.

### **1.3 Research objectives**

#### **1.3.1 Main objective**

The main objective of the study is to investigate how collective resource use and adequate support structures contribute to the integration of subsistence and emerging farmers into profitable food value chains in the mainstream economy of South Africa.

#### **1.3.2 Specific objective**

More specifically, the research aims to:

1. Identify the existing support structures of physical and social capital.
2. Analyse the impacts of existing support structures of physical and social capital on the effectiveness of farmers in the study area.
3. Analyse various technical and institutional factors preventing farmers in the study area from accessing the mainstream market.
4. Make recommendation for policy formulation and implementation.

#### **1.3.3 Research questions**

This study is premised on the following analytical questions:

1. What are these existing support structures of physical and social capital?

2. How have the existing support structures of social and physical capital been able to assist farmers in the study area?
3. What are the technical and institutional factors preventing farmers in the study area from accessing the mainstream market?
4. Would good policy formulation and implementation impact on smallholder farmers in the study area?

#### **1.3.4 Hypotheses**

The following hypotheses were tested, in order to achieve the broader objective of the study:

1. Collective approaches to water use and resource access are more effective than individual action.
2. Existing support structures of social and physical capital in the study area are not sufficient in assisting farmers in the study area to be more productive.
3. Technical and institutional factors are preventing farmers in the study area from accessing the mainstream market.
4. Good policy formulation and implementation would impact positively on smallholder farmers in the study area.

#### **1.4 Justification of the study**

This study is reinforced by the application of analytical concepts and frameworks. The social and physical capital concepts are better explained by the application of sustainable livelihood frameworks (DFID, 1999). The sustainable livelihood frameworks (SLF) make it possible to analyse at household level and the various aspects of farmers' livelihoods were taken into considerations. This study becomes necessary due to the significance of agriculture to the South African economy; at least 35% of South Africa's economically active population are directly or indirectly dependent on agriculture (Niewoudt *et al*, 2004). Implications of how resources that have direct bearing on farmers are managed is therefore highly relevant to current debate about agricultural restructuring and smallholder development as well as black economic empowerment in agriculture. Of particular significance is the management and utilization of water resources and land allocation for agricultural purposes. Smallholder and emerging farmers are consistently confronted with

challenges of insufficient support system; this study captures the key elements of institutional constraints to these farmers. The findings from this research will benefit smallholder farmers in the study area, as well as inform policy decisions on smallholder agriculture in larger economy of South Africa.

However, to better appreciate these key elements of institutional constraints, Williamson's, (2000) four level of social analysis was employed in this study. Since it is difficult to totally separate the farmers from their immediate environment, investigations into those social factors which Williamson refers to as "social embeddedness", form essential aspect of this study because of their relevance to the South African multi-cultural environment.

It has been estimated that 70 percent of poor people in South Africa are residing in rural communities (Republic of South Africa of South Africa, 1995; Department of Agriculture, 2001); improving smallholder agricultural productivity among the rural poor population becomes very crucial, as one of the ways of eradicating poverty. Since agriculture contributes directly and indirectly to the GDP, employment and exports, it therefore becomes essential to embark on a research of this nature for better understanding of the agricultural economy with a view to proffering valuable contributions and recommendations that could have significant policy implications for the agricultural sector.

### **1.5 Research outline**

This study is made up of seven chapters. The first chapter captures the introduction to the research; the main context of the study was discussed in this chapter. This chapter also highlights the problems and the objectives of this study, as well as the basis for the research. The chapter presents the research questions and the specific hypotheses. It ended with the justification for the study.

Chapter two presents the theory base for the study; it contains the body of works previously published by other scholars while emphasizing their relevance to this study. Chapter three presents the theoretical and analytical frameworks; it encompasses the methodology used in this study, it outlines the application of the theory used in this study. This chapter also contains the detailed overview of the study area while highlighting the study area selection criteria and processes, geographical characteristics and its significance to the study in general. The results of this study are presented in chapters four, five and six; the results and explanations of collective and individual approaches to water and land

resources utilization were presented in chapter four; chapter five presents the results of analytical frameworks for social and physical capital, while also emphasizing the key elements of institutional constraints using both sustainable livelihoods frameworks (SLF) and the Williamson's 4-levels of social analysis.

A quantitative result on the technical and institutional factors preventing the farmers from accessing the mainstream market is presented in chapter six. A summary of the research findings, conclusions and recommendations followed by a list of references and appendices are presented in chapter seven which is the last chapter.

**2.1 Introduction**

The purpose of this study is to assess the implications of food value chain support structures available to farmers in the study area. The institutional environment where these farmers operate is of paramount significance to this study. This chapter examines the theoretical foundations for this study, and explores the concepts of social analysis and sustainable livelihoods in analysing the role of support structures in smallholders' food value chains. The analytical frameworks upon which this study is premised are broadly articulated and expatiated in this review. The objective of the literature review is to profile some of the previous works that have been done on the subject of support structures of physical and social capital, with a view to providing theoretical basis for this study. The review will provide a critical perspective to the exposition of this study, with the aim of synchronising the core research objectives with the stated research statements, while clarifying the hypothesis to be tested.

This review is organized in three main sections as follows: (1) a review of the concept of food value chain among smallholder farmers, with emphasis on the need to grow the food value chain, value chain governance, specification and operation of commodity chain; (2) a review of the institutional environment where these farmers operate using the Williamson's (2000) social analysis frameworks based on the New Institutional Economics (NIE) model; focussing mainly on "governance" issues with respect to support structures of physical and social capital in relation to smallholder agriculture; (3) a review of Sustainable Livelihoods Frameworks (SLF) in relation to food security and poverty eradication among "resource poor farmers", focussing mainly on their livelihood assets, strategies and outcomes, while highlighting the vulnerability context within which these farmers operate. However, the chapter closes with a section on alternative cooperative governance of collective and individual resource access and utilization, emphasizing how these concepts could impact on smallholder agriculture.

## **2.2 The concept of food value chain**

Kaplinsky and Morris (2000) defined value chain as a full range of activities which are required to bring a product or service from conception through the different phases of production, which involves a combination of physical transformation and the inputs of various producer services, from delivery to final consumer, and final disposal after use. “Traditionally, the value chain concept has been defined using the concept of the firm (Porter, 1998), where a firm refers to a collection of activities that are performed to design, produce, market, deliver and support its product (Porter, 1998, as cited by Muchara, 2011). Stamm (2004) noted that porter’s value chain analysis “consists of a purely description of various stages that are necessary for the production, marketing and distribution of a good or service. From the foregoing, the concept of “value chain” is very relevant to food production processes, especially among the teeming population of smallholder farmers. However, Stamm (2004) argues that Porter’s value chain model limits itself to the level of firm and corporate networks and disregards the aspect of corporate power. This raises the questions on value chain governance and external support structures, especially among rural farmers who are essentially deficient in their abilities to access external supports to help their participation in the entire value chain process.

### **2.2.1 Growing the food value chain among smallholder farmers**

Gerrefi (1994) stresses that value chain should be seen as the interconnectedness of activities from the input side through to production and consumption. Porter (1985) observed that value activities are divided into two broad types, primary activities and support activities. Primary activities are made up of those activities that include the creation of a product, marketing, delivering the product to buyers, as well as after-sales assistance/service. They could be classified into five categories which include inbound logistics (activities associated with receiving, storing and disseminating inputs to the product); operations (activities associated with transforming inputs into the final product); outbound logistics (activities associated with distribution); marketing and sales (activities associated with providing a means by which buyers can purchase a specific product) and service (activities associated with providing services to enhance value of the product).

Porter (1985) further stressed that support activities underpin the primary activities that are vital to each other in exchanging inputs. He defined support activities as classified

into four categories, namely procurement, technology development, human resource management and firm infrastructure. Support services are important in ensuring the efficient functionality of primary activities.

Humphrey and Schmitz (2002) contended that smallholder producers must be able to access lead firms in the value chain. They stressed that smallholder growers are often excluded from the value chains due to sourcing strategies from the lead firms; this action according to them is usually influenced by customers' expectation, safety and environmental requirement of governments and non-governmental organizations, coupled with labour standards.

Smallholder producers who gain access to supply chain often find themselves in a steep learning curve, because the lead firm tend to be too demanding in terms of cost reduction, raised quality standards, and increased delivery speed. However, these firms do transmit best practices and provide expert advice. Consequently, highly governed chain are normally characterised by such challenges for smallholders (Humphrey and Schmitz 2002).

Hendricks and Lyne (2003) argued that for smallholder farmers to effectively participate in the value chain, they should pool their resources together; their small individual produce should be collectively put together for collective marketing. Bienabe and Vermeulen (2007) observed that, there are opportunities for the inclusion of small-scale farmers in formal market supply chain. They stressed that such inclusion will provide avenue for strategic partnership or mentorship programmes with established farmers; this according to them will assist smallholder farmers in accessing mainstream market thereby increasing their marketing volumes.

### **2.2.2 The need for value chain governance**

In an age of decentralization of governmental structures from the global to the local level, many observers (among them Dolan and Humphrey, undated; Keesing and Lall, 1992; Gereffi, 1994; and Gwynne, 2006) think that the need to govern a chain arises as a result of the increasing use of product differentiation approaches in both developed and developing countries market, which implies that competition will raise the need for supply chain management. They observed that the producers/suppliers to the market need information about the changing market needs, legislation requirements, and consumer preferences and

may require assistance in meeting changing product specifications. Keesing and Lall (1992) emphasized that information must be collected and supplied or transmitted to suppliers but in instances where emerging producers have no experience, then someone is needed to coach or train them; particularly on procurement procedures, quality control, inspections, packaging and shipping techniques, documents required, sizes and size assortments. Hence, governance of a commodity chain is necessary to enforce and monitor the performance of the producers or suppliers in any given value chain system, (WRC 2007).

Value chain governance therefore mirrors the existing characteristics of the chain. The importance of value chain governance is emphasized by Gwynne (2006) whose work highlighted how financial, material and human resources are allocated within specific value chains. Gwynne (2006) also referred to a scenario whereby lead firms in an organisation exert authority on small firms as part of vertical coordination. Moreover, contracts are often used to tackle different aspects within the chain, involving quality, time of delivery and quantity among other aspects (Gwynne, 2006; cited by Obi, 2011).

### **2.2.2.1 Governance and positioning in the chain**

The literature generally identifies three dimensions of value chain governance on the basis of the pattern of information flow within the chain, the rules and guidelines (both incipient and instituted) that prevail, and the mechanisms by which chain relationships are coordinated. In this sense, governance is a multi-faceted concept and does not necessarily imply a deliberate action to regulate the chain as it is often conceived. Rather, governance equally refers to the pre-existing situation in a particular chain in respect to the interactions between suppliers, consumers and other key players within the value structure. The concept recognizes the market structure as it naturally exists and as it differs from one market type to another (Obi, 2011)

Evidently, Kaplinsky and Morris (2000) shared the enthusiasm of those who think that value chain governance is necessary. However, they went further to stress that value chain merely means a repetitiveness of interlinkage interactions, which according to them ensures that interactions between firms along a value chain display an image of organization rather than simply random. They argued that value chain governance is necessary when conditions requiring product, process and logistic qualification have negative consequences up or down within the value chain. Kaplinsky and Morris (2000)

further attempted to differentiate between governance and coordination in value chain processes. They stated that coordination of activities is carried out by different sectors in the linkages in order to ensure that performance (intra, inter and regional) is managed in an organisational or former manner. Governance functioning, on the other hand depends on who has power, which implies that there are major actors in the chain who assume responsibility for the various firm activities, and for the capacities of other chain participants to upgrade their activities (Kaplinsky and Morris, 2000)

#### **2.2.2.2 Maintaining competitive edge in food value chain process**

Generally, food products are known to be income inelastic, but Dolan and Humphrey, (undated) observed that, fresh fruits and vegetables are noticed to be purchased by higher-income consumers. They concluded that as a result fresh produce is important for attracting and retaining such customers, in order to maintain competitive edge the retailers or suppliers of such fresh produce need to put competitive measures in place. Dolan and Humphrey, (undated) argued that for retailers or suppliers to generate the greatest return in the chain, each stakeholder should position itself where it knows efficiency and profits can be achieved. They highlighted some of the strategies that supermarkets enforce to suppliers in order encourage competitiveness:

- **Quality:** Self-service produce and ready-to-eat salads have become prominent in supermarket and this has placed pressure on producers or suppliers to supply appealing produce.
- **Consistency:** Supermarkets advertise an all year round availability of fresh product in the shelf. Therefore, this has meant that producers should also think about the final consumer and in doing so, consistency should be ensured with products appealing in appearance and taste.
- **Variety:** A wide range of vegetables offered supermarkets means that niche markets are being created for producers within the supermarket shelf. For example, basic products such as tomatoes have extended to cherry tomatoes, vine-ripened tomatoes, etc.
- **Pre-washed vegetables** that are prepared for instant cooking have grown to be more accepted and trendier. Hence, supermarkets are demanding washed and clean fresh produce and as a result costs are being transferred to producers.
- **Packaging:** Vegetables are not only available in lose form but also in a wide

variety of packaging form and some instances packaging has to take place within the farm gate.

- Reliability of supply: In the chain continuous supply is important and when this activity is outsourced, retailers require guaranteed on time delivery to keep consumers from switching to other retail outlets (Dolan and Humphrey, undated).

With regards to meeting the performance standard, Dolan and Humphrey (undated) mentioned that “if the chain is to meet the requirements placed on it, its performance must be monitored, and systems put in place to ensure that suppliers can and do meet standards. Exporters should be informed of legislation developments related to pesticide applications, residue levels and food safety levels to gain market access in developed nations” (Dolan and Humphrey, undated as cited by WRC, 2007)

Smallholder farmers often cannot meet stringent food safety and quality control requirements; they are seldom able to provide standardized products on a continuous basis as is often demanded by buyers, and they often lack market information (Gulati *et al.* 2007). In the context of encouraging competitiveness and effectiveness of food value chain, strong and efficient support structures must be put in place to encourage smallholder agriculture, especially in developing countries of the world.

### **2.3 What are support structures?**

Within the context of technical and institutional constraints confronting smallholder farmers on a regular basis, support structures could be deemed to mean “Governance”. Obi (2011), observed that the more serious small farmers’ problems have become in recent years, the more has the question of governance risen to the top of the agenda, and the reason is not difficult to find. As a result of resource constraints and technical as well as institutional obstacles to production, the vulnerability of farmers has grown. The goal of the farm firm as a basic unit of economic activity is to maximize profits. But this goal is frustrated by the technical and institutional constraints confronting the farmers on a daily basis. On their part, the small farmers are adopting measures that minimize their vulnerability and enhance their welfare and profitability. Acting individually, each farmer adopts strategies that make him or her safer and more secure, regardless of what others are doing. The theory is that these actions can often make some people worse off while enhancing the livelihoods of others. This is clearly contradictory to the broader societal goals of promoting greater equity. This constitutes a market failure to the extent that less

than optimal outcomes are realized by the actions that are designed to generate welfare enhancement for all. In fact, such market failures may often lead to considerable erosion of welfare for a large majority of the farmers or household units that are unable to compete in the unregulated competitive market (Obi, 2011).

In a very fundamental sense, correcting the foregoing market failure constitute the major goal of public policy. Given this realization, it becomes inevitable that some rationalization should be put in place. Van Tilburg and Obi (2011) observed that initiatives on improvements which benefit groups of smallholder farmers require usually a multi-institutional effort, for example, coordinated by a task force; this is what support structures for smallholder farmers entails in a broader sense. They concluded that well-coordinated investments in rural infrastructure can improve the performance of the smallholder sector substantially. Initiatives should be taken by the agribusiness and finance sector in close consultation and cooperation with public authorities, Van Tilburg and Obi (2011). Williamson (2009) has made a recent attempt to re-enact the work on economic organization which James (2001) championed to argue that the fixation on optimization and maximization has downplayed the importance of “mutuality of advantage” which is the fundamental reason why people engage in exchange. In his view, in which he was paraphrasing the views of earlier theorists, the primary unit of analysis is transactions, and our interest should be on how to coordinate the associated activities in such a way that initially divergent positions regarding relative value are reconciled so that all concerned are happy. It is this process of reconciling divergent positions in order to bring all parties to the point where they all benefit from the transaction that Williamson (2009) termed as governance (Obi, 2011).

Backeberg (2002) in his review of requirements for sustainable irrigation development, identified support services as one of the eight pillars of sustainable irrigation development. These pillars are:

- People knowledge base.
- Institutions and institutional arrangements.
- Climate, natural resources and production potential.
- Infrastructure and technology.
- Economic location.

- Financing and financial services.
- Technical and financial feasibility of farming systems.
- Support services.

It must be emphasized that economic and social development follows a pattern of change which requires a holistic, integrated and multi-disciplinary approach for analysis and planning, (Backeberg 2002). He noted that in order to ensure that policy and management interventions lead to sustainable development, the staff of the development or management agency must consider all the issues listed above. Detailed highlights of these 8 pillars are presented in Box 2.1.

### **2.3.1 Theoretical issues underpinning the notion of support structures**

Support structures are instruments or mechanisms that make it possible for systems to function efficiently where market failure exists. (Dorward et al, 1998) observed that the major challenge from the literature is that of the coordination within a value chain. They noted that New Institutional Economic is fundamentally concerned with problems of market coordination, and the incentives for economic agents to devise institutional responses to the problems of market imperfections. Kherallah and Kirsten (2002) corroborated the views expressed by Dorward et al (1998); they indicated that changes in the food and agricultural sector in developing countries in the aftermath of market liberalisation and government withdrawal, provides a fertile ground for the application of the New Institutional Economics frameworks.

#### **2.3.1.1 The role of Institutions in economic development**

Successful development policy requires an understanding of the dynamic way in which economic transactions are conducted and the necessary role institutions play in facilitating change. Succinctly said, institutions are very important for the development of economic activities (Slangen et al, 2008). Economists have stressed the idea that good institutions are instrumental to economic development (La Porta et al, 1999: 222). From an economic perspective, institutions matter because they affect national welfare through productivity and employment (Slangen et al, 2008). Conversely, it is also clear that some institutions retard rather than accelerate growth. Regulatory agencies prevent entry, courts resolve disputes arbitrarily and sometimes dishonestly, and politicians use government property to benefit their supporters rather than the population at large (Shleifer and Vishny, 1998:8).

**Text box 2.1: The eight pillars of sustainable irrigation development.**

- |  |  |
|--|--|
| <p><b>1 People knowledge base:</b></p> <ul style="list-style-type: none"> <li>➤ Entrepreneurial spirit</li> <li>➤ Experience and training levels</li> <li>➤ Management capabilities</li> <li>➤ Gender and age</li> <li>➤ Social organization</li> <li>➤ Local leadership</li> </ul> <p><b>2 Institutions and institutional arrangement:</b></p> <ul style="list-style-type: none"> <li>➤ Generally valid social convention</li> <li>➤ Tribal/ community authorities</li> <li>➤ Customary and/or common law and contractual agreement</li> <li>➤ Land tenure (private and/or communal etc.)</li> <li>➤ Water rights (held by individuals or groups)</li> <li>➤ Relevant legislation and regulation</li> </ul> <p><b>3 Climate, natural resources and production potential:</b></p> <ul style="list-style-type: none"> <li>➤ Rainfall, temperature, etc.</li> <li>➤ Length of growing season</li> <li>➤ Suitability of soils</li> <li>➤ Adapted crops and livestock, rotation and grazing systems</li> <li>➤ Crop water requirements</li> <li>➤ Current cultivation/ husbandry practices etc.</li> </ul> <p><b>4 Infrastructure and technology:</b></p> <ul style="list-style-type: none"> <li>➤ Transport (roads, railways, etc.)</li> <li>➤ Communication (telephone, etc.)</li> <li>➤ Power supply (electricity, etc.)</li> <li>➤ Water storage, distribution and O &amp; M costs</li> <li>➤ Level of land mechanization</li> <li>➤ Type of irrigation and drainage technology</li> </ul> | <p><b>5 Economic location:</b></p> <ul style="list-style-type: none"> <li>➤ Markets for inputs (seeds, fertilizer, pesticides, etc.)</li> <li>➤ Markets for products (raw and/or processed crop and livestock products)</li> <li>➤ Quality and grading requirements</li> <li>➤ Time and duration of product delivery</li> <li>➤ Present price levels and future price trends</li> <li>➤ Expected changes in demand and supply etc.</li> </ul> <p><b>6 Financing and financial services:</b></p> <ul style="list-style-type: none"> <li>➤ Availability of equity capital</li> <li>➤ Types of loans available</li> <li>➤ Current and expected interest rates</li> <li>➤ Security and repayment requirement for loans</li> <li>➤ Access to savings and credit facilities</li> <li>➤ Available government grants and subsidies etc.</li> </ul> <p><b>7 Technical and financial feasibility of farming systems:</b></p> <ul style="list-style-type: none"> <li>➤ Crop and livestock activity budgeting</li> <li>➤ Capital budgeting</li> <li>➤ Cash flow budgeting</li> <li>➤ Objectives and goals of household and farming enterprises</li> <li>➤ Incentives for investment</li> <li>➤ Employment opportunities (family and hired labour)</li> </ul> <p><b>8 Support services:</b></p> <ul style="list-style-type: none"> <li>➤ Government and/or private extension and training</li> <li>➤ Government and/or private funded research (on-station and on-farm)</li> <li>➤ Agribusiness or cooperative service units or depots etc. commercial services</li> <li>➤ Suppliers of repair and maintenance services</li> <li>➤ Access to schools, clinics, hospitals, etc. (social services)</li> <li>➤ Establishment of farmer and/or grower associations, water user associations etc.</li> </ul> |
|--|--|

Source: Backeberg (2002); adapted from the Internal research note on the requirements for sustainable irrigation development, water research commission (WRC), Pretoria, 2002.

Furthermore, Shleifer and Vishny (1998), distinguish three models of government: *the helping hand model*, *the invisible hand model*, and *the grabbing hand model*. These models were used to explain the reasons for government intervention and the nature of government decision-making process. The *helping hand model* focuses mainly on market failures. Solutions to these failures are of paramount significance to this model; these solutions could be in the form of corrective taxes, regulations, price control measures, government ownership, and planning etc. The *invisible hand model* begins with the notion that market works very well without the government, the government may perform the basic functions

necessary to support a market economy (such as the provision of law and order, and national defence). The *invisible hand model* was initially conceived as a prescription of an ideal, limited government. However, its irrelevance as a model is quite obvious in real market economy. The *grabbing hand analyses* are models of political behaviour that argue that politicians do not maximise social welfare, but instead pursue their own selfish objectives. The *grabbing hand model* is helpful for understanding the existing institutions in different countries, the reasons for the ways in which they have been put together, and the benefits and costs of these institutions for economic development and growth, (Shleifer and Vishny, 1998; as cited by Slangen et al, 2008).

### **2.3.1.2 Institutional frameworks**

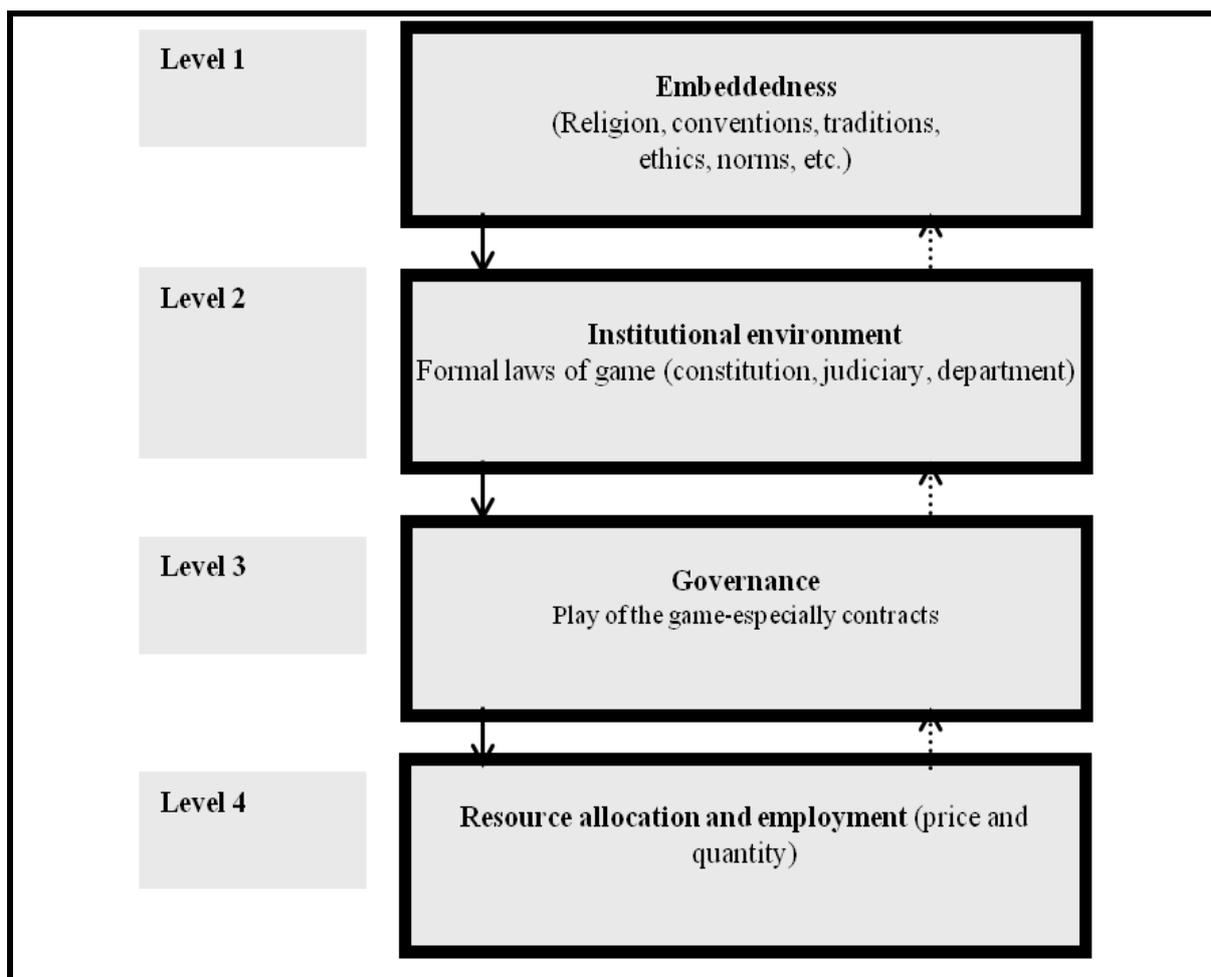
According to (Slangen *et al*, 2008), the purpose of creating institutions is to provide order and regularity in expected outcomes and to limit the element of uncertainty in transactions. Davis and North (1971), argued the importance of distinguishing between institutional environment and institutional arrangement. They defined the concept of institutional environment as the set of fundamental political, social and legal ground rules that establishes the basis for production, exchange, and distribution. However, they viewed institutional arrangement as an arrangement between economic units that govern the ways in which these units can cooperate and/or compete. North (2003) distinguishes the difference between institutions and organisations; if institutions are perceived as the rules of the game then organisations can be considered as the players of the game. North (2003) argues further that the institutional environment does not only delineate the rules of the game within which the institutional arrangements, such as firms and organisations, actually operate, but also prescribe the rules of conduct within which human actions take place. Williamson (1998) corroborated the works of Davis and North (1971) and North (1991; 1994) in making a distinction between the institutional environment and institutional arrangement (governance structures). However, Williamson (2000) goes further based on Williamson (1998) to develop a framework consisting of four levels of institutional economic analysis. Williamson (1998: 2000) sees a route to increasing efficiency through the instrumentality of physical and social capital which reduces transaction costs. While Williamson's four level of social analysis provides one way of looking at the significance of support structures (governance) within the context of institutions and organizations; the concept of Sustainable Livelihoods Frameworks (SLF) places people at the centre of development.

### 2.3.2 Williamson four-level of institutional analysis

Williamson, working in the field of new institutional economics (NIE), developed an approach to social analysis that is based on four levels of analysis, and which draws on different branches of economic thought. At the highest level (Level 1) is social embeddedness (customs, norms, traditions, etc.), which changes very slowly at the rate of centuries to millennia. Next is level 2, the institutional environment, which refers to formal and informal social rules ('rules of the game'), which change at a rate of 10 years to a century. At Level 3 is the governance structure level that refers to the 'play (or organization) of the game', in which changes occur more frequently, at the rate of one year up to a decade. At the lowest level (Level 4), is resource allocation, which refers to prices and production quantities. At this level, change is continuous; figure 2.1 shows a detailed description of Williamson's four-levels of social analysis. Slangen et al, (2008) explains Williamson's four-level of social analysis as follows:

#### 2.3.2.1 Social embeddedness:

Level 1- This level is considered to be Williamson's slowest level to evolve, it is the level at which cultural norms, customs, morals, traditions and more informal codes of conduct emerge. This level forms the underlying fabrics of the society. Williamson (1998: 26) suggests that institutional rules at this level take 100 – 1000 years to be established. This first level of institutional analysis is concerned with the degree to which economic transactions are embedded in social relations. The term embeddedness was introduced by Granovetter (1985) in his critique of Williamson; he argued that New Institutional Economists presented an under-socialised view of human behaviour. Conversely, the embeddedness argument holds that (economic) behaviour and institutions are so constrained by on-going social relations, that to construct them as independent is a grievous misunderstanding (Slangen et al, 2008). However, according to Williamson (1998: 27; 2002: 596), the social embeddedness level is where norms, customs, morals, traditions, etc. are located. Slangen et al, (2008) noted that it was the work of Putnam (1993, 2000) that launched the notion of 'civic life' as a mode of organising and argued that social networks, known as 'social capital', are the basis of economic prosperity.



**Figure 2.1: The four levels of social analysis.**

*Source: adapted from Williamson, 2000.*

### 2.3.2.2 Institutional environment:

Level 2- This level included the *formal rules of the game* in the society. These formal rules include constitutions, laws and property rights. At this level the executive, legislative, and bureaucratic functions of the government are located, it comprises of the distribution of power across different levels of government. (Slangen *et al*, 2008) also noted that, the definition and enforcement of property rights and of contract laws are also important features of this level. Milagrosa (2007) observed that the institutional environment deals with intangible aspects such as formal rules and informal norms.

The institutional environment is dynamic and it changes over time. For instance in the past, chiefs and kings had absolute control over the affairs of the people, especially in productive activities such as farming but the modern day societal system does not give them absolute power in most parts of the world. Political leadership had replaced and displaced their absolute authority and their activities are now being closely monitored by

legally constituted authority. The significance of this level of social analysis to the study site is clear, given that the role of the local chiefs and their subjects are closely monitored by authority at the level of the local and district municipality. The government protects and enforces property rights, monitors the institutional environment (rules of the game) and ensures strict compliance to the existing legal structures in the society. While it might take longer period of time for informal rules of the game such as norms, values, etc. to change, the formal rules of the game under this level of analysis can be changed and implemented faster. Certain aspects of the institutional environment can change more quickly than others depending on the prevailing circumstances. For example, ordinary laws could be implemented faster than constitutional amendments.

### **2.3.2.3 Governance structure:**

Level 3- The third level is where institution of governance are located. Governance should be considered as ‘an effort’ to craft order, thereby to mitigate conflict and realise mutual gains’ (Williamson 200: 599). Slangen *et al* (2008) noted that analysis at this third level is about the effectiveness and efficiency of different institutional arrangement, or governance structures (e.g. markets, firms, clubs, contracts, in-house production or vertical integration), they stressed that the challenge here is to get the governance structure right. A governance structure can be described as an institutional arrangement consisting of the rules of the game by which an exchange is carried out and administered (Hendriske, 2003). It can also be considered as a contractual format chosen to manage a transaction, ranging from a simple spot market transaction, to a long-term relational contract, to a transaction entirely within an organization or firm (Fitzroy *et al.*, 1998). However, within the context of this study with respect to Williamson’s social analysis at level 3, the governance structures represent the existing rules or legal structures of contractual format within the study area which are instrumental to managing a transaction. They are influenced by the level of social embeddedness and the institutional environment in the study area.

According to Milagrosa (2007), the research question to analyse the governance level of the Williamson approach relates to the identification of the existing marketing arrangements and governance structures for the product and region under consideration, and to determine how efficiently they are aligned. Furthermore, Milagrosa (2007) stated that the researcher has to determine whether he/she “can clarify what propels farmers to select certain marketing arrangement and governance structures for marketing their crops”

#### **2.3.2.4 Resource allocation and employment:**

Level 4- This is the level at which market performance is evaluated; it places emphasis on the quantity produced and marketed, production and marketing costs, and price analysis in the form of farmer's and traders share of total market sales are also taken into consideration (Milagrosa, 2007). This level focuses mainly on the neoclassical economic theory and it happens continuously within any given society. It is often referred to as theory of incentive and involves continuous changes to price and output.

Milagrosa (2007) concluded that Williamson four-levels of social analysis represent a framework which allows for a systematic way of evaluating production and marketing. Research should start at the highest level (social embeddedness) and then proceeds systematically until reaching the lowest level of resource allocation. Milagrosa (2007) noted that beginning at the embeddedness level "enables one to create a clear picture of the culture and the social environment in which the players operate". Arguing that such information may help the researcher to comprehend the institutional environment and the resulting governance structures governing transactions. Once the researcher knows how and why a market operates the way it does, "better and more tailored strategies on how to get marginal conditions right can be developed". Milagrosa (2007) concluded that "one need to come down the ladder level-by-level to understand the vegetable production and marketing system but needs to go up the ladder in the same manner in order to get the conditions right" (Milagrosa, 2007; as cited by WRC, 2007)

#### **2.3.3 Support structures of physical and social capital**

Physical and social capitals are vital components of support services, while physical capital could be referred to as *tangible structures*; social capital could be termed *intangible structures*. Physical capital is usually in the form of physical goods or assets, social capital are usually in the form of networks of social relations. The study considers physical capital in the form of assets ownership, and availability of basic infrastructure. In one branch of the theory of the firm asset ownership defines firms. In the presence of incomplete contracts, asset ownership confers control rights allowing the firm to use fiat to govern the use of owned assets (Williamson 1985, Grossman and Hart 1986). It is good to stress that physical and social capital are considered in this study as the two essential components needed by the farm firm to function efficiently. However, the implication is that where a very strong social capital exists, there is the need for efficient physical capital to provide

the needed outcome of positively impacting on the lives of the people; in this case the smallholder farmers.

### **2.3.4 The concept of physical capital**

Physical capital cannot be defined objectively; the definition has to be subjective. However, within the context of this study one can explain what physical capital means to an average smallholder farmer. Physical capital comprises of those physical assets and infrastructures possessed or needed by a producer for the enhancement of productive activities. Physical capital often comes in the form of support needed to augment the living standard of the people or to enhance sustainable livelihoods.

#### **2.3.4.1 Elements of physical capital among smallholder farmers**

Having established the concept of physical capital within the context of this study, physical infrastructure like good road network, modern storage facilities, tractors, modern farm implements, good transportation, and irrigation machine etc. are some of the major elements of support structure of physical capital among smallholder farmers.

#### **2.3.4.2 Assessing physical capital**

In order to justify an intervention or an initiative, assessment of physical capital is usually required. This becomes necessary for the purpose of measuring the impact of such initiative on the people. Studies have shown that the ex-post evaluation on rural projects in sub-Saharan Africa indicates a strong positive correlation between feeder roads and agricultural productivity (Njenga, 2003). Gavira (1990) noted that an inadequate public infrastructure could result in massive losses to producers. In 1988, three regions in Tanzania lost 50% of their cotton, one region 80% of its rice due to heavy rain that rendered the already bad roads to be further inaccessible (Gavira, 1990). Investment in physical capital to support agricultural production is very essential, especially among the rural poor farmers.

### **2.3.5 The concept of social capital**

While Putnam popularised the term social capital, the concept of social capital was developed initially by sociologists Bourdieu (1986) and Coleman (1988). The focus of Coleman was not so much on the forms of social capital, but more on its function. He argued that social capital 'is not a single entity, but a variety of different entities, having two characteristics in common: they all consist of some aspect of a social structure, and

they facilitate certain actions of individuals who are within the structure (Slangen *et al.*, 2008). Succinctly put, Coleman (2000) describes social capital as connections among individuals- social networks and the norms of reciprocity and trustworthiness that arise from them. Whether at the micro, meso, or macro level, social capital exerts its influence on development as a result of the interactions between two distinct types of social capital— structural and cognitive. Structural social capital facilitates information sharing, and collective action and decision making through established roles, social networks and other social structures supplemented by rules, procedures, and precedents. As such, it is a relatively objective and externally observable construct. Cognitive social capital refers to shared norms, values, trust, attitudes, and beliefs. It is therefore a more subjective and intangible concept (Uphoff 2000).

### **2.3.5.1 Social capital and the poor**

Posey (1999) observed that removal of people, often the poorest and the indigenous, from the very resources on which they mostly rely has a long and troubling history and has framed much natural resource policy in both developing and industrialized countries (Gadgil and Guha, 1992). Yet common property resources remain very essential for many people, and excluding them from such resources can be costly. The term social capital captures the idea that social bonds and norms are important for people and communities (Coleman, 1988). One important factor to consider is whether local people could play a positive role in conservation and management of resources at their disposal; if this is so, then it will be good to find out how best individual actions could be directed in favor of the common good. Ostrom (1990) observed that some communities have long been known to manage common resources such as forests and grazing lands effectively over long periods without external assistance; however, recent years have seen the emergence of local groups as an effective option instead of strict regulation or enclosure. O’Riordan and Stoll-Kleeman (2002) noted that local groups are indicating that, given good knowledge about local resources; appropriate institutional, social, and economic conditions; and processes that encourage careful deliberation (Dryzek, 2000), communities can work together collectively to use natural resources sustainably over the long term (Uphoff, 2002); this will however be built upon the concept of social capital, to enhance efficiency. When social networks are strengthened, the norms and the cultural belief system of the people are also taken into consideration; then collective action could make significant impact on the lives of the people.

### 2.3.5.2 Operationalizing social capital

As social capital lowers the transaction costs of working together, it facilitates cooperation. People have the confidence to invest in collective activities, knowing that others will also do so. They are also less likely to engage in unfettered private actions with negative outcomes, such as resource degradation (Pretty et al (2001), Agrawal, (2002)). Four features are important: relations of trust; reciprocity and exchanges; common rules, norms, and sanctions; and connectedness in networks and groups (Pretty, 2003). Wade (1996) observed that relations of trust lubricate cooperation, and so reduce transaction costs between people. Instead of having to invest in monitoring others, individuals are able to trust themselves to act as expected, thus saving money and time. Wade (1996) noted further that trust takes time to build and is easily broken. When a society is pervaded by distrust or conflict, cooperative arrangements are unlikely to emerge.

Coleman (1998) and Putnam *et al* (1993) affirmed that reciprocity increases trust, and refers to simultaneous exchanges of goods and knowledge of roughly equal value, or continuing relations over time. They observed that reciprocity contributes to the development of long-term obligations between people, which helps in achieving positive environmental outcomes. According to Taylor (1982) common rules, norms, and sanctions are the mutually agreed upon or handed-down drivers of behaviour that ensure group interests are complementary with those of individuals. These are sometimes called the rules of the game, and they give individuals the confidence to invest in the collective good. Sanctions ensure that those who break the rules know they will be punished.

Woolcock (2001) identified three types of connectedness (bonding, bridging, and linking) which are important for the networks within, between, and beyond communities. Bonding social capital describes the links between people with similar objectives and is manifested in local groups, such as guilds, mutual-aid societies, sports clubs, and mothers' groups. Bridging, according to Pretty (2003) describes the capacity of local groups to make links with others that may have different views, and linking describes the ability of groups to engage with external agencies, either to influence their policies or to draw on useful resources. However, studies have shown that high social capital is associated with improved economic and social well-being.

For instance, households with greater connectedness tend to have higher incomes, better health, higher educational achievements, and more constructive links with government (Pretty (2002); Ostrom (1990); Putnam (1993); Wilkinson (1999); Krishna (2002)). In order to develop appropriate forms of social organizations, collective management of resources should seek to embrace building of trust, develop new norms and encourage formation of groups.

### **2.3.5.3 Challenges of social capital**

Pretty (2003) observed that the formation, persistence, and effects of new groups suggest that new assemblage of social and human relations could be a requirement for long-term improvements in natural resources. Gardner and Stern (1996) argued that regulations and economic incentives play an important role in encouraging changes in behaviour, but although these may change practices, there is no guaranteed positive effect on personal attitudes. Pretty (2003) noted further that without changes in social norms, people often revert to old ways when incentives end or regulations are no longer enforced, and so long-term protection may be compromised. However, there remains a danger of appearing too optimistic about local groups and their capacity to deliver economic and environmental benefits, because divisions within and between communities can result in environmental damage. Moreover, not all forms of social relations are necessarily good for everyone. A society may have strong institutions and embedded reciprocal mechanisms yet be based on fear and power, such as feudal and unjust societies (Pretty, 2003). Portes and Landolt (1996) noted that social capital can have its “dark side” due to the fact that formal rules and norms can trap people within harmful social arrangements, and the role of men may be enhanced at the expense of women. Some associations may act as obstacles to the emergence of sustainability, encouraging conformity, perpetuating inequity, and allowing certain individuals to shape their institutions to suit only themselves.

### **2.3.5.4 Social capital and water management**

As a response to poor performance of large-scale, government-managed irrigation systems, donors and national governments have begun to advocate community management of irrigation systems at the watercourse level. While community management of small-scale irrigation systems has been prevalent for decades, involving users in the management of large scale systems has been rare. This change in approach has meant shifting the emphasis in irrigation projects from the engineering designs to the organization of farmers to make

the most effective use of irrigation systems (Ostrom 1992). Studies from different parts of the world had indicated that when farmers are organised into groups they tend to be more involved in managing their own project than when government is fully involved, this has been viewed as a way to ensure their cooperation and improve the provision and allocation of irrigation facilities. While corroborating his earlier research (Ostrom 1992), (Ostrom 1994) reiterated that irrigation services are common pool goods: rival and non-excludable; based on the presence or absence of rivalry and excludability, goods and services can be classified into four categories: private, public, toll, and common pool goods Ostrom, Gardner, and Walker (1994) and Picciotto (1997). Empirical findings had also indicated that community management of irrigation system tends to be more effective than government-managed irrigation systems. The success of an irrigation project depends largely on the active participation and cooperation of individual farmers. A group such as a farmers' association should therefore be organized or preferably at the farmers' initiative if necessary, with initial government assistance, to help in attaining the objectives of the irrigation project. Irrigation technicians alone cannot satisfactorily operate and maintain the system (Asian Development Bank, 1973).

#### **2.3.5.5 Element of social capital**

Slangen *et al*, (2008) summarized the core elements of social capital while concluding that a network of relations can build on social values and the reputation of being trustworthy. They stress further that, if the network builds commitment and trust through relationships in which a balance of give and take is understood, then social capital can be said to have been produced and information flows will likely be transparent within the group. However, they emphasized that once this process is done routinely, 'we express this with the term 'norms of reciprocity'. They observed that when social capital is high throughout the institutional environment (informal and formal), economic welfare (e.g. in GDP per capita) is more likely to be high and governments are more likely to be trusted. Slangen *et al*, (2008) identify the key elements of social capital as follows:

- Trust
- Common norms and values
- Reputation
- Trustworthy
- Norms of reciprocity

- Commitment
- Connectedness or glue that society holds together; and
- Active participation in society

Hence, social capital is a product of relationships that contain these key elements and through the process of connecting, trust is built and reinforced over time.

#### **2.3.5.6 Measurement of social capital**

In a conceptual and empirical study of collective action for conserving and developing watershed in Rajasthan, India; Krishna and Uphoof (1999), isolated the social factors that account for the degree of success observed in 64 villages in the Indian state of Rajasthan. They developed a social capital index that combines an equal number of structural and cognitive factors representative of the social environment in the region (informal networks, established roles, solidarity, and mutual trust). They then showed that this index, along with political competition and literacy, had a significant and positive association with both watershed management and broader development outcomes. They also found that demographic characteristics and household attributes, such as education, wealth, and social status, were not systematically associated with the level of social capital within households. In contrast, several community attributes reflecting participation and experience in dealing with community problems positively affect the social capital index. The largest increments occurred in social capital, however, where beliefs in participation are reinforced by the existence of rules that are clear and fairly implemented (Grootaert and Bastelaer, 2001). Putnam *et al* (1993) studied extensively on the degree of civic community membership as a measure of social capital. They based their analysis on the assumption that citizens accept their role in collective action (organised group behaviour) as a means of producing collective goods. Based on the outcome of their findings, Putnam *et al.* proposed that forms of collective action with very high voluntary participation result in higher levels of trust, lower transaction costs and higher economic productivity.

In a related study Phillipson *et al* (2003) pointed out that a very important aspect in formulating a model for analysis of social capital is recognizing that the unit of analysis we are interested in is not the isolated individual, nor the theoretical group (household, community) or real group (group or organisation) but rather the *relationships* between them. They argued that if a social capital is inherent in relationships it does not belong to anyone, stressing that collective social capital refers to an analysis of relationships at

another level that is between groups, which is a research focus that is distinct from individual social capital.

In a reference document for public research, development and evaluation on social capital, Franke (2005) made a very clear distinction on how best to measure *individual social capital* and *collective social capital*. Public policy that focuses on **individual social capital** is primarily concerned with questions pertaining to the *individual benefits resulting from the inclusion of the individual within his social environment*. This may involve kin relationships, work relationships, or participation in groups or organizations in which the individual forges ties with others and which are often viewed in terms of civic or political participation or engagement. Similarly, policies that focus on **collective social capital** deals with questions that refers to the *collective benefits arising from participatory and associative dynamics*, which can be defined socially or on a territorial basis (e.g. networking among community). Despite its relative popularity, Franke (2005) had observed very significantly that the concept of social capital should be understood within the context of ‘*individual and collective*’ dimensions to social capital. The author stressed that the two concepts refers to distinct realities, emphasizing that there are still links between individual and collective social capital. For example, when we document the participatory practices of individual, we have a certain image of collective social capital, that is, the capacity of groups and organizations to use the contribution of individual members to achieve collective benefits. But group membership does not constitute the sum total of collective social capital: it allows essentially for an estimation of the intra-group dynamics but excludes important ties that groups forge with other groups. In other words we cannot claim to have a full picture of the associative architecture of a given community by simply collecting data on the participatory practices of individuals. Thus, it is important to avoid the trap of aggregating individual social capital in order to estimate collective social capital Franke (2005).

### 2.3.6 The concept of collective action

Marshall (1988) defines collective action as an action taken by a group (either directly or on its behalf through an organization) in pursuit of members perceived shared interests. Collective action requires a group of people with shared interest working together towards a common purpose. In most cases the action of the group of people in collective action is voluntary; it is this idea of a voluntary participation that differentiates collective action from hired labour. Formal or informal organizations may be useful in coordinating the

activities of collective action, but it is important to distinguish between organizations and collective action. Many organizations only exist on paper, and do not lead to action; conversely, collective action may occur spontaneously. Moreover collective action can manifest itself and can be understood as an event (a one-time occurrence), as an institution (rule of the game applied over and over again), or as a process (Meinzen-Dick *et al*, (2004)

Any recurrent need in a community could become institutionalized to form the basis for collective action e.g. collective maintenance of an irrigation system in a community. Badstue *et al.*; 2002 argue that Institutionalization depends on the object of collective action; any kind of collective action for routine maintenance will likely become institutionalized because it is a recurrent need in a community or group of users, while collective action for seed exchanges is likely not to be institutionalized where the need to exchange seed occurs only sporadically. Marvell and Oliver (1993) argue that institutional analysis of collective good provision should not overlook the role of individual entrepreneurs. An individual constitute a very important aspect of any community and should therefore not be ignored.

Ostrom (1992) observes that with respect to natural resource management the collective action of deciding on and observing rules for use or non-use of a resource can take place through common property regimes or by coordinating activities across individual farms. According to Ostrom (1992) collective action is easiest to identify when there is a clearly defined group that takes part. The group have to be well defined; their objectives should be clearly stated in the collective interest of every member of the group.

Moreover, clearly defined boundaries is the first of Ostrom's (1992) argument that boundaries have to be clearly defined; and this was what form the basis of the design principles for long-enduring, self-organized irrigation systems, which have also been applied to many other cases of natural resource management. This suggests that boundedness of the group, which allows people to know who else is or should be contributing, encourages collective action. However, in many instances of collective action it is not clear how the group is organised, and the boundaries might not be fixed or rigid. Some people may participate one time or the other, with none of them knowing exactly who is involved, but all identifying with the collective action initiative.

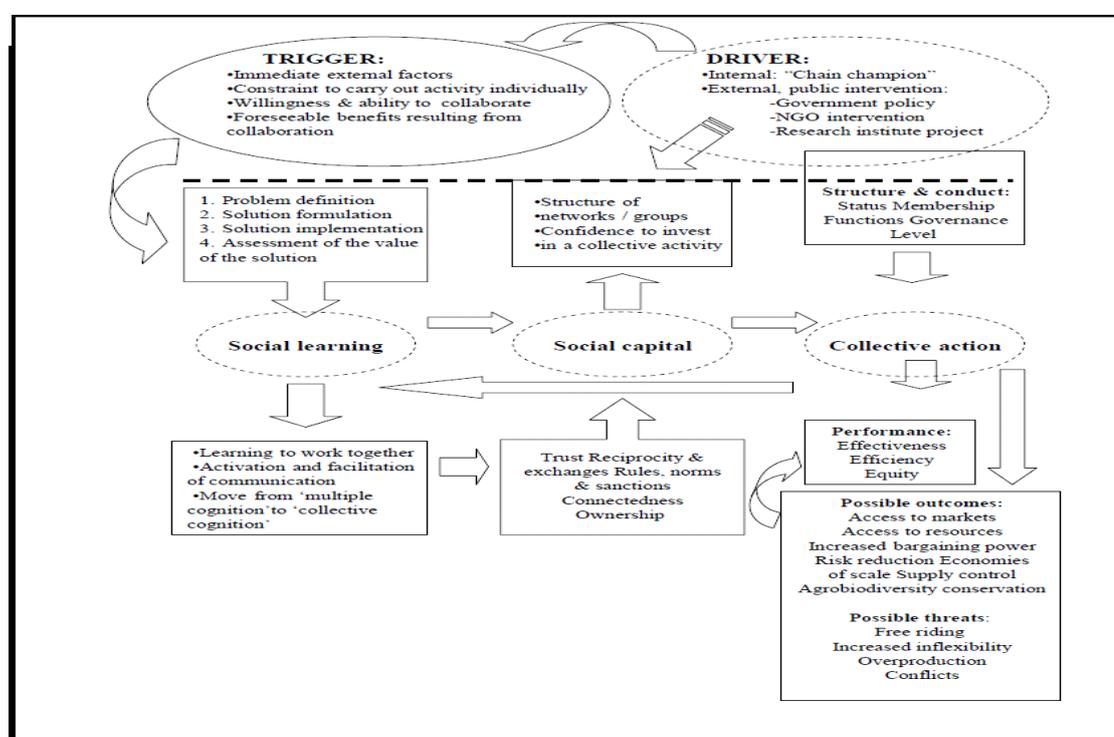
### 2.3.6.1 Collective and individual resource access and utilization

Studies have shown that the success of many economic development projects depends on people's ability to refrain from individually profitable actions for the sake of the common good. Such collective action problems have the key characteristic that, because individual actions have externalities on others, private and social optima do not coincide. Individual actions could have both positive and negative implications on others, with respect to utilization and provision of common property resources. Bandier *et al*, (2005). For instance, individual action could impose negative externalities on others due to use of common property resources — where the actions of individuals impose negative externalities on others, and the provision of public goods — where the actions of individuals impose positive externalities on others. A good understanding of how these two problems of collective action interplay within the strata of society is important to this study. Collective action problems in developing countries could be considered within the scope of the factors which discourage opportunistic behaviour and that which promotes cooperation. Institutional design has particular relevance in these countries both because formal institutions that regulate the use of common resources and the provision of public goods are generally absent, and because many of the world's poorest individuals depend on these resources for their livelihood (Bandier et al, 2005).

Olson's (1965) contends that self-interested behaviour precludes cooperation when group rationality is in contradiction with individual rationality. Common resource management can therefore end up 'tragically', as Hardin (1968) put it, if each individual ignores the negative externality that his utilization choices impose on other group members. Bandier et al, 2005 further observe that such pessimism may be justified in the case of anonymous and infrequent interactions; they emphasized the folk theorem which suggests that repeated interaction between the same individuals might increase the likelihood of sustained cooperation in equilibrium. However, this is possible only if sufficiently harsh and credible punishments are available. They further mentioned that extensive socio-anthropological fieldwork had found evidence that some communities manage to create effective informal institutions, namely rules that govern the use of common resources and contributions to local public goods; stating that failure, however, occurs as frequently as success.

### 2.3.6.2 Different forms of collective action

Literature have given different description of collective action, according to Poteete and Ostrom (2003) collective action has been described as taking various forms including the development of institutions, resource mobilization, coordination activities and information sharing. Oakerson's (1992) concern with the analysis of collective action at operational and constitutional level which deals with the levels at which one needs to analyse the phenomenon. According to Meinzen-Dick *et al*, (2004) the indicators of collective action might vary from one degree to the other depending on the specific objective of collective action. For instance, collective action for the maintenance of an irrigation system, will be different from collective action for the constitution of a federation of watershed groups, indicators of collective action will again differ, or in any case not overlap entirely. It is very important to identify the level at which collective action takes place. Many studies have shown that collective action takes place only at community level, but not all forms of collective action take place at this level. Many microfinance institutions use groups of ten to twenty members. McCarthy *et al* (2002) demonstrates the importance of cooperation among groups within the community, e.g. for water point management. Place and Swallow (2002) observed that the appropriate units of analysis of collective action will vary, depending on the research or policy question.



**Figure 2.2: The process of collective action for smallholder market participation.** Source: Kruijssen *et al.*, (2009), *collective action for small-scale producers of agricultural biodiversity products. Food policy*, 34 (2009) 46-52 Elsevier.

### **2.3.6.3 Conceptual framework for collective action**

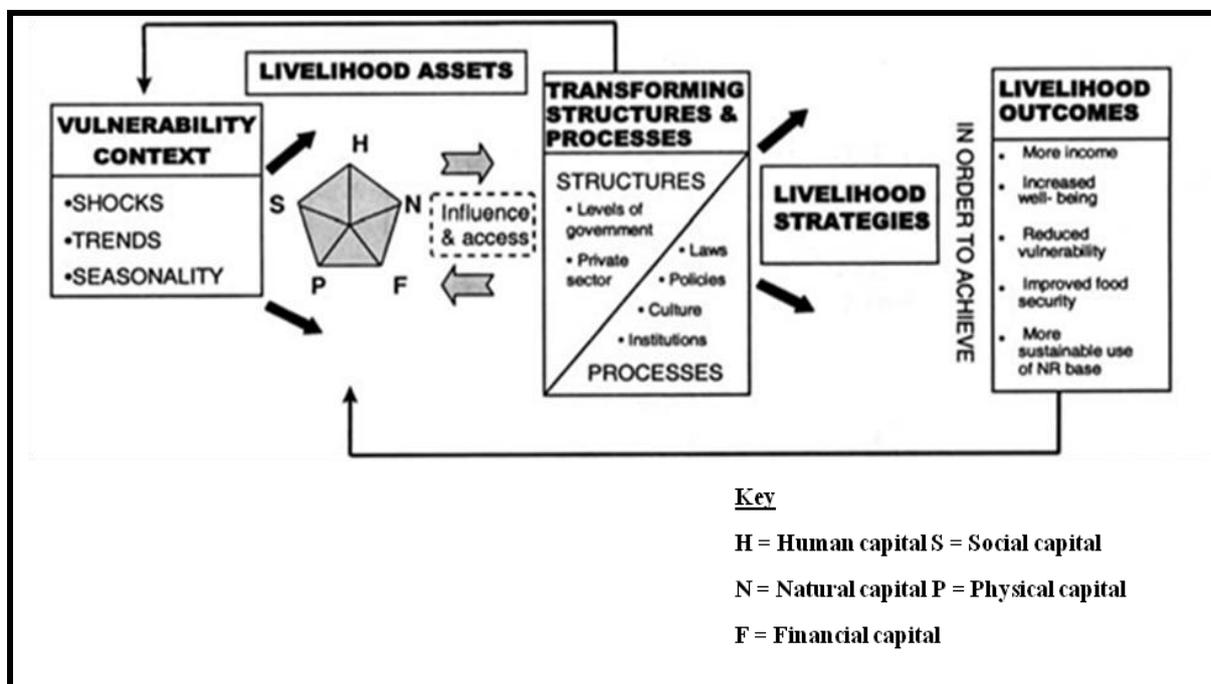
Studies have shown that the formation of community-based organizations, whereby smallholders can pool resources and market their products collectively, could overcome the high transaction costs resulting from their small size. It can improve their access to resources (such as inputs, credit, training, transport and information), increase bargaining power (Bosc et al., 2002), and facilitate certification and labelling. In the context of long-term investments such as those required for perennial crops and capital intensive processing technologies, a collective can also reduce individual farmer risk (Di Gregorio et al., 2004).

### **2.3.7 The Sustainable livelihood frameworks (SLF)**

The SLF provides information to help understand the main factors that affect poor people's livelihoods, and the relationships between these factors, and this could help in facilitating policy, planning and implementation, which could lead to effective development interventions. The SLF places people at the centre of development programme. The figure below (Figure 2.3) shows the five assets or capital types as identified by Scoones (1998). The framework is suitable for analysing the livelihood of the smallholder farmers in the study area. It identifies existing assets and strategic opportunities for rural poor people.

The SLF is generally used to conduct a livelihood analysis through a participatory process involving the target community. It is an approach to poverty reduction and is said to focus people's attention on strengths and assets. While recognising the multiple influences that people experience (and the multiple actors that are at play), it seeks to create an understanding of the relationships that exist between influences and their impacts on livelihoods. The framework acknowledges that people have dynamic multiple livelihood strategies in an effort to secure their livelihoods. The application of the approach is expected to lead to the identification of key challenges as well as opportunities for poverty reduction. In line with the multiple livelihood approach of people, there is also recognition that they may be seeking multiple outcomes (DFID, 1999). In line with the discussion above, Ellis (2000) observed that the livelihood approach comprises three main dimensions:

- Assets
- The processes that influence access to those assets
- The strategies adopted for survival.



**Figure 2.3: The sustainable Livelihoods (SL) framework.**

*Source: adapted from key sheets for sustainable livelihoods (DFID, 1999).*

The main components of SLF are clearly represented in figure 2.3 can be summarized as:

- Livelihood Assets.
- Livelihood strategies.
- Livelihood outcomes.

### 2.3.7.1 Livelihood Assets

These serve as the basis for people's livelihood. There are five types of assets/capital that enable people to pursue sustainable livelihoods, namely:

- **Human capital (H):** Comprises knowledge, skills and the ability to perform labour (including good health).
- **Financial capital (F):** Comprises various financial resources available to people.

- **Natural capital (N):** Comprises natural resources available to people (e.g. Land, water, minerals, etc.).
- **Physical capital (P):** Comprises the basic tangible infrastructure and producer goods available to the people (e.g. farm equipment, transport, road access, etc.).
- **Social capital (S):** Comprises the societal resources that people can draw upon individually or collectively within a community (e.g. social networks, clubs etc.).

These livelihood assets form the basis for the analyses of this study; each asset was analysed with considerations for the various variables peculiar to them. A major aspect of the study was to investigate livelihood assets available to individual households.

#### **2.3.7.2 Livelihood strategies**

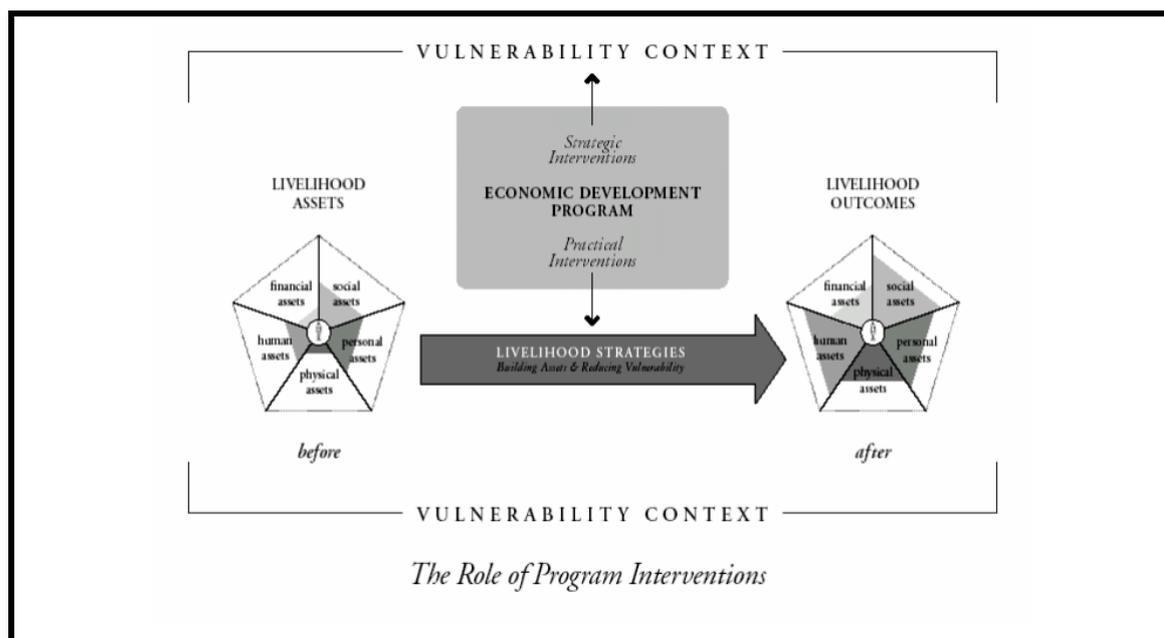
These are comprised of the range of choices and decisions that people make or undertake in order to achieve their livelihood goals and aspirations. In terms of the current study, these activities could be in the form of agricultural activities, investment activities, etc.

#### **2.3.7.3 Livelihood outcomes**

These are the achievements of livelihood strategies that individuals and households are always striving to attain (e.g. more income, improved food security, more sustainable use of natural resources, improved wellbeing, etc.). Livelihood outcomes can translate into increased physical or financial capital of a particular household, which are in turn available as assets.

#### **2.3.8 Vulnerability context**

People's livelihoods and the available capital are usually affected by certain trends, shocks and seasonality over which they have limited or no control. Shocks could be as a result crop failures resulting from pest infestation or livestock health resulting from diseases outbreak. The extent to which households are affected by such shocks is an indication of their vulnerability context. Transforming structures and processes often influence the vulnerability context, which in turn can impact on households' livelihood assets. The role of developmental programme interventions is shown below in Figure 2.4 (Vulnerability context framework), where interventions aim to build assets and reduce vulnerability (Murray and Ferguson, 2001).



**Figure 2.4: Vulnerability Context Framework.**

*Source: Murray, J. & Ferguson, M. (2001).*

Power dynamics, which exist within communities as well as between different groups of stakeholders, also play a significant role within the components of the SLF. Poor communities and the poorer people within communities are those who generally have least access to assets. They are also likely to have limited influence over structures and processes and are highly vulnerable to shocks (New Zealand Aid Tools, undated).

The livelihood framework has been criticised for not giving sufficient attention to aspects of people's livelihood that are equally important for sustainable living and utilisation of assets. These include the aspect of culture, the notions of power and power relations and historical factors (Adato and Meinzen-Dick, 2002).

The current study explores some of the implications of these important issues such as culture and tradition of the people as well as the issue of power and power relationships. These are very important factors, though one might not be able to attach any economic value to them. They are very central to how these smallholder farmers operate in the context of certain norms and beliefs, and such factors have implications for the sustainability of their agricultural ventures.

The inclusion of Williamson's approach to social analysis (in particular the first three levels of analysis) addresses these limitations of the SLF approach. Williamson's analysis

also considered cultural norms, customs, morals, traditions and more informal codes of conduct that form the underlying social fabric of society. The approach also covers the historical aspect, because it takes into consideration the length of time over which changes occur.

#### **2.4 Chapter Summary**

This chapter presents the review of relevant literatures and it explains the various concepts and frameworks used in this study. The concept of collective action and social capital were reviewed; and their relevance to the study was emphasized. The two analytical frameworks used in this study were reviewed. The vulnerability context framework was also reviewed. This chapter provided a strong theoretical base for this study, the application of social capital and collective actions to livelihoods enhancement were broadly reviewed with relevant illustrations and explanations from seasoned authors.

**METHODOLOGY AND ANALYTICAL FRAMEWORK**

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**3.1 Introduction**

The present chapter focuses specifically on review of the methodology used in this study; it highlights the different motivations that form the basis for the study, the methods used at different levels of the investigation, and the significant findings and outcomes of such investigations. To set the context for the review, the place of smallholder agriculture in South African agricultural landscape was succinctly discussed; the socio-economic profile of the Eastern Cape Province was highlighted, a general overview of the Amathole district municipality was presented, with a view to stimulating a better understanding of the study location which then provides a basis for evaluating the methodology employed and the over-arching assumptions. The chapter then turns to the research process by, describing the sampling procedures, analytical framework and the methods of data generation and processing. Furthermore, the chapter presents details of the models adapted in the analysis and the data specifications of the study were clearly explained. The two econometric models employed in this study are binary logistic regression model and the discriminant analysis and these are comprehensively described in the chapter.

**3.2 South African economy and Smallholder agriculture**

It is an established fact that agriculture is an important source of income and livelihood for many rural households in developing countries, especially in Sub-Saharan Africa. Carter and May (1997) identify agricultural production as one of the most important sources of income for rural households in South Africa. Eicher (1999) observes that two-thirds of people in Africa derive their livelihood from agriculture. Smallholder agriculture is important to employment, human welfare, and political stability in Sub-Saharan Africa (Delgado, 1998). It therefore becomes very important to focus developmental agenda on smallholder agricultural development in this region. In South Africa, different definitions have been used by different authors and scholars to define and categorize farmers. Van Zyl *et al.* (1991) classify farmers into three major categories, these are, commercial, emerging and subsistence farmers. Commercial farmers are defined to include those who participate in the market economy. Emerging farmers are those who cannot participate in the market

economy because of restrictions in the (economic) environment, perhaps due to institutional and technical factors. Subsistence farmers include those who produce mainly for home consumption and sometimes produce surpluses by coincidence.

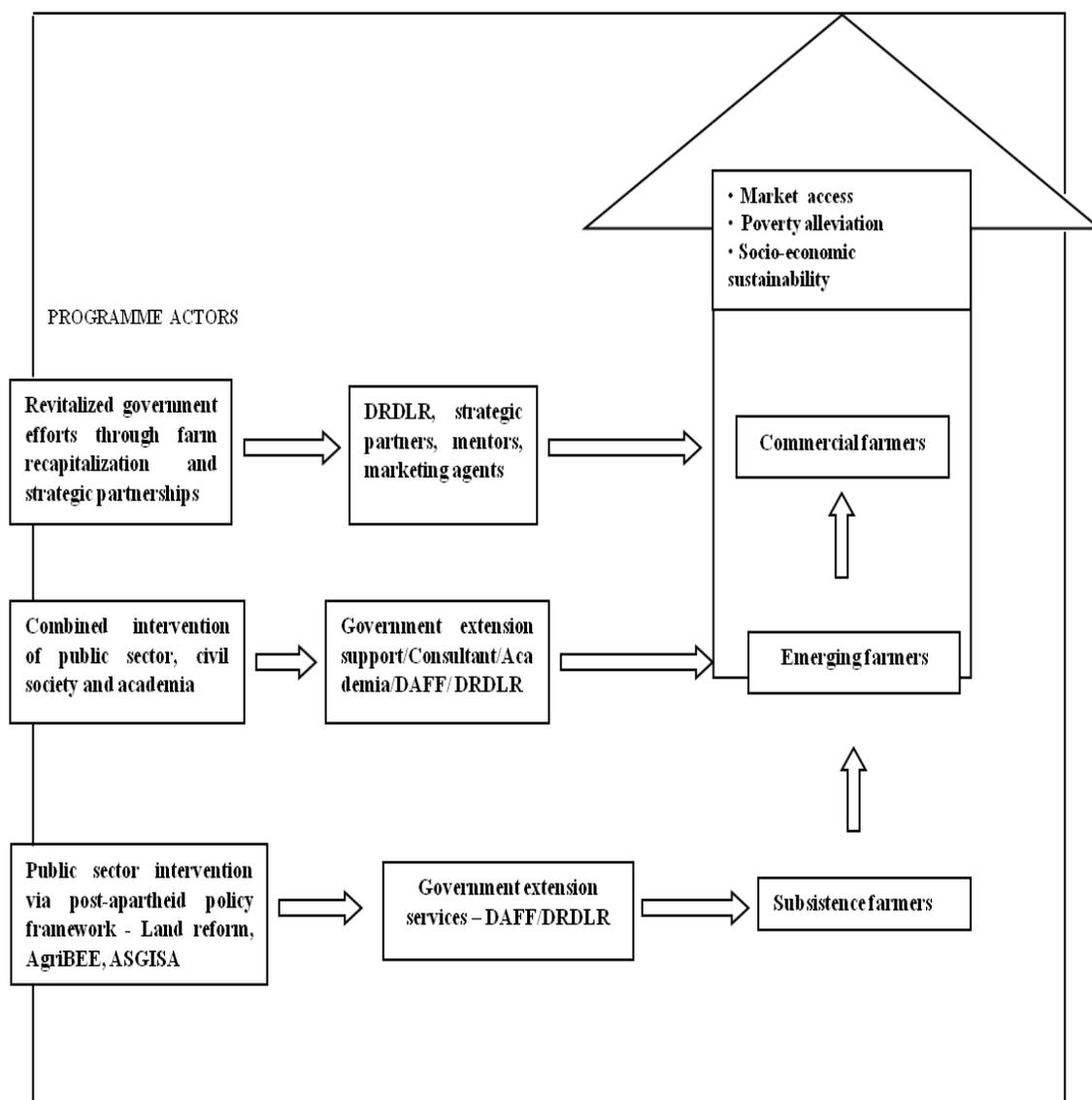
Botha and Treurnicht (1997) argue that there are four categories of farmers, and they include; a fully commercial farmers, emerging commercial farmers, land reform beneficiaries and household food security farmers. The Farmer Support Services Working Group Workshop (1997) based their classification on the type of clients who regularly need extension services as emerging farmers, land reform beneficiaries as subsistence farmers and commercial farmers who are further subdivided into small, medium and large farmers. These last categories of farmers are not clearly defined. Catling and Saaiman (1996:160) as cited by Macheche *et al* (2004) aptly classify a small-scale farmer or grower as a “historically disadvantaged individual or group having access to land which normally supports a small or medium agricultural enterprise.”

Eicher (1990) observed that there are four types of farmers in Africa, which include:

- Resource-poor farmers comprising of farmers who sell some of their labour to large-scale farmers and engage in rural non-farm activities to meet their food needs. They produce some of their food and buy the rest
- Smallholders and herders, these are the farmers who rely majorly on family labour to produce food, livestock, and export crops for both domestic and international markets
- Middle “progressive” farmers, they are the farmers who own and operate their farms and often bear the risk of farm innovation, they provide seasonal jobs, and generate a marketable surplus on their produce
- Large-scale farmers, this group of farmers produce mainly for the market; they possess political power and are skilled in extracting subsidies and services from the state to enhance their production.

Figure 3.1 gives a framework catering for the needs of all possible role-players in the value chain. The figure is divided into three categories of farmers, namely subsistence, emerging commercial farmers, and commercial farmers. At each level the degree of involvement by government and/or private sector role-players would be different. The figure suggests that the main responsibility for support on the subsistence level should reside with public

authorities. However, subsistence farmers have the potential to develop into emerging commercial producers as is depicted in the middle of Figure 3.1. Support to this group of farmers would be in the form of an alliance including government, private sector, academic institutions and commercial farmers' initiatives. Emerging farmers are not yet ready to enter the commercial market insofar technology gathering and adoption, as well as management skills are concerned, yet they do not longer qualify as subsistence farmers as targeted by international and governmental support programme. As they move towards complete commercialization, the support functions performed by government could be transferred to other role-players (Van Tilburg and Obi, 2011).



**Figure 3.1: Developmental-transformational path under South Africa's post-apartheid agricultural restructuring programme.**

*Source: Adapted from Van Tilburg and Obi (2011).*

Resource-poor farmers are broadly categorised as subsistence farmers (i.e. those who produce mainly for home consumption) and those with small gardens for fruits and/or vegetable cultivation. Farming does not provide enough income for them to meet all their needs and, therefore, they usually engage in nonfarm activities to make ends meet. These farmers cannot afford to pay for support services and they do not usually sell their produce. This category is also made up of those farmers who derive their livelihoods mainly from nonfarm activities and engage in farming (e.g. gardening) in order to increase their nonfarm income sources. Resource-poor farmers are generally risk-averse; they rely mainly on family labour, own a few animals, and have a small piece of farmland. In addition, they face high transaction costs. Delgado (1998) argues that reducing these transaction costs will determine whether resource-poor farmers' access to assets, information, services and markets will increase. This is emphasizing the need for adequate support systems for this category of farmers.

Middle-income farmers (emerging farmers) include those who are richer than resource-poor (smallholder) farmers and farming is their main source of income. These farmers may also engage in nonfarm activities to augment their farm income. They produce mainly for the market but do not have enough resources and technical expertise (they lack physical and social capital support system) to increase their product market share. They cannot compete effectively with large-scale commercial farmers. Unlike resource-poor farmers, middle-income farmers are not risk-averse, often they are members of farmers' organizations or community groups, and they can raise some collateral for commercial bank loans and can contribute towards the cost of farmer support services. They could pool their resources together collectively in order to achieve common objective of increasing agricultural production.

### **3.2.1 Challenges of smallholder agriculture in rural development**

To improve the contribution of smallholder agriculture to poverty reduction, agricultural productivity must be raised, sustained and supported significantly. This must occur in such a way that environmental sustainability is promoted.

Productivity and environmental sustainability must be pursued simultaneously. Reardon (1998) observes that environmental sustainability emerged as a critical issue in African policy circles in the late 1980s because of famine, growing evidence of land degradation,

deforestation, and desertification, and because of a rebirth of concern for the environment in developed countries. Especially, with the growing concern of impacts of climate change on food security; sustainable smallholder agriculture must of necessity be pursued in tandem with environmental sustainability. Machethe *et al* (2004) note that low productivity of smallholder farmers is one of the most important reasons for the failure of most African countries to achieve food security. Raising agricultural productivity is necessary if African countries are to overcome the problems of poverty and food insecurity. This will require a significant increase in investment in all factors that contribute to agricultural productivity and lifting the constraints thereon, and this should be done with particular focus on smallholder agriculture. Table 2.1 revealed that 42% of the rural ultra-poor rely on crop or livestock production, it identified access to land and water as major constraints to increased agricultural productivity among the smallholder farmers.

Bonnen (1998) contends that increases in productivity arise not only from technological change but also from institutional innovation, improvements in human capital and in the availability of biological and physical capital. Institutions are very vital in improving productivity of smallholder agriculture in South Africa; the various public and private organizations have significant roles to play in advancing the course of smallholder agriculture. Improvement of physical capital in the form of basic infrastructures like, good road networks linking farms to the market, provision of farming equipments, irrigation facilities for smallholder farmers and provision of production inputs like fertilizer, seeds/seedlings. Educating and training these smallholder farmers should also be seen as issues that are critically important to these smallholder farmers.

It has been observed that an inverse relationship exists between productivity and farm size, i.e. productivity tends to be higher on small farms than large farms (Berry and Cline, 1979; Binswanger and Elgin, 1998). This is significant evidence to proof that with increased support for smallholder farmers, there will be a corresponding increase in productivity that will guarantee food security and poverty eradication among the rural poor.

The New African Partnership for Africa's Development (NEPAD) observes that the productivity of smallholder farmers in most African countries is often considered to be low and has been declining during the past two decades. Low smallholder agricultural productivity implies low smallholder agricultural profitability. The value added per worker in agriculture in the 1990s was 12 percent lower than in 1980. Average incomes in the

1990s were 16 percent lower than in the 1980s. Agricultural output has also been falling or levelling off in many African countries. For example, yields of most important food grains, tubers and legumes are no higher currently than in 1980 (New African Partnership for Africa's Development, 2003). It has therefore become necessary for African countries to concentrate more on improving smallholder agriculture; in order to address the problems of food insecurity and extreme hunger, with a view to meeting the Millennium Development Goals (MDGs).

### **3.2.2 Smallholder agriculture and the importance of support system**

As a result of the fact that the agricultural service organizations in South Africa were designed along racial lines, smallholder farmers' needs have not been adequately addressed. Most service organizations are giving more attention to white dominated commercial agriculture. Thus, while the interests of white commercial farmers were being addressed, many smallholder farmers either had limited or no access to support services. Machethe *et al* (2004) observed that where smallholder farmers had some access to farmer support services, the quality of the services has been inferior.

Rukuni and Eicher (1994) argue that in order to advance the course of smallholder agriculture, support services should be accessible to the majority of smallholder farmers. They emphasized that international experience suggests that with adequate access to farmer support services, smallholder farmers can increase productivity and production significantly; citing a practical example of smallholder farmers in Zimbabwe (average farm size of between 2 and 3 hectares) doubled maize and cotton production in the 1980s when extension, marketing and credit services were provided.

Furthermore, the works of other scholars have also corroborated the fact that significant achievements could be made by these smallholder farmers when support services are adequately put in place, there is some evidence that extension has increased productivity and income among smallholder farmers (Birkhaeuser *et al.*, 1991; Bindlish and Evenson, 1993; Bindlish *et al.*, 1993; Umali-Deininger, 1997).

There is a need for smallholder farmers to gain access to farmer support services and reliable markets, if land distribution is to be successful; this becomes necessary in order to ensure that smallholder farming is profitable on a recurring basis (Eicher and Rukuni, 1996). Local and global experiences indicate that it is fruitless to embark on land

distribution without concurrently taking measures to improve access to farmer support services for smallholder farmers. Encouraging access to support services may require that agricultural service organizations be restructured in such a way that it will be easier for them to provide good quality services to smallholder farmers.

However, it is good to stress that revamping agricultural service organization should not be done at the expense of other important factors that could also enhance increased productivity among the teeming population of smallholder farmers. Improving the performance of agricultural service organizations addresses only one of the prime movers of smallholder agricultural development and, therefore, not a sufficient condition for getting smallholder agriculture moving. Other prime movers are human capital, new technology, rural capital formation (infrastructure and improved livestock herds) and a favourable economic policy environment (Timmer, 1990; Eicher, 1990; Eicher and Rukuni, 1986). The approach should be holistic and must be able to address the foundational institutional challenges and constraints confronting these smallholder farmers.

### **3.2.3 Understanding rural development in South African context**

The term 'rural' is a contested term and it is used in a multiplicity of ways, implying that the concept is not easy to define (Anríquez and Stamoulis, 2007). Surveying international and South African literature and policy documents highlights that the key elements in the term 'rural' are social, economic, cultural *and spatial*, with 'rural' characterizing a variety of contexts, which a rural development strategy in a country or in a province needs to take into consideration. The Eastern Cape rural development strategy therefore recognises the multidimensional nature of rural development and seeks to address the distinct challenges of *homelands, farms, semi and arid areas, peri-urban areas and rural towns* through programmes specifically designed for the different regions (ECRDS, 2010). Given the history of South Africa it is important to stress the *interconnectedness of the rural and the urban*: The rural is not opposite of, or separable from the urban. In South Africa the rural and the urban must be understood in their interconnectedness rather than as simple dichotomies. In addition, discourses driving the understanding of the rural that are deficit-oriented run the risk of deepening the powerlessness of rural places ((Porteus and Nabudere, 2005) and should be guarded against. Any definition of rural development needs to speak to its many dimensions, and in the case of South Africa and the Eastern Cape, its particular history. For the purpose of the Eastern Cape rural development strategy

(ECRDS), rural development is defined in a manner that addresses the improvement of standards of living and welfare, but also taking into account past injustices and skewed patterns of distribution and ownership of wealth and assets.

### **3.3 Socio-economic profile of the Eastern Cape Province**

The Eastern Cape is made up of six district municipalities, one metropolitan municipality and 38 local municipalities. The Eastern Cape is situated in the south-eastern part of South Africa with much natural beauty including beautiful coastlines, temperate forests, large areas of rolling rural hinterland and semi-desert landscapes. The Indian Ocean here is temperate while the north-east part of the Province borders with KwaZulu-Natal and touches the southern tip of the Drakensberg range. Mountains and foothills are common in the southern parts of the Province, with parts of the Karoo exhibiting a semi-arid to arid nature. At nearly 170,000 square kilometres, the Province covers 13.9% of the country and its long curving coastline and considerable distances provide the Province with extremely varied landscapes. The Eastern Cape is the only one of South Africa's nine provinces to have all the country's biomes, or ecological zones, within its boundaries. Figure 3.2 shows the districts and the municipalities that make up the Province (ECRDS, 2010).

#### **3.3.1 Geographical location of the study site**

Foundation community project and Ciko Santrini community project are located in Mbashe local municipality; both projects are under the Amatole district in the Eastern Cape province of South Africa. Amatole district is located in the south eastern part of the Eastern Cape Province, between East London and Umtata. Foundation Community Project is situated in Mbozi village, which is 17 km East of Willowvale town, while Ciko project is 7 km from Willowvale town. Geographically, Foundation Community Project is positioned at the following coordinates: S 32° 16' 44.1", E 28° 36' 32.4" and Ciko Santrini Community Project is positioned at the following coordinates: S 32° 14' 49", E 28° 34' 89".



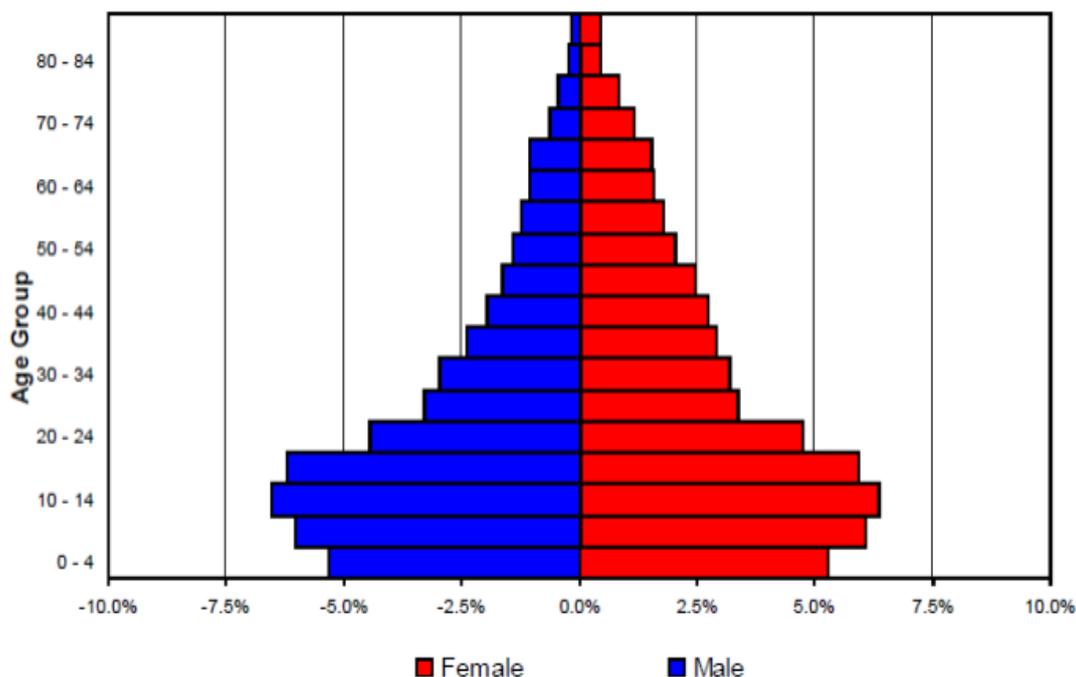
**Figure 3.2: The districts and the municipalities in the Eastern Cape Province.**  
*Source: Eastern Cape development strategy (ECRDS, 2010).*

The geographical location is illustrated in Ciko village has a total of 67 households and Mbozi Village has a total of 113 households. The two villages are under the administration of one headman and therefore are governed by same policies. Mbashe Local Municipality has a total land area of 305 009 hectares. The highest population density generally falls within the Wild coast and former Transkei, with an average of between 2 100 and 3324 households per ward (Gubu *et al* 2005). Studies have shown that Amathole district has the highest population in Eastern Cape, with 1 657 373 people. It is of concern that an estimated 72% of Amatole residents live in poverty while 96% are un-employed (ECDA, 2006).

### 3.3.2 Demographic information

Statistical information from the 2001 Census and the 2007 Community Survey indicate that the South African population increased from approximately 44.8 million in 2001 to 48.5 million in 2007. Over the same period, the Eastern Cape population is estimated to have increased by 200 000 from 6.3 million to 6.5 million. However, the provincial share of the national population has shrunk from 14 percent in 2001 to 13.5 per cent in 2007. This makes the Eastern Cape the third most populous Province in the country after Gauteng (21.5%) and KwaZulu-Natal (21.2%); (ECRDS, 2010)

Figure 3.3 below displays the estimated percentage of the Eastern Cape population by age and gender. Children between 0-19 years constitute the largest proportion (3.1 million) of the population while the chart further reveals that there are progressively fewer middle-aged people (up to 65+ age) in the Province. As a result, a small proportion of approximately 454,000 people or 7 percent of the provincial population reaches old age.



**Figure 3.3: Distribution of the Eastern Cape's population by age and gender (percentage).**

*Source: Adapted from ECRDS (2010); originally derived from Stats's SA community survey, (2007)*

Although the population of the elderly in the Eastern Cape appears to be very small, there are however obvious implications in terms of providing health and social welfare services for this age group. The pyramid also reveals that approximately 57.4 % (3.7 million) of the provincial population falls within the 15-65 years age economically active bracket. This means that 42.6% (2.8 million) of the population is distributed between the age categories (0 to 15 and 65+ years) which translate to a dependency ratio of 74.1% (ECRDS, 2010). Table 3.1 shows the population distribution of local municipalities in Amathole district municipality; Mbashe local municipality had 254,000 people as at the year 2007. This implies that more than a quarter of a million people could

potentially benefit from improved agricultural development initiatives.

### 3.3.3 Poverty and Access to Basic Services

According to ECRDS (2010), some 43 % of the Eastern Cape can be categorized as being poor. The poverty gap, the average distance from the poverty line is 0.20, as is the severity of poverty at 0.12. Analysis of poverty data collected in 2006 indicate that a minimum of R881.5 million would be required per annum to eliminate poverty in the Eastern Cape through an income transfer. Between the 2001 Census and the 2007 Community Survey revealed that 17.5% more people used electricity for lighting, 16% more used electricity for cooking, 16.4% more had access to water inside a dwelling, while 9.3% energy using candle for lighting and 9.2% energy using electricity for heating.

**Table 3.1: Population distribution of the Amathole district of Eastern Cape province, 2007.**

<b>Municipality</b>	<b>Population figure</b>
<b>Amahlathi</b>	139,000
<b>Buffalo City</b>	703,000
<b>Great Kei</b>	45,000
<b>Mbashe</b>	254,000*
<b>Mnquma</b>	288,000
<b>Ngqushwa</b>	84,200
<b>Nkonkobe</b>	123,000
<b>Nxuba</b>	25,000
<b>Total</b>	1,665,000

\*Study site where Ciko and Mbozi are located

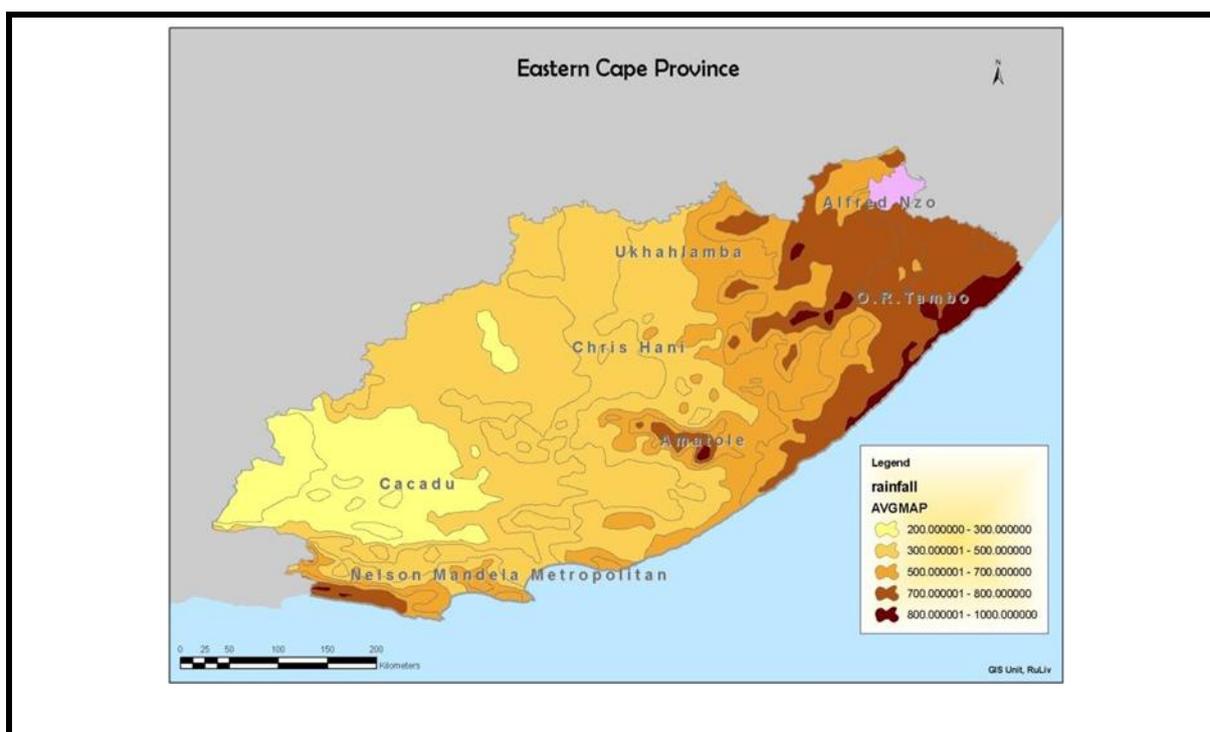
Source: Amathole economic development agency's annual report, 2006/2007.

Ciko and Mbozi villages are connected to Willowvale town through a gravel road of about 17km. Both Ciko and Foundation Community Project have poor basic facilities, though both projects have irrigation facilities; these facilities are not functioning properly. Shixini River is the source of water for both irrigation farm projects. Land preparation is done primarily by the use of a tractor. While Foundation has a tractor, Ciko Project does not

own a tractor but relies on hiring a tractor for land preparation from Foundation Community Project. There are fencing facilities in both; these fences are made of barbed wire to protect crops against theft, pests and animal invasion. Both project sites made arrangement for security personnel; a security guard is employed in each project site to guide against any form of theft.

### 3.3.4 Climate

The Eastern Cape is well watered, with regular rainfall in the mountains of the Drakensberg and hills of the Transkei feeding a number of major rivers. The lowland coastal belt, extending 30km to 60km inland, can have rain all the year round, although the southern cape regions west of Port Elizabeth are the only true winter rainfall regions of the province. The dry Karoo in the west receives little rain (Fig. 3.4).



**Figure 3.4: Map showing the rainfall distribution pattern in the Eastern Cape Province.**

*Source: Eastern Cape rural development strategy (ECRDS, 2010).*

According to ECDA (2006) the long term mean temperature in the study area is 18 degrees Celsius and annual rainfall range between from 801mm and 1500mm, (Maps: Appendix 1 & 2), with 60 to 75% of the rainfall being received in summer (November to April). Summer temperatures range from 22 degrees Celsius in higher altitude areas to

27 degrees Celsius in lower altitude areas while winter temperatures range between 3 and 10 degrees Celsius (Gubu *et al*, 2005) as cited by Muchara B. (2011).

### **3.3.5 Project location and settlement pattern**

Land ownership is basically communal in both Ciko and Mbozi villages, Mbashe local municipality is one of the eight local municipalities in the district. Lands are usually allocated by the headman while grazing land is communally owned. The village is situated on high plateau and the road networks within the villages are connected to one another by gravel; the road terrain is very poor. Livestock get their drinking water from Mbozi River, Shixini River, Ciko River, Qwaninga River and dams in the villages. Piped water is provided by the local municipality through Qwaninga River.

### **3.3.6 Agricultural practices**

The major occupation of the residents in the study area is small scale agricultural production. They produce mainly at subsistence level; Gubu *et al*, 2005 observed that land use patterns in Mbashe Local Municipality shows that any crop can be grown in the rich soils given the stable climate that gradually changes from temperate to sub-tropical along the coastal plains of the region. Crop production is however heavily dependent on rain fed: this is one of the reasons for low crop production in the study area. Individual farmers in the study area do not have access to irrigation facilities, this account for the reason why crop production is very low among the smallholder farmers in the study area. Irrigation system is however available to both Ciko Santrini project and Foundation community project (FCP). The water is pumped by the irrigation engine from the Shixini River; there is no Water Users Association (WUA).

### **3.3.7 Institutional arrangement**

Ciko and Foundation Community Project are separately being operated as cooperatives. Farmers do engage in collective farming activities. However, most livestock farmers in both villages usually produce and market individually. Majority of the smallholder farmers produce only for personal consumption. Technical support is provided by the Eastern Cape Department of Agriculture. These supports often come in the form of provision of extension services, provision of production inputs and periodic training. Major source of funding for Ciko and Foundation Community Project is the Department

of Social Development. A total of R250 000, 00 was provided by the Department of Social Development (DoSD) towards fencing, pump house, chemical storage rooms, pit latrine, guardroom and office construction at Foundation Project, while R240 000,00 was allocated to Ciko Project.

### **3.3.8 Enterprise initiatives**

Ciko and Foundation community project are saddled with the mandate of producing a wide range of crops using the sprinkler irrigation system. They produce and market the following crops: Cabbage, Spinach, Butternut, Broccoli, Pumpkins, Potatoes, Green paper, Carrots and Maize. The decision on what type of crops to be grown is the sole responsibility of Project members; the municipality or the Department of Social Development (DoSD) do not decide for the farmers. The group project in both villages do not involve in livestock farming. Livestock farming is done individually by farmers to enhance individual livelihoods. Some of the livestock in the study area being raised by farmers include: cattle, goats, sheep and chicken. Both on-farm and off –farm marketing of produce is done, as farmers try to maximize profit from their enterprises. Given the complexity of the challenges facing these farmers, this study deems it necessary to explore how the resources of water and land are being utilized by these farmers with a view to identifying the existing support structures available to these farmers.

### **3.3.9 Availability of Water**

Water is generally scarce in the study area; the people make use of different sources to obtain water. Dams and rivers in the study area are used by smallholder livestock owners to cater for their animals. The municipality is assisting in supplying water to the community through water tanks and establishment large reservoir tanks in strategic locations within the community. Water is a finite resource and alongside natural cyclical changes, are new and continuing human activities that have become primary “drivers” of the pressures affecting our planet’s water systems. These pressures are most often related to human development and economic growth. Research argues that there are three drivers of strategic importance for water in South Africa; loss of dilution capacity caused by the over-allocation of national water resources, unique patterns of spatial development, with all of the major centres of economic development are located on watershed divides, and our historic legacy of social trauma from the pre-statehood era (Turton, 2008).

### **3.3.10 Economic analysis**

Research has shown that prices of agricultural commodities have increased considerably in the past two years, creating a global food price “bubble”. These increases according to Von Braun (2008) are broadly attributed to rising population growth, energy prices, subsidised bio-fuel production as well as underinvestment in agricultural infrastructure and sciences. The food crisis has added to general inflation and macro-economic imbalances to which governments must respond with financial and monetary policies. At the same time, the financial crunch and the accompanying economic slowdown have pushed food prices to lower levels by decreasing demand for agricultural commodities for food, feed, and fuel. Because the two crises are interconnected, a co-ordinated response is needed to alleviate the double blow on the poor (Von Braun, 2008)

The Eastern Cape Province generated 7.8% of the total Gross Domestic Product (GDP) of South Africa in 2007, making it the fourth largest contributor to the national GDP after Gauteng, Western Cape and KwaZulu-Natal. Nevertheless the Province is far below the leading province, Gauteng, which accounts for 36 percent of South Africa’s GDP. In terms of real Gross Geographic Product (GGP) per capita; the Eastern Cape is the poorest province in the country, with an annual income of R13, 511 per person living in the Province in 2007. This is just over half of the national average of R23, 203 (ECRDS, 2010).

Given the fact that smallholder farming falls within the primary occupation of the vast majority of the rural communities in the Eastern Cape; this study becomes relevant when considering the economic benefits that could accrue to these farmers if resources are judiciously utilized within an environment that provides them with all the needed support structures. Hence, the study focuses on collective and individual resources utilization with particular emphasis on the existing physical and social capital that could support the farmers in participating in the mainstream economy.

### **3.4 Methodology, description of data and data analysis**

This section highlights the sampling methods, data collection and analytical tools that were employed during the course of the study. The specific objectives stated under the introduction are clearly described and analysed; the analysis were used to answer the research questions previously raised in chapter one. The section describes the sampling

procedure used during the study and the survey tools used to extract data at each stage are well stated. Qualitative and quantitative data were collected and the relevant analytical techniques were used accordingly. This section succinctly describes the qualitative and quantitative data analytical techniques employed in this study.

#### **3.4.1 Research strategy**

Ciko and Mbozi villages were used as the research sites for the study. Data was collected across the two villages through sampling of individual farming households. In addition, the two community projects located within the study area were also investigated. An attempt was made at comparing the activities and assets among the household farmers with what is taking place at the community project sites.

This study discusses and analyses the findings of the field survey, focused group discussion and key informants interviews conducted in Mbozi and Ciko communities of Mbashe Local Municipality of the Eastern Cape Province in August 2010. The data under analysis were collected from 100 smallholder farmers. The study gives a brief overview of demographic structure of individual household farmers in both villages and then proceeds to describe the process by which farmers access land and water, procure their production inputs and market their agricultural produce. Furthermore, this study also analyses and describes the existing support structures for farmers in both communities; the agricultural community projects in both villages.

#### **3.4.2 Study site selection and sampling technique**

The site selection was based on the previous research that was conducted in the study area, this present study is a follow-up and a continuation of the stages involved in the research. A multi-stage random sampling procedure involved selecting the local government areas and the villages. The sampling actually started from the site selection process, which involved random visits to communities having irrigation projects in Eastern Cape Province. A total of nine irrigation schemes were visited as potential study sites, from which two sites in Mbashe local municipality were selected, these are the Foundation Community Project (FCP) and Ciko Santrini Community Project. The bases for selecting these two sites have to do with operational status and crop diversity of these two projects.

A total of 59 respondents were sampled in Mbozi village, this comprises 20 members

(active and non-active members) of the irrigation scheme and 39 non-members. At Ciko village, a total of 41 respondents were interviewed; and this comprises of 18 members (active and non-active members) of the irrigation project and 23 non-members. The entire household heads sampled equals 100 (Table 3.2); this was randomly sampled across Ciko and Mbozi villages.

**Table 3.2: Sample overview of smallholder farmers in the study area.**

<b>Site</b>	<b>Irrigation project</b>	<b>Non project members</b>	<b>Total</b>
<b>Foundation Community Project</b>	20	39 (Mbozi village)	59
<b>Ciko Santrini Community Project</b>	18	23 (Ciko village)	41
<b>Total</b>	<b>38</b>	<b>62</b>	<b>100</b>

*Source: survey data 2010.*

### **3.4.3 Data collection**

The study made use of both primary and secondary data which were collected in four stages, namely: (1) the orientation stage, (2) the farm household survey, (3) focus group discussions (FGDs) and (4) the key informant interviews.

#### **3.4.3.1 The orientation stage**

The orientation stage was meant for study area visitation in order to physically assess the situation of the farmers in the study area. It provided a basis for a personal visual assessment of some existing assets in the study area. This stage was also used to become familiar with the government officials that were to be interviewed in the course of the research, in order to schedule appointments with them. Visits were made to the Department of Social Development (DoSD), Eastern Cape Department of Agriculture and Rural Development, and Department of Water Affairs (DWA) as well as to the office of the Municipal Manager, all within the Mbashe Local Municipality. The contacts established through this visit were crucial in identifying the official structures

in place, as well as identifying those responsible for attending to the needs of the smallholder farmers in the study area. This stage actually gave focus to the research.

#### **3.4.3.2 Farm household survey**

A survey questionnaire was administered to 100 individual smallholder farmers (41 households in Ciko and 59 households in Mbozi). The questionnaires were administered in person in order to give room for thorough probing. A team of four experienced enumerators administered the entire questionnaire. Data were collected on household demography, resource access, market access, production inputs, types of crop produced, etc.

#### **3.4.3.3 Key informant interviews**

It was to be necessary to conduct in-depth discussions with various key informants due to the fact that they are well grounded in the community. Questions were designed for the key informants based on the core objectives of the study. Key informants included the sub-headmen, headmen, the local municipal manager, as well as the traditional chief and sub-chief. These key informants were drawn from both Ciko and Mbozi villages. Their insights in the discussion were very useful in understanding the nature of the assets and support available to the farmers, and ways in which cultural belief systems, norms, values and traditions influence the activities of smallholder farmers in the study area.

#### **3.4.3.4 Focus group discussion**

These were basically used as an exploratory method for discovering people's thoughts and perceptions. Detailed information was also obtained through this means. Data were generated during interaction with and between members of the two groups. The FGDs were conducted separately and were specifically for project members only. Participants in the FGDs were the members of the two community projects at Ciko and Mbozi villages. The discussion afforded them the opportunity to share their experiences and highlighted some of the challenges that they currently face.

### **3.5 Data analysis**

Variables were evaluated and analysed based on the core objectives of this study. Variables relating to the demographic structure of respondents, individual and

collective water use, individual and collective land use, production input acquisition, marketing system within the food value chains and public-private partnerships were analysed. The sustainable livelihoods assessment was meant to generate an understanding of the role and impact of the project at the study area in enhancing and securing the livelihood of the smallholder farmers, as well as the impact that social and physical capital play in supporting agricultural enterprises.

The data were processed appropriately using SPSS 19 and Microsoft Excel. Descriptive statistics were used where appropriate, being supplemented with qualitative information. The analysis involved three major levels:

Descriptive analysis provided a general picture of the livelihood situation in the study area, for instance livelihood asset ownership and distribution in the study area were considered. The five major forms of livelihood capital were described based on the information collected from the individual household survey – although the focus was on physical and social capital.

Explorative analysis was conducted to determine various factors that were responsible for current livelihood conditions in the study area. Two major analytical frameworks were used, namely (1) The sustainable livelihood frameworks and (2) Williamson's four levels of social analysis. The research conducted involved more qualitative analysis rather than quantitative analysis. Inferential analysis was used to provide more detailed information than descriptive statistics; it helps to generate convincing support for the theory employed in this study.

### **3.5.1 Descriptive statistic**

Descriptive statistic is used in this study to discuss and summarize assertion of facts; in this study it is intended to guide against misunderstanding of the data used. Specifically, this study is well represented in tables, graphs and charts. The data were captured through the application of computer software. SPSS 19 and Microsoft excel were employed; data were rendered both graphically and numerically. The descriptive method was employed in this study mainly to facilitate the description of collective and individual use of resources in the study area.

### 3.5.2 Conceptual frameworks and method of analysis

In order to understand how social and physical capital impact on smallholder farmers' ability to participate in the formal economy, an analysis of the study area was undertaken. Two approaches were used for the analysis, namely the Sustainable Livelihoods Framework (SLF) and Williamson's Four Levels of Social Analysis.

The SLF approach was employed in order to facilitate a detailed understanding of the various existing and non-existing capital in the study area. In developing the sustainable rural livelihood (SRL) framework, Scoones (1998) identified five assets or types of capital namely natural, human, financial, physical and social that can be used to describe the livelihood condition of smallholder farmers. This study takes measures to identify and evaluate the five assets or capital types within the context of the prevailing circumstances in the study area.

**Table 3.3: Summary of study objectives and analytical tools employed.**

Objective	Analytical tool
1. To assess and describe the impact of collective and individual use of water and resource access on the effectiveness of farmers in the study area.  2. To analyse and describe the impacts of existing support structures of physical and social capital on the productivity of farmers in the study area.  3. To analyse various technical and institutional factors preventing farmers in the study area from participating in the mainstream market.  4. To make recommendation for policy formulation and implementation	1. Descriptive statistics  2. The Sustainable Livelihood Framework/Analysis  3. (a) Williamson's four levels of social analysis. (b) Logistic regression model and discriminant analysis  4. Summary of findings and conclusion based on relevant literatures.

The concept of social capital, which is one of the forms of capital that the SLF defines, is a key component of institutional economics and thus it was perceived that a more relevant

analytical approach be used that succinctly describes the various institutional frameworks in the study area. Williamson (2000) developed an approach to social analysis, which defines four levels of analysis. This approach was employed in this study to facilitate a holistic analysis of the various institutional arrangements in the study area and the framework has been comprehensively discussed in the previous chapter.

The main components of SLF are summarized as:

- Livelihood assets
- Transforming structures & processes
- Livelihood strategies
- Livelihood outcomes
- Vulnerability context.

These five components were described in the previous chapter and they form the bases of analysis for this study. The household survey provided data that allowed for this assessment. Table 3.4 below shows some relevant variables that informed the method of analysis employed under this study. Human, social, natural and financial capital can all be considered as relatively intangible forms of capital, while physical capital comprises more tangible assets.

While all forms of capital listed above were explored in a superficial way in order to explain the use of the SLF, the focus of this study is specifically on social and physical capital. The focus group discussions with traditional leaders ward committee members and some key informants in the community revealed the impacts of such factors on the livelihoods of the farmers, which are presented later in the report.

### **3.5.3 Binomial logistic regression model**

The study employed the logistic regression model (logit model) for analysis. Binomial logistic regression (BLR) model is useful in analysing data where the researcher is interested in finding the likelihood of a certain event occurring. In other words, using data from relevant independent variables, binomial logistic regression is used to predict the probability (p) of occurrence, not necessarily getting a numerical value for a dependent variable (Gujarati, 1992).

**Table 3.4: Variables used in evaluating different forms of capital/assets.**

<b>Form of capital</b>	<b>Variable</b>
<b>Human Capital</b>	Household size, household head age, education, gender of household head, health status, labour use.
<b>Natural Capital</b>	Access to agricultural land, sources of water.
<b>Financial Capital</b>	Sources of income, access to credit.
<b>Social Capital</b>	Membership of a community group, membership of farmers associations, access to market information, mentorship and skills transfer.
<b>Physical Capital</b>	Personal household items, Transport, Total livestock, Total farm equipment, Total house asset value, Road access to the farm.

Gujarati (1992) observed that logistic regression does not assume a linear relationship between the dependent variable and independent variables, but requires that the independent variables be linearly related to the logit of the dependent variable. Logit model is used in estimating the probability of whether an event occurred or not. In this study, it is used primarily to estimate the probability of whether the smallholder farmers have access to market or not. This study is premised on the fact that some of the smallholder farmers in the study area do market a few of their produce either formally or informally.

In this study, the farmers' willingness/decision process to access market is modelled using the random utility framework adopted from Kolady and Lesser (2006). The details of the model are given in equation (1). From the utility theoretic viewpoint, a farmer is willing to access market if the farmer's utility from such decision, minus its cost, is greater than or at least equal to the utility the farmer will derive from not accessing market (equation 1) – that is, if:

$$U(1, Y_1 - C; \mathbf{X}) \geq U(0, Y_0; \mathbf{X}) \dots \dots \dots (1)$$

Thus, equation (1) is a utility function, indicating the satisfaction or otherwise; the farmer will derive from being able to access market

Where:

- ✓ 1 represents farmers' response in favour of market access (have market access)
- ✓ 0 represents farmers' response against market access (not have market access)
- ✓  $Y_1$  and  $Y_0$  are expected benefits from the two responses
- ✓  $C$  represents what it will cost the farmer to have market access
- ✓  $X$  is a vector of farmers' perception on market attributes

In this study, it follows that farmer's chances of being able to access market depends on certain factors as modelled in the variable.  $P_i$  represents the probability that the farmer will be able to access market and  $(1 - P_i)$  represents the probability that the farmer will not be able to access market. A typical logistic regression model, is of the form:

$$\text{Logit}(P_i) = \ln(P_i / 1 - P_i) = \alpha + \beta_1 X_1 + \dots + \beta_n X_n + \mu_t \dots \dots \dots (2)$$

Where:

- ✓  $\ln(P_i / 1 - P_i)$  represents logit of market access choice
- ✓  $P_i$  represent the odd the farmer will have market access
- ✓  $1 - P_i$  represents the odd that farmer will NOT have market access
- ✓  $B$  represents coefficient
- ✓  $X$  represents covariates
- ✓  $\mu_t$  represents error term

Thus, equation (2) represents the probability of whether market access is possible for the farmer, due to certain factors specified in the model for both butternuts and chicken value chains in the study area.

Mohammed and Ortmann (2005) argued that several methods can be used to explain the relationship between dependent and independent variables. Such methods include linear regression models, probit analysis, log-linear regression and discriminant analysis. However, binomial logistic regression was chosen for this analysis because it has more advantages, especially when dealing with qualitative dependent variables and when the

dependent variable has two categories. When compared to log-linear regression and discriminant analysis, logistic regression proves to be more useful. Log-linear regression requires that all independent variables be categorical and discriminant analysis requires them all to be numerical, but logistic regression can be used when there is a mixture of numerical and categorical independent variables (Dougherty, 1992).

### 3.5.4 Discriminant analysis

Logistic regression answers the same questions as discriminant analysis. It is often preferred to discriminate analysis as it is more flexible in its assumptions and types of data that can be analysed. Logistic regression can handle both categorical and continuous variables, and the predictors do not have to be normally distributed, linearly related, or of equal variance within each group (Tabachnick and Fidell 1996). However, one of the requirements of the regression analysis is that the dependent variable (Y) must be a continuous variable. If this assumption is violated, then the use of a regression analysis is no longer appropriate (Ramayah *et al.*, (2010).

A discriminant analysis is a parametric analysis whereas a logistic regression is a non-parametric analysis, the major difference between these two methods of statistical analysis is that for a discriminant analysis the samples are from a normally distributed population while the normality requirement is not needed for a logistic regression because it is a distribution free test (Ramayah *et. al.*, 2004; Ramayah *et. al.*, 2006). The analysis creates a discriminant function which is a linear combination of the weightings and scores on these variables. The maximum number of functions is either the number of predictors or the number of groups minus one, whichever of these two values is the smaller. Suppose we have two populations, where the first population is  $N(\mu_1, \sigma_1^2)$  and the second population is  $N(\mu_2, \sigma_2^2)$ , then the likelihood for a single observation is:

$$f_i(y) = (2\pi\sigma_i^2)^{-1/2} \exp \left\{ -\frac{1}{2} \left( \frac{y - \mu_i}{\sigma_i} \right)^2 \right\}$$

Similarly, the likelihood for the first population is larger than the second population when:

$$\frac{\sigma_2}{\sigma_1} \exp \left\{ -\frac{1}{2} \left[ \left( \frac{y - \mu_1}{\sigma_1} \right)^2 - \left( \frac{y - \mu_2}{\sigma_2} \right)^2 \right] \right\} > 1.$$

When  $\sigma_1 = \sigma$ , it means that some significant cases had occur. This implies that the likelihood is positive when:

$$(y - \mu_2)^2 > (y - \mu_1)^2 \text{ or } |y - \mu_2| > |y - \mu_1|.$$

Note: Smallholder farmers in the study area are involved in both the production of crops and livestock; for the purpose of analysis this study examines the market access for livestock and crops with particular emphasis on Chicken and butternuts production.

The equation above is assumes that the constants and variables in the exponents are positive.

For the purpose of this study; the two populations are butternuts and chicken, each has its own different levels of observations. The number of observations for chicken was 13 (variables) while the numbers of observations for butternuts was 11 (variables). A detailed explanation for the discriminant analysis is presented in chapter 6 under interpretation of inferential analysis for discriminant analysis.

**Table 3.5: Description of the variables used in both models.**

<b>Variable label</b>	<b>Variable name</b>	<b>Coding of variable</b>	<b>Expected relationship</b>
<b>CHIASO</b>	Member of chicken farmers association	1 if yes, otherwise 0	+
<b>ASSTMU</b>	Assistance from the municipality eg good road infrastructure	1if good, otherwise 0	+
<b>ASSDOS</b>	Received assistance from the Department of Social Develop.	1 if yes, otherwise 0	+
<b>PROMEM</b>	Member of project	1 if member, otherwise 0	+
<b>INCOMES</b>	Major income source	1 if only livestock, otherwise 0	+
<b>GOVSUBS</b>	Inputs subsidy	1 if yes, otherwise 0	+
<b>SOCIALG</b>	Depend only on social grants	1 if yes, otherwise 0	-
<b>LWDOA</b>	Agric. Dept. providing market info	1 if yes, otherwise 0	+
<b>ARFDOA</b>	Assistance from the Department of Agric. E.g. access to ext.	1 if yes, otherwise 0	+
<b>NFGAL</b>	Need for farmer's group or association	1 if yes, otherwise 0	+
<b>PARTAO</b>	In any partnership e.g. contractual agreement	1 if yes, otherwise 0	+
<b>BUTTPRO</b>	Farmer's decision to produce butternuts	1 if yes, otherwise 0	+
<b>AGREDEVP</b>	Membership of agricultural development	1 If yes, otherwise 0	+
<b>CHFMAR</b>	Decision to produce chicken	1 if yes, otherwise 0	+
<b>GOVSUBF</b>	Government subsidy on fertilizers	1 if yes, otherwise 0	-
<b>GENDER</b>	Gender's impact on market acces	1 if yes, otherwise 0	+/-
<b>HHSIZE</b>	Impact of household size on market access	1 if yes, otherwise 0	-
<b>AGEHH</b>	Whether the age of household head could affect market access	1 if yes, otherwise 0	+
<b>LEVEDHH</b>	Whether level of education of househead could affect market access	1 if yes, otherwise 0	+
<b>COLWAT</b>	Whether collective water use could affect market access	1 if yes, otherwise 0	+
<b>BUTTASSO</b>	Whether collective water use could affect market access	1 if yes, otherwise 0	+
<b>BUTTMD</b>	Whether collective water use could affect market access	1 if yes, otherwise 0	+
<b>CHIRM</b>		1 if yes, otherwise 0	This was used as the dependent variable to analyse chicken

*Source: Survey data, 2010.*

### 3.5.5 Definition of the variables specified in both models

The variables examined in the study are presented in Table 3.5. Studies and literatures have shown that certain factors must be in place for smallholder farmers to be able to efficiently access the market; this section presents those relevant statements with a view to examining their effects on the possibilities of market access for smallholder farmers in the study area.

- a) **CHIASSO:** This variable measures association among chicken farmers, the general belief is that when farmers belong to association, the networks provided by the association could assist in ensuring that the farmers have access to basic information that could impact on the possibility of having access to market.
- b) **ASSTMU:** This variable was fitted into the model test the level of support for these smallholder farmers at the level of their municipality.
- c) **ASSTDOS:** This variable measures the assistance received from government agency, it was fitted into the model to test the significance of government intervention through the provision of necessary support services to these farmers, these services could be in terms of rehabilitation of road networks leading to farm, provision of transport services, etc and how this services could lead to efficient market accessibility for the farmers
- d) **PROMEM:** This variable seeks to determine whether the involvement of smallholder farmers in community project could enhance market access.
- e) **INCOMES:** Income could serve as one of the reasons the farmers are producing, with adequate and timely access to information, smallholder farmers could decide to produce solely for income. This decision to produce because of the income derivable from the venture could encourage farmers to seek ways of penetrating the market.
- f) **GOVSUBS:** Provision of input subsidy; this variable was fitted into the model to test significance of government subsidy to these farmers, and to find out if this gesture could facilitate market access for the farmers; the subsidy could be in the form of seeds/seedlings, vaccines etc.
- g) **BUTTPRO:** This variable describes farmers' intention or decision of producing butternuts for market purposes; most smallholder farmers in the study area produce at a very small-scale. However, this variable seeks to test the significance of

- farmers' decision to produce butternuts marketing purposes only; with a view to determining the effect of such decision on market access for farmers.
- h) AGREDEVP:** Participation or membership in agricultural development programmes; this variable seeks to test whether involvement of farmers in agricultural development initiative could impact on market access for this farmers.
  - i) CHFMAR:** This variable describes farmers' intention or decision of producing chicken for market purposes; most smallholder farmers in the study area produce at a very small-scale. However, this variable seeks to test the significance of farmers' decision to produce chicken for marketing purposes only; with a view to determining the effect of such decision on market access for farmers.
  - j) GOVSUBF:** This variable specifically seeks to measure the impact of subsidy for fertilizer on butternuts market access, whether this fertilizer alone could be play a significant role in market access for butternuts
  - k) PARTAO:** Partnerships with public and private organizations, this variable seeks to measure the significance of strategic partnerships on market access for farmers in the study area.
  - l) GENDER:** This variable represents gender; it seeks to measure the impact of gender on market access for both chicken and butternuts, to find out if males are better able to access market than females. The variable is fitted into discriminant analysis only
  - m) HHSIZE:** This variable is fitted into discriminant analysis to measure the impact of household size on the likelihood of market access for farmers in the study area. It aims to reveal whether larger household size are better able to access market better than the smaller households.
  - n) AGEHH:** This represents the age of household heads; this variable is fitted into discriminant analysis to determine whether age of household head could play a significant role in creating market access for the farmers in the study area.
  - o) LEVEDHH:** This represents level of education of household heads in the study area. This variable is fitted into discriminant analysis to determine whether the level of education of household heads could influence market access for farmers in the study area.

- p) **COLWAT:** This represents collective water usage by farmers in the study area, it is fitted into discriminant analysis to determine whether water usage could play a significant role in market access for the farmers
- q) **SOCIALG:** This represents social grants; it is fitted into discriminant analysis to determine whether social grants could influence market access for farmers in the study area.
- r) **BUTTASSO:** This represents association of butternuts farmers, this variable is used only in the discriminant analysis to determine whether belonging to butternuts farmers association could affect market access for the crop among the farmers in the study area
- s) **BUTTMD:** This variable aims to determine whether meeting market demands for farm produce (butternuts) could impact on the possibility of market access for the smallholder farmers in the study area.
- t) **CHIRM:** This represents whether there is a ready market for chicken in the study area, and this was used as our dependent variable to analyze factors that could be responsible for market access for chicken in the study area; using logistic regression model
- u) **BUTTRM:** This represents whether there is a ready market for chicken in the study area, and this was used as our dependent variable to analyze factors that could be responsible for market access for butternuts in the study area; using logistic regression model

### 3.6 Chapter Summary

The study was conducted in Mbozi and Ciko villages in Mbashe Local Municipality of Eastern Cape. Household questionnaires (100) were administered in both villages; focus group discussions and key informant questions were administered to specific group of people in both villages. Descriptive statistics were used to profile household characteristics while Sustainable Livelihood Framework (SLF) was used to describe the various livelihood assets of the smallholder farmers in the study area. Williamson's 4-level of social analysis was employed to analyse the different levels of institutional arrangement and social embeddedness in the study area. Logistic regression analysis was used to analyse major variables that are of relevance to the study, with respect to

livestock production among the smallholder farmers in both Ciko and Mbozi villages. This gives an analytical model specification for the study. Microsoft Excel and Statistical Package for Social Scientists (SPSS 19) were used in analysing the data.

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**COLLECTIVE AND INDIVIDUAL RESOURCE UTILIZATION**

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**4.1 Introduction**

This chapter seeks to analyse the collective and individual use of resources among the farmers in the study area. Emphasis is placed on the analysis and description of collective and individual water resource use for crop and animal production in relation to collective and individual marketing, with attention to amongst others:

- Land and water resources
- Production input acquisition
- Marketing within selected food value chain
- Alternative cooperative governance for input/product marketing
- Public-private partnership for resource use and input/product marketing

**4.2 Descriptive analysis of household variables**

This section presents the findings of the field survey that was conducted in the study area (Ciko and Mbozi villages in Mbashe local municipality). The data under analysis was collected from 100 smallholder farmers. It gives a brief overview of demographic characteristics of the sampled households and further discusses socio-economic aspects that are of significance to how resources are utilized by farmers in the study area. Descriptive statistics, frequency counts and percentages illustrated by graphical presentations were used to present the results.

**4.2.1 Demographic context**

Table 4.1 summarizes the demographic profiles of individual farmers in both Mbozi and Ciko villages in terms of household size, age of household head and marital status of the household head.

**4.2.2 Age of household heads**

The study revealed that the mean age of the household head in the study area is 54.61, and it indicates that the majority of the house heads interviewed were not too hold to farm;

most of them are still within productive age. The minimum age is 19 years while the maximum age is 82 years.

**Table 4.1: Household demographic information.**

Variable type	Mean	Median	Minimum	Maximum
Household size	4.65	5.00	1	12
Age of household heads	54.61	57.50	19	82

*Source: Survey data August 2010.*

### 4.2.3 Gender of household heads

The study shows that 49% of the surveyed people are men while 51% are women, indicating that more women are involved in agriculture than men in the study area. The numbers of women who are heads of the household are more than the number of men in the study area.

### 4.2.4 Marital status and Income Sources

The marital status of the respondents was also analysed and the results show that 41% are married indicating the tendency to have a stable small scale farm to support the family, 34% are widowed - mostly due to old age. The study revealed that 18% of the respondents are single; the percentage of the divorced is 7% while 34% were widowed. These data about the demographic profiles could provide us with useful information about the lifestyle of the farmers with respect to resource acquisition and utilisation. Of the sampled respondents, 60% depend only on social grants as their major source of income, 17% depend on a combination of social grants and small-scale farming.

Table 4.2 below gives a summary of the major sources of income for the individual house farmers in the study area.

**Table 4.2: Major income sources for the farmers.**

Income sources	Frequency
Farming	2
Social grants	60
Teaching	4
Other (gifts)	10
Farming and social grants	17
Social grants and teaching	1
Social grants and other (gifts)	1
Farming and other (gifts)	5
Total	100

*Source: Survey data August 2010.*

Table 4.2 clearly reveals that only 2% of the individual household farmers derive their source of income from farming alone - this is very small considering the rural nature of this community and the opportunities that the natural resources provide for agricultural activities. Some of the reasons that could be responsible for this are discussed in this report and forms part of the basis for the investigation of these smallholder farmers in these two villages.

#### **4.2.5 Other relevant demography**

Factors such as over-dependence on social grants and old age are very crucial. The study shows that 60% of the sampled household farmers depend solely on social grants as the only source of income. This is quite understandable when you consider the fact that well over 50% of the sampled farmers are aged and it further explains why a significant percentage of them have to also rely on different forms of gifts / remittances from their children or relatives in bigger cities for support. The survey further revealed that only 17% of the sampled individual households derive their income from a combination of farming and social grants.

The biggest challenge for increased future food production in South Africa is the investment in human capital and empowerment through knowledge that enables decisions and actions. The reason is that productive use of soil and water for food production depends on education, health and practical skills of women and men

cultivating the land. This empowerment is urgently required because of the widespread household food insecurity and under-nourishment currently experienced in rural areas (WRC, 2010).

The study shows that 74% of the respondents lack access to specialized skills and 50% indicated that they are sick/physically challenged; which inadvertently hampers effective participation in farming operations. Table 4.3 below shows the level of education of individual household in the study area.

**Table 4.3: Level of education of individual household head.**

Education level	Percentage
Primary	54
Secondary	41
Tertiary	3
None	2
<b>Total</b>	<b>100</b>

Source: *Survey data, 2010.*

Table 4.4 above revealed further, that farmers in this study area have the requisite basic literacy foundation. Of the 100 respondents, 54% only have primary school education. This is not sufficient when one considers the slow rate at which this low level of education could allow these farmers to engage with the latest skills and techniques needed in this modern time to improve farming practices. However, the 41% of farmers with secondary education potentially supports the possibility of their benefiting from any specialised training on the management of resources at their disposal. The study also revealed that the farmers lack specialized skills as only 26% have specialized skills or training in agricultural practice such as modern farming techniques in home gardening, specialized trainings in farm record keeping, etc.

### 4.3 Access to land

The study reveals that 84% of the people use land for agricultural purposes. This clearly confirms that the communities are actually agrarian by nature, however the study further reveals that despite the fact that these communities are agrarian, the majority of the people are not fully dependent on farming, given that only 2% of households are

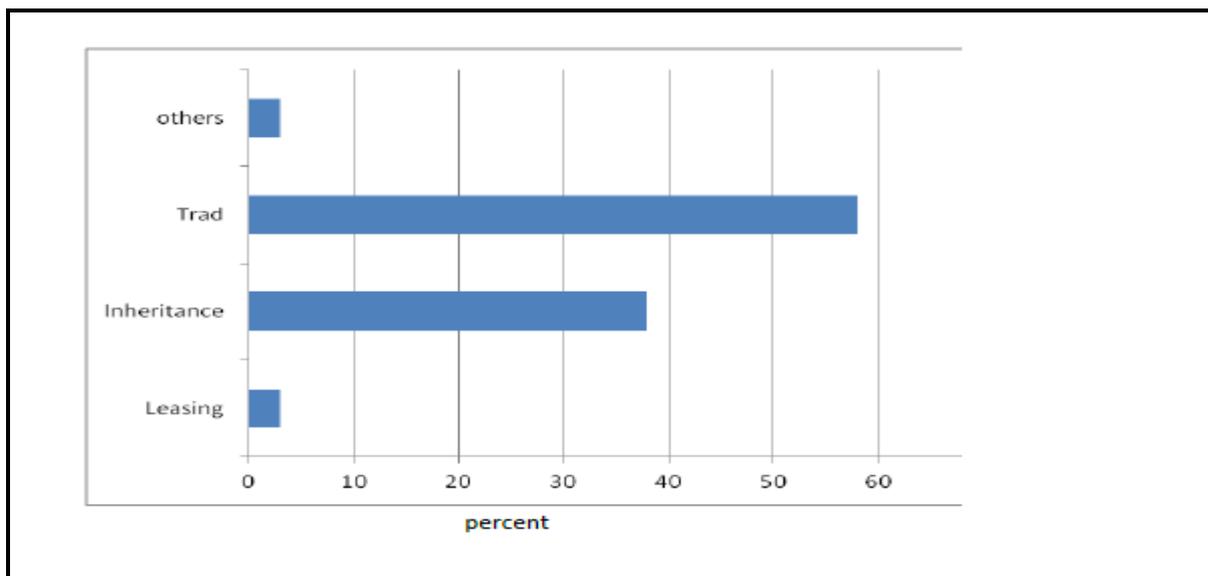
fully dependent on small scale farming - the major source of income for the people being through social grants, which 60% of the people directly depend on for their livelihoods.

It is interesting to know that 79% of the women interviewed in both communities are actively involved in agriculture, with more number of women in Ciko community. In terms of old age, only 25% of the respondents were too old to farm and 50% were too sickly or physically challenged to farm. All these factors highlighted so far succinctly support the degree to which land is utilized in these two communities. Another very important factor is the number of people who are engaged or employed in other jobs. Twenty percent of the people indicated that they were involved in other jobs not related to agriculture.

#### **4.3.1 Land acquisition**

The process by which households gain access to land for agricultural purposes was investigated. In terms of land acquisition, 39% of the people indicated that they acquired land by inheritance while 59% indicated that they got their land through the traditional ownership system (these could be closely related as land inherited would in all likelihood have originally been allocated to the household through the traditional system). Only 2% of those interviewed obtained theirs through leasing. Detailed explanation on methods and procedures for land acquisition in both villages is provided in the section below.

Though land is acquired predominantly for agricultural purposes, there are other uses to which land is used in these two communities. For instance, a discussion with key informants in both villages revealed that apart from farming purposes and homesteads, land in these two villages is also used for small business activities such as shop buildings, etc.



**Figure 4.1: Different types of land acquisition.**

#### **4.3.1.1 Procedures pertaining to land acquisition**

This section of the research gives attention to the local systems that are in place to allow access to land for housing, crop production, etc. In terms of this, 79% of the people interviewed recognized that there are laws and rules governing land tenure and acquisition. More explanations is provided under cooperative governance of land acquisition in this study

An interactive discussion with key informants revealed that the process of land acquisition starts with an individual who expresses interest in a particular piece land. The individual then approach his neighbours (the neighbours in this case are the people living very close to the land the individual wants to acquire). It is important that these neighbours agree with the individual to make use of the land - once the consent of these neighbours had been sought and a mutual agreement established, the individual then proceeds to the subhead man who is in charge of the area where the land is located.

The subhead man is first interested in knowing whether an agreement had been reached between the individual and his neighbours. Once this has been ascertained the subhead man then tells the potential land owner to bring traditional beer for a mini ceremony with the community members. The entire community is then notified at the ceremony about the intended land to be acquired and the individual who has expressed interest in acquiring the land. The essence of the ceremony is to inform the larger

community member, this is done in order to ensure that there is transparency and to avoid conflict of interest with respect to the particular land under considerations.

After the mini ceremony, and subject to there being no objections to the acquisition of that particular land, the subhead man and the potential land owner then proceed to inform the ward committee, which represents the municipality at the village level. The subhead man then takes the potential land owner to the headman who is the overall traditional head in the village -he is then required to give gifts to the headman (e.g. brandy).

The headman then writes a formal letter to the Department of Agriculture informing them that an individual had expressed interest in a particular piece of land in the village and that a mutual agreement has been reached between the community and the potential land owner. The potential land owner then takes the letter to the ward councillor; who is a representative of the municipality at the ward level and he is politically elected to that position. It is the duty of the ward councillor to confirm from the ward committee that they have been duly informed about the intended land and intended land owner. Once the ward councillor has ascertained this from the ward committee, he will then also write a letter to the Department of Agriculture to his awareness.

The potential land owner then takes the two letters to the Department of Agriculture for endorsement; the Department of Agriculture then sets a date for land allocation. It is the duty of the intended land owner to inform the headman and the subhead man about the date for the land allocation - the headman and the subhead man will then inform the community members.

After the land had been officially allocated, it is the duty of the Department of Agriculture to apply for permission to occupy (PTO) on behalf of the land owner from the Department of Land affairs. However, the new land owner could begin to use the land even before the PTO is issued, since the process usually takes some period of time due to official processes.

The study revealed that land allocation and acquisition usually follows the same procedure highlighted above, regardless of whatever purposes the land is to be used for. However, corporate organizations or registered companies will, among other things,

submit copies of their constitution to the Department of Agriculture as part of the conditions to be fulfilled before land is officially allocated to them.

The key informant discussion also stated some of the problems associated with land acquisition in the community. These include the death of a land owner. If a land owner dies, the clan might not want to release the land to someone else who is interested in putting the land to productive uses. Another problem is that of religious belief - some religions do not encourage their followers to give alcoholic drinks to the Headmen, yet buying brandy or other alcoholic drinks for elders of the community is one of the informal conditions that must be fulfilled before land is allocated to any interested person.

#### **4.3.1.2 Access to grazing land**

While individual households can secure access to land for cropping purposes, the grazing area is used communally. Discussions with a key informant in the community revealed that livestock owners are not permitted to graze cattle and other livestock on lands meant for crop production.

Within the study site there are areas of land dedicated for grazing purposes where every community member may graze their livestock. No rules or processes controlling access to the grazing area were identified through the study – these were limited to the exclusion of livestock from the cropping lands.

#### **4.3.1.3 Under-utilization of allocated cropping land**

There are allocated lands that are not being used by the farmers in both communities, this study reveals that 33% of the people in both communities have allocated lands that are not being used for any productive purposes. All the people interviewed gave reasons why they have allocated lands that they are not using, these reasons are summarized in table 4.4 below.

Since land is not being fully utilized in these two communities, it is essential that ways are found to address the challenges so that land can be brought back into production. This becomes necessary if the problems of poverty and food insecurity are to be effectively addressed in the study area.

**Table 4.4: Reasons given for underutilization of land.**

<b>Reasons</b>	<b>Frequency</b>	<b>Percentage</b>
Lack of money	3	9.1
Too distant	2	6.1
Poor topography	3	9.1
Lack of fencing	4	12.1
Input challenges	1	3.0
Lack of money and fencing	4	12.1
Too distant and poor topography	1	3.0
Lack of money and input problems	4	12.1
Lack of money and fencing and input problems	4	12.1
Lack of fencing and input challenges	1	3.0
Lack of money and too distant	1	3.0
Other reasons (Poor health)	5	15.2
<b>Total</b>	<b>33</b>	<b>100</b>

*Source: Survey data, 2010*

### **4.3.2 Collective land utilization**

The way land is utilized differs for individual households versus community projects. Individual households use grazing areas collectively but their cropping lands are used individually. Members of projects, on the other hand, utilize land collectively. The next two sections cover acquisition and utilization of land at Ciko Santrini Project (CSP) and Foundation Community Project (FCP).

#### **4.3.2.1 Foundation community project (FCP)**

Land utilization at FCP project site can be classified as collective usage as individual members do not have access to individual plots within the project area. FCP is currently benefiting from a 10 year lease of the land for its agricultural activities. The land belongs to Mbosi villagers, and through a government-supported intervention, a lease agreement was entered into between the community and the project members. The agreement was signed by the Headmen, Councillor, Project members and lawyers, and was for a 10 year term. A total of 66 hectares of land is available to the project but only 5ha is fenced and being utilized for crop production.

The focus group discussion revealed some of the reasons for the underutilization of project land, which are:

- Lack of monetary support
- Inadequacy of farm implement
- Attitude problems on the part of the community dwellers which makes human resources a difficult issue for the effective implementation of the project.

In a focus group discussion with the project farmers on their project site, it was revealed that at the inception of the project, 5 project members and 28 non-project members contributed their lands individually to make up the 66 hectares of land available to the project site in Mbozi. The 28 non-project members did it to help the community develop its food production potential. Some of the benefits open to the community members include paying cheaper prices and sometimes have access to free fresh produce.

During the same discussion it was stated that members are not allowed to use the land for individual purposes. In addition the fenced project land is used strictly for crop production since the project members do not engage collectively in livestock production. The unfenced portion is grazed by cattle from individual households.

This study also explored some of the challenges associated with collective land usage at the project sites. The major challenge was said to be the lazy attitude of some project members. Some members participate more regularly during harvesting period than during the bulk of the growing season and this often leads to dispute, especially with the hard working members who always feel cheated.

However, despite the various challenges and problems, most farmers who are active members of the project still prefer collective land utilisation to individual usage as it is perceived to be a pre-requisite for accessing government support. For example, the Department of Social Development (DoSD) stipulates collective farming practice at the projects that it supports. Through such support initiatives, the project members have access to some periodic skills training on community development and how to better improve agricultural production.

#### **4.3.2.2 Ciko Santrini community project (CSP)**

The project started in 2008 with a total of 20 hectares of land, out of which only 10 hectares were fenced. Of this fenced area, only 2.5 hectares is currently being utilized for

crop production purposes. Land utilization is predominantly collective and no member is allowed to use the project land for individual purposes.

At the inception of the project, 25 project members contributed their individual land allocations to the project. This was done to fulfil a condition for a community development project that is to be funded by government.

A focus group discussion conducted at the project site in August 2010 revealed that the total number of project members have been reduced to 10 members, out of which only 6 members are active. It is also interesting to note that all these 10 project members are women. Some reasons given for the drastic decrease in the number of project members since the inception of the project include:

- Death of members (2 out of the founding members died).
- Old age (some of the project members died because they have become too old).
- Sickness is another major reason.
- Attitude (some of the members became lazy and they left).

Furthermore, in an interactive session with an official from the DoSD, it was revealed that the reason why some of these project members left is due to the fact that some of them were agitating for monthly stipends to enable them to sustain themselves, since the project is not generating enough funds to cater for its members. The official stated that the government is currently investigating whether the provision of stipends will motivate some of the local farmers to be part of agricultural community development project.

Lack of human capital in the form of labour availability is a major problem affecting both FCP and Ciko project sites and this study considers it a major factor affecting land utilisation in the study sites. A cursory look at the future sustainability of these agricultural development projects assumes that the projects might not be sustainable in the long-term due to the fact that youths are not attracted to the agricultural projects. This is why virtually all the project members are old and some are very sickly.

This study proposes that government should look for a way to attract the youth to participate in agricultural development initiatives. This will not only reduce

unemployment among the youth, but will also compensate for the lack of human capital (labour and skills) which has been identified as a major factor affecting land utilisation in the study area.

#### **4.4 Water utilization**

Water utilization in both villages is categorized based on three major types of utilization, these are:

- Water usage for crop production.
- Water usage for livestock production.
- Water usage for domestic activities.

This study also examines the sources of water usage as well as volumes of water being utilized by these two communities.

Discussions about water utilization also require further exploration of what the term “collective resource use” actually means. For example:

- At the projects, the members collectively contribute resources that are used to pump irrigation water. The water is then used to irrigate a collectively managed field. This is collective behavior in its truest form.
- Communal water taps and rivers are communally owned sources of water. People use this communal source of water for their own individual purposes. They do not collectively draw water or collectively utilize it.

Then, there are communal resources that are actively managed and for which there are local rules that control usage (e.g. the communal taps), while there are some communal water resources which do not seem to be actively managed or controlled in any way (e.g. rivers and dams). Different systems of water use for crop production are discussed below.

##### **4.4.1 Water usage by the project group for crop production**

Irrigation systems and location adjacent to the Shixini River, means that water is available for irrigation purposes at both sites. Besides irrigation, project members are also allowed to use project water for washing and drinking. While there is water available

for crop production at both project sites, there are challenges associated with the irrigation systems at both sites. There are shortages of sprinklers, breakdown of irrigation engine and lack of technical know-how on the part of project members on how to service the engine. The irrigation engine is maintained by the project members from the proceeds of the money generated by the project. There was a suggestion made by members that a second engine / pump would assist as they would be able to continue irrigating when there are repairs required. The other challenge related to irrigation at the project sites is that of water logging. The problem is more pronounced during rainy season as there are no drainage systems at either of the two project sites. The drainage problem is more pronounced at the Ciko project, mainly because of the topographical nature of the village.

#### **4.4.2 Water usage by individual households for crop production**

Water use by individual households for crop production was investigated. The survey indicated that 91% of the people in both villages use water for crop production, while only 80% also use water for livestock production this reveals that we have more farmers involved in crop production than livestock farming practices.

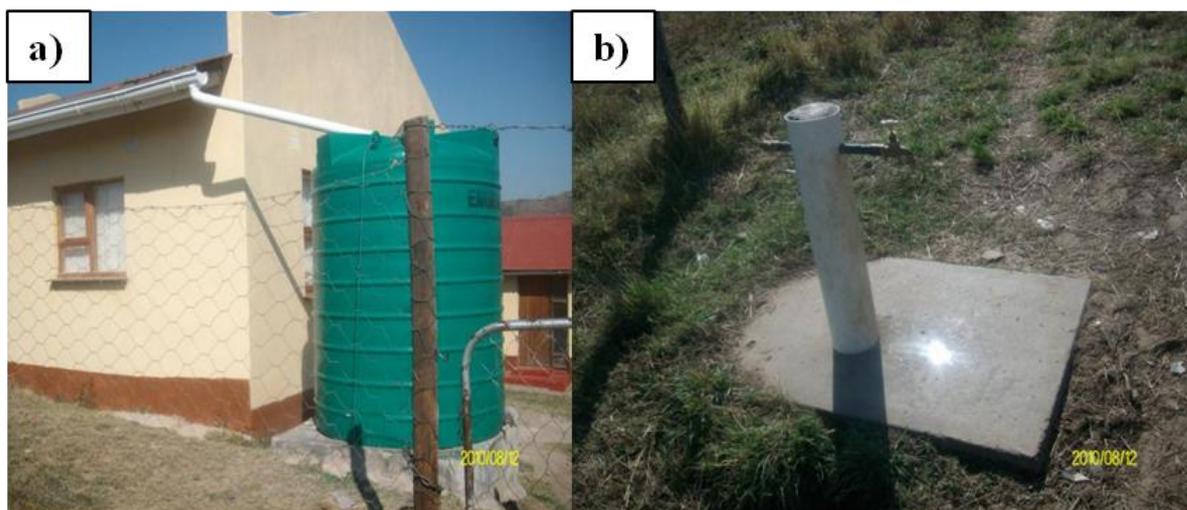
Different sources of water were indicated by the farmers interviewed, namely: rivers, dams, communal taps, harvested water and municipal water tanks. One or more combinations of these sources are used for crop production practices. The degree of utilisation is presented in Table 4.6 for clarity. It was found that the most common sources of water are the communal tap (62 responses) and river (49 responses). Water harvesting off roofs was mentioned by 28 of the respondents. The different sources of water by individual households are presented in Table 4.5.

Water resources are generally shared by the community for crop production as 57% of the people indicated. This could be referred to as communal water use rather than collective water use, as the water source is shared, but utilisation takes place on an individual basis. The survey further revealed that nobody pays for water in either community.

**Table 4.5: Sources of water used by individual households for crop production.**

Sources of water	Frequency	Percentage
River	16	18.2
Dams	1	1.2
Communal taps	25	28.4
Harvested water	4	4.6
River and communal taps	18	20.5
Communal taps and harvested water	2	2.3
Rivers and dams	4	4.6
Rivers and harvested water	2	2.3
Rivers, communal taps and harvested water	8	9.1
Dams and communal taps	9	10.2
River and municipal water tanks	1	1.2
<b>Total</b>	<b>88</b>	<b>100</b>

Source: Survey data, 2010.



**Figure 4.2: Water harvesting from roofs and a communal tap at both Ciko (a) and Mbosi (b).**

Whilst it was a very daunting task for farmers interviewed to specifically state the volume of water used, some were able to estimate the volume used on a daily basis to water their crops. These volumes range from 10-200 litres/day, however, 35% indicated that they have no idea of the volume of water they use daily for cropping.

Water for cropping purposes is not available throughout the year; it is only at the project site that irrigation facilities are available. Of the households, 60% do not have access to

regular water supply, they have to depend on rain water, and however during dry season when rain water is not available they make use of water obtainable from the municipal water tanks, the river and communal taps.

The survey reveals that there are constraints to water accessibility for crop production - 72% of the respondents stressed that government needs to be more focussed at ensuring that the problems of water scarcity in the study area receive more attention. Of the respondents, 93% stated that water supply is inconsistent in their community.

#### 4.4.1.1 Water use by individual households for livestock production

The different sources of water used by the farmers for watering livestock are summarized in Table 4.6 . Rivers and communal taps appear to be the most important source of water for livestock (48 and 47 responses, respectively). This may be because people are including chickens as livestock and these are being supplied with water from the taps.

**Table 4.6: Sources of water for livestock production**

Sources of water	Frequency	Percentage
River	18	24.0
Dams	3	4.0
Communal taps	22	29.3
Harvested water	1	1.3
Rivers and communal tap	18	24.0
Rivers and dam	4	5.3
River and harvested water	2	2.7
River, communal tap and harvested water	5	6.7
Dams and communal taps	1	1.3
River, Dams, Communal taps and harvested water	1	1.3
<b>Total</b>	<b>75</b>	<b>100</b>

*Source: Survey data 2010*

#### 4.4.1.2 Water for domestic use

In terms of domestic usage, all households interviewed make use of water for domestic purposes, with 40% of the people making use of communal taps as the

major source of domestic water. Table 4.7 summarizes the different sources of water for domestic use.

#### 4.4.2 Rules governing water usage

In terms of the legislative requirements of the Department of Water Affairs (DWA), the survey further revealed that there are no former water user associations in either communities. Respondents had no knowledge that such legislation exists and none of the projects had been registered as water users when the projects were initiated.

There are some local rules governing water usage at the study site, but these all seem to relate to the use of water from communal taps that were installed by the Amatole District Municipality. According to the responses from the individual household farmers, the communal taps may not be used for the following purposes:

- To wash cars.
- To mould bricks.
- To wash clothes.

**Table 4.7: Different sources of water for domestic use.**

Sources of domestic water	Frequency	Percentage
River	7	7.0
communal taps	40	40.0
Harvested water	3	3.0
River and communal taps	19	19.0
Communal taps and harvested water	18	18.0
River and dams	1	1.0
River and harvested water	2	2.0
River, communal taps and harvested water	8	8.0
Dams and communal taps	1	1.0
River and municipal water tanks	1	1.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

*Source: Survey data, 2010.*

Given that communal taps may not be used for washing clothes, dams and rivers become important for this purpose (See Textbox 4.1).

Another rule is that nobody is allowed to store water in large quantities and nobody is permitted to sell water. There is penalty for breaking any of these rules and the penalty could be imposed on an individual or a group of people living in an area. There is a penalty fee of R5000 and an area can also be banned from getting access to water for a specific period of time. Furthermore, if anybody wants to use large quantity of water for a ceremony or any big gathering, permission must be sought from the Amatole District and if such permission is granted, the municipality will supply the quantity of water projected to be needed for the ceremony in tanks.

A focus group discussion for project members held in both villages indicated that water is mainly used for crop production and domestic usage. The community does not have any local rules governing the use of water from rivers and dams for agricultural purposes; respondents were also not aware of any of the legislations pertaining to the use of water for irrigation purposes.

#### **Text box 4.1: Study experience.**

**Facts emerging from personal experience in the study area revealed that although people refer to communal taps as a source of water, water scarcity is actually very severe in the two villages. This is evidenced by the photograph below, which shows some villagers washing clothes on the field near a very small muddy dam.**



**An attempt was made at getting information from them on how the dam is serving the communities and it was revealed that the dam is used communally by the villagers for washing clothes and it was also said that some bring their cattle for watering. It was also highlighted that water supply from this particular dam is seasonal.**

#### **4.5 Procurement and utilization of inputs and equipments**

While the farmers at the study site use combination of production inputs and equipment such as fertilizer, herbicides, manure, pesticides, labour, seeds, tractor and other equipments, utilization is greater at the projects than for individual household

production, which is largely of a subsistence nature.

#### **4.5.1 Sources of inputs and equipments**

The different sources of inputs and equipments were investigated through the study:

*Fertilizer:* There are different sources or outlets for the procurement of fertilizer in the study area. This survey revealed that most farmers usually procure their inputs from more than one sources. For example, out of the 57% of the farmers who make use of fertilizer, 37% procure it from shops, 2% procure from farmers' cooperative group, and 14% get theirs from the municipality. There are those farmers who make use of more than one source, 1% of those that purchase fertilizer procure from both shops as well as farmers' cooperative groups, while 1% procure from farmers' cooperative group and private institutions and 2% get it from shops and the municipality.

*Herbicides:* Herbicide procurement by farmers in both villages is very low (14 farmers mentioned purchase of herbicide). Of those purchasing herbicides, 9% procure from shops, 2% from farmers' cooperative group, 1% procure from both farmers' cooperative group and private institutions e.g. Umtiza.

*Manure:* Manure is obtained mainly through collection of animal dung from the kraal - 78% of the people get manure from the animal kraal either belonging to them or from other farmers having kraals.

*Pesticides:* Pesticides are procured mainly through shops as indicated by 23% respondents. In addition, 4% said that they procure from farmers' cooperative group, 2% procure from municipality while only 1% procures from a combination of a farmers' cooperative group and private institutions.

*Labour:* The supply of labour in both villages is generally achieved through individual household arrangements, with most farmers making use of members of their household for labour. Collective labour provision is, however, practiced by some farmers. This is an arrangement which enables individual farmers to share labour between each other. The people who provide their labour are rewarded through different means. They can be paid in paraffin or they can be paid a wage (in the region of R25 per day). When labour is being

provided at a time when there is harvest available, some of the crops can be shared among the volunteer labourers.

*Seeds:* Seeds play a fundamental role in any farming activities. This survey revealed that out of the 88% of the farmers which make use of different types of seeds for crop production, 73% procure them from shops, 5% get their seeds from farmers cooperative group while 3% procure from the municipality, 4% get from shops and farmers' cooperative group, 1% procure from both cooperative group and private institutions. Mostly, the municipality is playing a major role in assisting the farmers to procure seeds and seedlings. The discussion of procurement does not include the storing of seed from one season to use the following season.

**Text box 4.2: The concept of labour sharing.**

**The concept of labour sharing is practised by individual farmers in both Ciko village and Mbozi. This is a collective way of accessing labour. In Ciko village it was found through discussions that, among the project members, labour is always required because of the fact that there are few of them. To address this, they sometimes receive labour assistance from members of the community who are not project members. This comes with compensation in cash or in kind. At Mbozi, this type of labour sharing is only practised among individual farmers and does not apply to the irrigation project.**

*Source: Key informants and focus group discussions in both Ciko and Mbozi villages*

*Tractors and other equipment:* None of the individual farmers indicated that they own a tractor but they are able to hire tractors from individuals within the community. The Foundation Community project was provided with tractor from Amatole District as it was not being used at the site where it had previously been donated. Other farm implements and equipments are procured from the shops/malls and private institutions such as the Umtiza Farmers' Corp.

### 4.5.2 Method of production-input procurement

This section of the study explores the method by which farmers procure agricultural inputs. The survey revealed that collective procurement of inputs is mainly practiced by project members - very few individual farmers procure inputs collectively as summarized in table 4.8.

**Table 4.8: Methods of procuring production inputs for individual households.**

<b>Production inputs</b>	<b>Collective procurement (No. of respondents)</b>	<b>Individual procurement (No. of respondents)</b>	<b>Total no. of households procuring</b>
Fertilizer	9	47	56
Herbicides	4	10	14
Manure	0	81	81
Pesticides	3	26	29
Labour	0	98	98
Seed	4	83	87
Tractor and other	2	30	32

*Source: Survey data, 2010.*

#### 4.5.2.1 Procurement of inputs by individuals

Procurement of production inputs among individual farmers in the study site is relatively low. This is due in part to the subsistence nature of their farming system. Some factors were identified by these household farmers as some of the reasons why procurement of inputs is problematic for them, these challenges are:

*Financial constraints:* a vast majority of these farmers are unable to sustain themselves and their family substantially and this makes the periodic procurement of these inputs difficult for some of them.

*Distance to suppliers:* these production inputs are not locally accessible - the farmers need to travel to places as far as East London to source some of these inputs.

*Transportation problems:* some of the production inputs cannot just be carried in handbags; they are required to be transported over a long distant. The fact that the roads leading to these villages are in a bad condition further compounds their problems.

*Lack of technical know-how:* some of these farmers are still ignorant about how best to apply these inputs, especially inputs such as pesticides or herbicides.

In terms of frequency of procurement of these production inputs, this study reveals that most of them procure on a yearly basis. This is due mainly to the nature of the farming operation system, which is generally seasonal.

#### **4.5.2.2 Procurement of inputs by projects (collective)**

A focus group discussion with members of the two project groups indicated that procurement of inputs is done collectively, on behalf of the project, and the frequency of procurement is done quarterly or biannually. The project members have their own peculiar challenges with respect to input procurement; transportation is a major challenge and the road network leading to the project farm sites is also complicating the problems.

At FCP the project members sometimes make use of their tractor to transport these inputs to the farm site and at other times they hire transport. The cost of transportation from Willowvale to the project site is R100-R150, R200-R300 from Idutywa to the project site and R600-R1000 from East London to the site depending on the weight and the quantity of inputs to be transported.

In order to mitigate some of these problems, the FCP revealed at the focus group discussion that they have started their own nursery to ensure that essential seeds and seedlings are raised and nurtured by the project in order to compensate for having to travel long distances to procure them. In addition it is believed that in the long run, if the nursery initiative is sustained, the FCP could serve as a centre for individual farmers and other projects in the area to procure seeds and seedlings.

The FCP usually procures and utilizes the following production inputs and equipment as and when the need arises:

*Inputs:* Fertilizer, pesticides, herbicides, seeds and seedlings,

*Machinery and equipment:* Tractor, disc plough, planter, chisel plough, multiple plough, boom sprayers, wheel planter and seedling planter.

The discussions revealed that FCP still lacked the following farm equipment as at the time of the group discussion on their project site: Sprinklers, track line pipes, trailers and tractors, precision planters, ridgers (for potatoes) and the projects' own transport.

The situation is slightly different at Ciko Santrini Project with respect to production inputs procurement, and the general level of production. A focus group discussion revealed that the project members have few or no equipment and the general level of production is very low when compared with FCP. For instance, the Ciko Santrini Project has no tractor so they usually hire one from Idutywa at R250/hour during a normal planting season. Transporting production inputs to the project site is very challenging for them. In terms of labour input, the project usually makes use of labour sharing activities with the community in order to compensate for the low human capital in the project group.

The survey also discovered that farmers are not given any form of subsidies on any of the production inputs and there are no concessions whatsoever on any purchased inputs either from private organizations or retailers/wholesalers.

#### **4.6 Marketing of selected crops**

A number of crops were selected based on the prior knowledge of what the dominant crops are in the two villages and also based on the research that has been previously conducted in the study area which has a direct bearing with this study. These crops are: potatoes, spinach, butternuts, cabbages, tomatoes, maize and others (See Table 4.9).

This section will address issues relating to marketing of these crops, namely:

- The marketing outlets for each of the crops
- The extent to which a particular crop is actually being produced for marketing purposes
- Whether marketing is being done collectively or individually
- Whether there is a ready market for each of the crops and if market demand is being met.
- Whether a market association exists for each crop under consideration

**Table 4.9: Number of farmers growing various crops.**

Type of crop	No. of farmers growing it	Percentage
Potatoes	75	17.4
Spinach	73	16.9
Butternuts	36	8.3
Cabbage	79	18.3
Tomatoes	35	8.1
Maize	86	19.9
Others	48	11.1
<b>Total</b>	<b>432</b>	<b>100</b>

Source: Survey data, 2010

#### 4.6.1 Marketing outlets for selected crops in the food value chain

For the purpose of this study, three marketing outlets have been identified, these outlets are: Hawkers, wholesaler and individual consumers. Table 4.10 shows the number of individual household farmers making use of the various marketing outlets for their crops. The table shows the trends in marketing outlets, and it reveals the level of market penetration of individual farmers in both Ciko and Mbozi.

Marketing activities are still mostly limited to supplying hawkers and individual consumers (these are generally members of the local community). The study shows that only some 25% of potato farmers sell their crop. These farmers market their produce to hawkers and individual consumers and wholesalers, to a lesser extent. Spinach is marketed only to hawkers and individual consumers, as are butternuts – however in the case of butternuts a slightly different situation emerges and one finds that the bulk of farmers who do sell them, sell to individual consumers (33.3%).

It can be deduced from Table 4.10 many of the individual farmers do not sell any portion of their crop (See Figure 4.2). This reveals that most of them produce on a subsistence level and that none of the farmers interviewed market any of their crop to retailers.

In a focus group discussion with the two project groups, it was found that at FCP it was indicated that 75% of their produce usually goes to the market in a normal harvesting season. There is no ready market for this produce since many of the local market outlets do not support the project because it cannot always meet the market

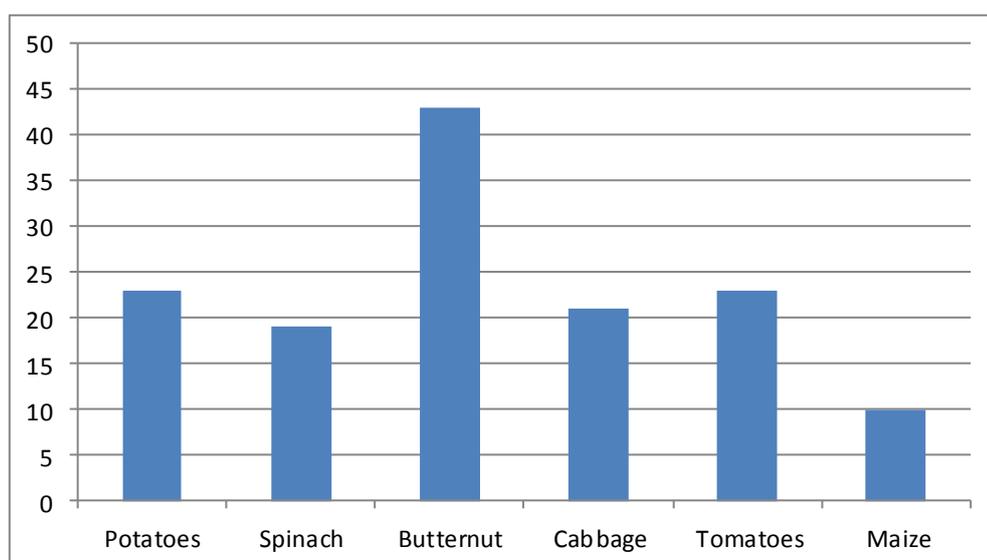
demand. In addition, the farmers in both villages indicated that they have no access to market information and they only rely on common knowledge.

**Table 4.10: Marketing outlets for various crops (As percentage of those growing the crops).**

Selected crops	Hawkers	Wholesalers	Individual consumers	Others	Growing but not marketing
Potatoes	5.3	1.3	14.7	1.3	77.4
Spinach	4.1	0	15.1	0	80.8
Butternuts	5.6	0	33.3	2.8	58.3
Cabbage	5.1	0	15.1	1.3	78.5
Tomatoes	5.7	0	17.1	0	77.2
Maize	2.3	0	8.2	0	89.5

*Source: Survey data, 2010.*

The study revealed that a relatively low proportion of farmers are actually producing for the market. Most of these individual farmers indicated that they would have wished to be selling their produce if proper support were given to them in terms of access to credit facilities and free inputs by the government. Discussions revealed that the level of productivity is very low, although the market is there for them. As a result of this they cannot meet the market demand.



**Figure 4.3: Percentage of farmers that grow a crop and actually produce it for the market.**

### 4.6.2 Marketing within selected livestock value chains

Table 4.11 shows the different types of livestock selected for study in both villages. From the Table it is clear that chickens are the type of livestock owned most frequently by individual households. The study also revealed that there is no formal market for livestock in the study, although we cannot over rule the tendency for informal marketing of livestock within the local community. This is primarily due to the fact that the farmers in the study area are not seeing this venture as an income generating enterprise since nearly all of them are raising these livestock at a subsistence level. However, for the purpose of this study only chicken and cattle value chains are chosen for analysis in both villages.

#### 4.6.2.1 Analysis of Livestock ownership in the study area

Livestock are assets that could allow people to participate in livestock value chains. There are few livestock owners in the study area and they operate individually, producing mainly for household use, the main motive is not to market. This study sought to identify cattle and chicken owners in the study area with a view to describing the type of support available to these individual farmers with respect to livestock production.

**Table 4.11: Frequency distribution of selected livestock in the study area.**

<b>Selected livestock types</b>	<b>Frequency</b>	<b>Percentage</b>
Cattle	23	20.4
Sheep	1	0.9
Goats	28	24.8
Chickens	57	50.4
Turkeys	1	0.9
Donkeys	0	-
Pigs	3	2.7
<b>Total</b>	<b>113</b>	<b>100</b>

*Source: Survey data, 2010.*

#### 4.6.2.2 Cattle ownership

The study revealed that out of 41 individual farming households interviewed in Ciko, only 12 owned cattle, representing 29.3% of the sampled households. While in Mbosi, out of 59 individual household famers interviewed in Mbosi, only 11 households owned cattle representing 18.6% of the sampled households (See Table 4.12 below). The numbers of cattle per household is very small (though slightly larger herds were encountered in Mbosi). This is an indication that most of them own these livestock mostly for personal reasons and not necessarily for commercial purposes.

**Table 4.12: Livestock ownership at Ciko and Mbosi (Cattle).**

<b>Ciko</b>	<b>Mbosi</b>
Number of households (N=41)	Number of households (N=59)
Households owning cattle: 12 (29.3%)	Households owning cattle: 11 (18.6%)
Range of herd sizes: 1 – 6	Range of herd sizes: 1 – 12
Total cattle: 39	Total cattle: 53

*Source: Survey data, 2010.*

A key informant discussion with few of the cattle owners at Ciko revealed there are no special programmes in place to support individual livestock owners in the area. However, they all alluded to the fact that the dipping facilities provided by the government are very helpful, and that the local Animal Health Technician from DoA usually disseminates information on disease outbreaks and often advises through the farmers' association in the area and Umtiza Corporation on how best to apply the vaccines. There are, however, no dipping facilities in Mbosi and cattle owners make use of the dipping facilities in Ciko. A key informant discussion with the official of the Department of Agriculture revealed that the dipping facilities at Ciko are meant to cater to the needs of livestock owners in both villages. There are no cattle farmers' associations in the study area, and the cattle owners do not have any organized informal or formal support arrangements with any organization. An interview with the manager of Umtiza in

the study area, Mr. Wedi, further revealed that livestock owners in the study area are very few and they lack the necessary support from the government and other private organisations. He added that before any support measures are given to livestock farmers in the study area, there is need for them to organize themselves and prioritize their objectives. The manager cited high level of illiteracy as one of the factors affecting livestock business in the study area.

#### 4.6.2.3 Chicken ownership

The study revealed that more households are rearing household chickens in both Ciko and Mbosi villages than households rearing cattle. The majority of them have chickens just for domestic purposes and own consumption. The study shows that out of the 41 sampled households in Ciko, 27 rear chickens constituting 65.9% of the sampled households. In Mbosi village, the study shows that out of the 59 sampled household, only 30 household rear chickens constituting 50.9% of the sampled households (see Table 4.13 ). There is no intensive management system for these chickens. The typical system of management is a free-range, low input system making use of local chickens. There is no existing association for chicken owners in the study area. This study revealed that there is potential for livestock production in the study area but the type of market existing among these farmers is typically informal. It appears that the existing structures are not adequate enough to encourage the smallholder livestock farmers.

**Table 4.13: Livestock ownership at Ciko and Mbosi (Chicken).**

<b>Ciko</b>	<b>Mbosi</b>
Number of households (N=41)	Number of households (N=59)
Households owning chicken: 27 (65.9%)	Households owning chicken: 30 (50.9%)
Range of herd sizes: 1 – 6	Range of herd sizes: 1 – 12
Total cattle: 39	Total cattle: 53

*Survey data, 2010*

#### 4.7 Cooperative governance

Cooperative governance is a term that is normally used to refer to how different

government departments need to work together in order to implement development programmes. In the case of the current study, cooperative governance can be looked at from two perspectives:

- Alternative cooperative structures for farmers.
- Cooperative governance pertaining to government departments.

In terms of the second point there is some overlap with the next chapter, which will look at various support structures that impact on smallholder agriculture, in particular physical and social capital support, and this will be explored and discussed extensively in chapter five.

#### **4.7.1 Alternative cooperative governance arrangements for farmers**

One of the objectives of the study is to investigate whether there exist any alternative cooperative governance structures that could assist with input acquisition or product marketing. There is some assumption that certain organizational arrangements could facilitate access to inputs and markets, addressing the issues such as small volumes and irregular supplies of produce as well as small individual requirements for inputs, which are often coupled with high transportation costs.

The establishments of structures that allow for collective action by small-scale farmers are seen as a mechanism to increase their bargaining power, with the assumption being that they are stronger if they function collectively than if they function as individuals. There are essentially two kinds of farmer organisations: farmers' associations and cooperatives (Beinart *et al.* 1986). The former are informal bodies created at the local level by farmers to represent their interests. The latter are legal entities created by legislation and designed to provide services for farmers.

Farmers' associations had their roots in the late nineteenth century when wealthy farmers banded together to agitate for their creation by the Department of Agriculture. This movement led to the creation of the Transvaal Agricultural Union in 1897 which became the central body to which farmers' associations later affiliated. Though the establishment of associations at that time was a farmer-led initiative, it had the blessing of the state which was trying to get agriculture to pay for itself and hoped that these organisations would bring farmers together and induce the rich to help the

poor. The structure collapsed in 1906, leaving its less economically stable members very bitter. This failure showed how difficult it would be to unite the wealthy and the struggling less than one structure.

#### **4.7.2 Cooperative governance pertaining to government Departments**

The establishment of farmers associations and primary cooperatives continues today, as the Department of Agriculture seeks a mechanism that will strengthen smallholder agriculture. In an interactive session with an official from the Department of Agriculture during the current study, it was revealed that it is the mandate of the Department of Agriculture to form structures, and that such structures exist at various levels from the ward level up to the provincial level and national level. The official indicated that some farmers are aware of the existence of these farmers associations (cooperatives) but very few are actively involved. The official stated that the activities of these associations are being coordinated by the Department of Agriculture.

This study revealed that a greater number of individual households in both Ciko and Mbosi villages are not aware of the existence of these structures, and efforts need to be intensified in terms of information dissemination on the part of the Department of Agriculture in ensuring that these farmers are well informed about the objectives of these associations and why they need to be actively involved. The study revealed that 58% of the individual farmers interviewed affirmed that there is need for collective structures to strength their productive activities in both villages.

#### **4.8 Chapter summary**

Due to the nature of farming operations at the two villages and the challenges that they face, it would be beneficial to consider the establishment of structures that would facilitate access to water, land and production inputs and to marketing their produce. In all likelihood this would consist of two levels of structures – one at the farmers' level, that would allow for cooperation between farmers, and that at the service provider level, allowing for cooperation between different spheres of government and other key parties such as the private sector, non-governmental organisations and community-based organisations.

This chapter has been able to establish the importance of collective action among the smallholder farmers, as one of the panacea for market penetration by the smallholder

farmers in the study area; subsequent chapters will elaborate further on significance of support structure of physical and social capital, and why a good policy should be put in place in order to effectively prioritize the penetration of these smallholder farmers into the mainstream economy, with a view to improving their livelihoods.

**SUPPORT STRUCTURES OF PHYSICAL AND SOCIAL CAPITAL FOR  
SMALLHOLDER FARMERS**

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**5.1 Introduction**

This section provides an analysis, in terms of social and physical capital, of the context within which rural black farmers in the Mbashe Local Municipality of the Eastern Cape in South Africa operate, with special focus on Ciko and Mbosi villages. The initial study in this area addressed some issues of collective action among smallholder farmers. This present study seeks to address the fact that social capital could be regarded as one asset which must be available to complement other forms of capital (financial, natural, physical and human), which as stated by Grootaert (1998), is needed if its real value is to be of significant benefit to smallholder farmers.

It is perhaps good to stress that for any forms of existing capital found in the study area to be effective there is the need to identify, describe and analyse the various types of support structures that are available to smallholder farmers in the study area. Whereas the main objective seeks to identify what could be done to enable emerging farmers contribute into the mainstream economy. The sub-objectives look at those structures already existing or needed that are helping or hindering these farmers from participating in the mainstream economy. This section seeks to analyse and describe the existing support structures of physical and social capital within food value chain with reference amongst others to:

- Institutional arrangement including property right, norms and values.
- Social embeddedness including trust, loyalty and power relationships.
- Mentorship and skills transfer.
- Transport and marketing infrastructure.
- Information to access markets.

It is generally believed that high social capital in a community will contribute

significantly to a better organization for collective action, improved bargaining power and confidence (Narayan, *et al* 2000). Two forms of social capital, namely (1) Cognitive which includes norms, values and beliefs and (2) Structural which includes roles, rules and procedures, as well as networks, have been identified (Uphoff, 1999). The current study highlights these two forms of social capital as they relate to this study area. The study pays attention to networks and relationships, which, according to Coleman (1988), are fundamental to the concept of social capital, as well as trust, social norms and information sharing which all play very significant roles in how social capital is created, sustained and expanded.

The importance of physical capital, which is generally more tangible assets, to the smallholder farmers in the study area is also highlighted. The study explores the existing physical capital and also identifies gap that appear to be limiting the participation of smallholder farmers in the formal economy.

### **5.1.1 Analysis of individual household livelihood assets**

Different households, with different access to livelihood capital (human, natural, financial, social and physical), are affected by different factors, which include the diversity and relative abundance of different forms of available capital, otherwise called assets. These factors were investigated in the study area with respect to the existing capital with a view to finding out what assets exist and what support structures are in place to address needs in terms of different types of capital.

The first aspect of the study was to investigate livelihood assets available to individual households. In order to facilitate easier identification and classification of this relatively homogeneous subgroup within the sampled population of 100 individual households, the two farming communities were used as the basis of analysis to describe how these five livelihood capitals are functioning in each community.

The two farming communities were notably different in terms of some of their capital endowment. This is the reason why it was necessary to classify them based on the different characteristics unique to each of them. The major differences are discussed below under the five types of livelihood capital.

### **5.1.2 Human capital**

Human capital, according to Chivaura and Mararike (1998), is the most important factor when looking at the issues of livelihood assets. This is primarily due to the fact that people constitute both the object and subject of development and as a result they deserve the necessary consideration when it comes to human capital.

In terms of human capital, the two villages shared some similar characteristics (See Table 5.1 ). For example, an investigation of the gender of the household head in both villages revealed that the villages are comprised of slightly more female-headed households than male-headed households (In Ciko village 53.7% are females while Mbosi has 54.2% female-headed households). Though the percentage of household heads that are old is relatively low (9.8% and 35.6% in Ciko and Mbosi respectively), the study reveals that a relatively large percentage are very sickly / physically challenged (43.9 and 52.5 in Ciko and Mbosi respectively). This has implications in terms of their ability to provide labour for their farming activities.

These factors account partly for the reason that involvement in farming activities is gradually becoming lower in the study area. Furthermore, studies have shown that female-headed household have limited access to productive resources and are usually poorer than male headed-households (Spring, 2000 as cited by Nguthi, 2007). This could be one of the reasons for low availability of resources in both Ciko and Mbosi villages (especially given the relatively high proportion of women in the community projects). It is evident from the study that the household heads in both villages lack specialized skills/training in farming activities with 75.6% in Ciko village and 72.9% in Mbosi having no skill / training. The study revealed that the major sources of labour for Ciko and Mbosi villages are the household members. This was the case in 68.3% and 71.7% of households respectively. It is important to stress that age, gender, level of education, use of hired labour, household size with a combination of other factors are very useful reflections of human capital that could provide us with an indication of how new technology will be accepted by farmers. Studies have shown that older farmers are often reluctant to new technology as they tend to depend on experience rather than adopting a new way of farming. On the other hand, older farmers might have the experience and the authority that would help them to decide positively on the adoption of

new technology (CIMMYT, 1993).

**Table 5.1: Frequencies for human capital variables by village site.**

Variable Type	Ciko (N=41)		Mbosi (N=59)	
	N	%	N	%
<b>Gender of head household</b>				
Male	19	46.3	27	45.8
Female	22	53.7	32	54.2
<b>Too old to farm (60+)</b>				
Yes	4	9.8	21	35.6
No	37	90.2	38	64.4
<b>Sick/Physically challenged</b>				
Yes	18	43.9	31	52.5
No	23	56.1	28	47.5
<b>Educational Level of H/H</b>				
Primary	21	51.2	31	52.5
Secondary	15	36.6	28	42.5
Tertiary	3	7.3	0	0
None	2	4.9	0	0
<b>Sources of Labour</b>				
Hired Labour	13	31.7	17	28.3
Family labour	28	68.3	42	71.7
<b>Marital status</b>				
Single	5	12.2	14	23.7
Married	22	53.7	18	30.5
Divorced	3	7.3	3	5.1
Widowed	11	26.8	24	40.7
<b>Have specialised skills in farming</b>				
Yes	10	24.4	16	27.1
No	31	75.6	43	72.9

*Source: Survey data, 2010.*

Land and water are two key forms of natural capital available to the farmers in the study area. In terms of the current deliverable, and given the fact that the focus is actually on physical and social capital, land as a form of natural capital has only been explored in terms of size, rather than assessing the agricultural value of the land available to specific households.

### **5.1.2.1 Land**

Table 5.2 shows that 58.5% of individual household farmers in Ciko have less than 1 hectare of land, while 62.8% had the same type of land size in Mbosi. This implies that farmers are generally in possession of limited areas of land. Individual household farmers are constrained to operate on small pieces of land. It would seem that the only way to expand would be for them to engage in collective land usage, where some of them would consolidate their land holdings for a common purpose.

### **5.1.2.2 Water**

There are different sources of water in the study area and smallholder farmers in this community utilize water in several ways. The previous study explored laws and rules governing the use of water by smallholder farmers and their households. The study classified water utilization into three categories, namely water utilization for crop production, water utilization by livestock farmers and domestic utilization of water in the study area.

Some of the problems and challenges to water utilization were also explored and explained in this study. Water is seen in this study as a major asset to these smallholder farmers and a cursory look into how this natural capital is impacting on the livelihood of these smallholder farmers is of utmost significant to this study.

The previous chapter on collective use of resources presented frequencies of reliance on different water sources in the study area. Summaries of the different sources of water for crop and livestock production as used by the farmers in the study area is shown in the Table 5.3). This study focuses more on the physical components that make the utilization of water (natural capital) possible for these smallholder farmers.

**Table 5.2: Frequencies for natural capital variables by village site.**

Variable Type	Ciko (N=41)		Mbosi (N=59)	
	N	%	N	%
<b>Land size (ha)</b>				
<1ha	24	58.5	37	62.8
>1ha	3	7.3	11	18.6
<0.5ha	14	34.2	11	18.6
<b>Land Acquisition mode</b>				
Leasing	1	2.4	0	0
Rental	0	0	0	0
Inherited	5	12.2	34	57.6
Communal	0	0	0	0
Traditional elders	35	85.4	25	42.4
Purchased	0	0	0	0

*Source: Survey data 2010.*

Water plays a very significant role in the lives of the smallholder farmers and the general community of the study area. It serves in supporting crop and livestock production, and people also utilize water for domestic purposes.

**Table 5.3: Sources of water at the study area.**

<b>Sources of water for crop and livestock production</b>	<ol style="list-style-type: none"> <li>1. River.</li> <li>2. Dams.</li> <li>3. Communal taps.</li> <li>4. Individual household taps.</li> <li>5. Municipality water tanks.</li> <li>6. Boreholes.</li> <li>7. Harvested rain water.</li> </ol>
<b>Sources of water for domestic usage</b>	<ol style="list-style-type: none"> <li>1. River.</li> <li>2. Dams.</li> <li>3. Communal taps.</li> <li>4. Individual household taps.</li> <li>5. Municipality water tanks.</li> <li>6. Boreholes.</li> <li>7. Harvested rain water.</li> </ol>

*Source: Survey data, 2010.*

The investigation of existing physical capital for water utilization in the study area revealed that the individual household farmers are having difficult times accessing water for crop production in the study area. Irrigation infrastructure is only available to farmers within the two community project. An average individual smallholder farmer cannot afford irrigation infrastructure and government is yet to implement any initiative that will address the needs of individual farmers in the study area with respect to water utilization for crop production.

Access to water from the municipality water tanks and household tap water is problematic to the smallholder farmers. In Ciko village, 88.1% confirmed that government water is inconsistency, while 94.9% of the smallholder farmers stated that there is inconsistency of supply from government water sources (Table 5.4).

**Table 5.4: Frequencies for various water variables by farming households in the villages.**

Variable Type	Ciko (N=41)		Mbosi (N=59)	
	N	%	N	%
<b>Access to government water</b>				
Consistent (daily)	1	4.8	2	3.4
Inconsistent	37	88.1	56	94.9
None	3	7.1	1	1.7

*Source: Survey data, 2010.*

### 5.1.3 Financial capital

Social grants are a key source of income for most farming households in the study areas and thus serve as a form of financial capital. The study reveals that social grants as the main source of income accounts for 66.7% of farmers in Ciko village and 74.6% of farmers in Mbosi. This means that social grants could provide a source of funds to support agricultural activities.

Farming is a very low source of income for the farmers in both villages. In Ciko it accounts for only 11.9% and 3.4% for Mbosi. It appears to make a very limited contribution to livelihoods within the study area. Access to credit is very low, with 61.9% and 62.7% (Table 5.5) not having access to credit in Ciko and Mbosi, respectively (and credit facilities are generally limited to local informal savings and groups that are known as stokvels). The majority of these farmers also lack the physical assets that could readily be converted to financial capital.

**Table 5.5: Frequencies for financial capital variables by village site.**

Variable Type	Ciko (N=41)		Mbosi (N=59)	
	N	%	N	%
<b>Main source of income</b>				
Farming	5	11.9	2	3.4
Social grants	28	66.7	44	74.6
Teaching	3	7.1	1	1.7
Transfers (gifts)	6	14.3	12	20.3
<b>Access to credit</b>				
Yes	16	38.1	22	37.3
No	26	61.9	37	62.7

*Source: Survey data, 2010.*

#### 5.1.4 Social capital

As previously, the social capital available to smallholder farmers includes networks and connections, within and between neighbourhoods' families / tribes, etc. Relations of trust and mutual support are another related asset. The existence of both formal and informal groups provides social capital that can support agricultural production, as can collective representation. Strong leadership, common rules and sanctions as well as mechanisms that support participation in decision-making processes are all assets that can be described as social capital (IFAD, undated).

Social capital in the study area was assessed by considering various social activities that farmers are involved in. For example, membership of the farmers' association was seen as a key mechanism to facilitate access to information.

Participation in the farmers' association was found to be far greater than participation in a community group (See Table 5.6). The table also reveals that a large percentage of the farmers (73.2% in Ciko and 71.2% in Mbosi) do not receive support from extension staff.

A key informant discussion with some members of the community revealed that participation in community groups is not attractive to people due to the fact that they get no support from the group. Some of the community members are already discouraged and they have stopped attending group meetings. The study revealed that there are no formal livestock associations in the study area however; some of the individual household farmers interviewed revealed that they belong to famers association. The association often help them in terms of information dissemination.

**Table 5.6: Frequencies for social capital variables by village site.**

Variable Type	Ciko (N=41)		Mbosi (N=59)	
	N	%	N	%
<b>Membership of a community group</b>				
Yes	11	26.8	17	28.8
No	30	73.2	42	71.2
<b>Membership of a farmers' association</b>				
Yes	26	63.4	31	52.5
No	15	36.6	28	47.5
<b>Access to support from extension officers</b>				
Yes	9	22.0	15	25.4
No	32	78.0	44	74.6

*Source: Survey data, 2010.*

Besides the findings of the household survey which have been discussed above, the study revealed some forms of social capital existing in the study area. These are forms of social capital that have implications for individual farmers as well as for the group projects.

**Traditional institutions:** the study site is headed by a local chief who is supported by headmen and Sub-headmen. A key informant interview with Chief Zweliyazusa Sakhiwo Manxiwa revealed that smallholder farmers in the study area are greatly influenced by the decisions of the traditional leaders. Matters relating to land disputes are taken to the chief and procedures for dispute resolutions are put in place. The sub-headmen are the ones to take the matter to the headmen before the chief becomes involved in the matter.

**Mentorship and training:** Support for individual livestock owners in the study area is not efficient. A key informant interview with Ms Nokuthembela<sup>1</sup> revealed that Umtiza often provides some training to them with the assistance of the Department of Agriculture. She cited provision of free training and consultations as part of the training. She, however, expressed the need for more intensive training of this kind.

### **5.1.5 Physical capital**

In terms of personal household items, the text box 5.1 below gives an indication of the limited access that farming households at the study site have to agricultural assets. Transport infrastructure and road access is discussed briefly, and again later in terms of the community projects. Discussions regarding farm equipment are also restricted to discussions about the community projects as individually owned equipment is very limited and generally limited to manual tools. The section below does provide some indication of livestock ownership, general infrastructure and access to market information. Livestock ownership obviously is an asset that allows rural households to participate in livestock related value chains, and this had been fully discussed in chapter 4.

#### **5.1.5.1 Transport infrastructure**

From the only variable examined was mode of transportation for agricultural inputs and produce. In Ciko village 65.9% of households do not have access to transport for procuring production inputs or for transporting their produce, while 61.0% have a similar problem in Mbosi (Table 5.7). This could be one of the reasons why most of these individual household farmers have been constrained to producing only for

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<sup>1</sup> Ms Nokuthembela is a livestock owner in Mbosi - she buys day old chicks and rears them to broilers.

household consumption.

**Table 5.7: Frequencies for various physical capital variables by farming households in the villages.**

Variable Type	Ciko (N=41)		Mbosi (N=59)	
	N	%	N	%
<b>Transport infrastructures*</b>				
<b>How are produce and inputs transported?</b>				
Hired taxi	13	31.7	20	33.9
Vehicle from municipality	1	2.1	3	5.1
No access to transport	27	65.9	36	61.0

*Source: Survey data, 2010.*

**Text box 5.1: Access to agricultural assets.**

*Interim report on empirical investigation of the aspirations and needs of subsistence and emerging farmers at Willowvale Project Site (Muchara et al, 2010).*

Households generally had few agricultural assets. Those most commonly mentioned were shovels and hoes and respondents from 55 (67.1%) and 79 (96.3%) households said that they had access to shovels and hoes, respectively. Thirty-nine (47.5%) said that they had access to wheelbarrows and 8 (9.8%) said that they had access to ploughs (with 6 having their own ploughs and 2 indicating that they borrowed ploughs).

### **5.1.5.2 Other infrastructure**

Besides transport infrastructure, there are other variables to be considered in terms of physical capital in the study area, namely electricity and communication infrastructure. There is electricity supply at Ciko, but not in Mbosi and very few households have radios or television. This has implications in terms of having access to information that might be of relevance to these farmers. The low level of literacy is a challenge which often prevents the farmers from being able to access the right type of information.

## **5.2 Analysis of Capital available to the community projects**

In addition to considering assets / capital available to individual farmers at the study site, this has also been investigated for the two community projects to understand whether membership of the projects unlocks additional assets, especially in terms of physical and social capital for farmers.

DoSD has played a key role in establishing food security projects in rural communities. Ciko Santrini and Foundation Community are two such initiatives. Table 5.8 below, provides information for FCP, and shows that an amount of money was granted to the project by DoSD as additional funding, over and above the infrastructural development that they implemented.

The sustainability of the projects has also been evaluated in terms of the extent to which physical and social capital exist and is being harnessed. Community projects such as the two within the study area are categorised by DoSD as food security projects and were provided with infrastructure and additional funding to support their operation (See Table 5.8 below for an example of project information maintained by DoSD).

This study identified the various existing support structures of physical and social capital within the community projects in both Ciko and Mbosi. Obvious gaps in terms of social capital and physical infrastructure have also been highlighted. The extent to which these projects are in fact ensuring food security within the local community or income generation is a function of the extent to which they are harnessing the capital available to them.

**Table 5.8: Summary of project information for FCP, Mbosi.**

Project name	Nature of project	List of project members	Year funded	Total project cost	Financial status	
Foundation Community Organization	Food Security	11 Female 3 Male 2 Disabled	2010/11	R375, 000 Additional funding	Payment date of 1 <sup>st</sup> tranche: 07/07/2010	Payment date of 2 <sup>nd</sup> tranche: Once-off payment

*Source: department of social development, Mbashe 2010.*

### 5.2.1 Description of physical capital

Physical capital is an essential asset, especially for rural communities engaging in agricultural enterprises. These are the tangible assets, including infrastructure, equipment and inputs that allow for farming activities to take place. Access to these assets, as well as ability to make effective use of them is often based on access to other assets such as financial capital (to maintain and operate them), human capital (the skills to operate them) and social capital (For example, the processes of sharing them and making decision about them).

Physical capital available to the two community projects within the study area is discussed in the sections below. Attention is given to transport and marketing infrastructure, irrigation infrastructure and equipment, as well as communication infrastructure.

#### 5.2.1.1 Transport and marketing infrastructure

There is virtually no transport and marketing infrastructure in place and the bad state of the road is also compounding the problem. Table 5.9 below provides a summary of information provided by DoSD pertaining to marketing outlets, quantities and product prices for FCP at Mbosi.

It is clear that all produce is now being sold locally. Due to the challenges of road access and lack of adequate support, the farmers at FCP, Mbosi have reduced their level of production to cater to only the needs of local community.

This is in contrast to the situation that previously existed, where shop owners in Willowvale sent vehicles to the project site to collect fresh produce (See Figure 5.1).

**Table 5.9: Produce prices and marketing outlets in Mbosi, FCP.**

List of products sold	Quantity	Cost per item	Market outlets
Cabbage (heads)	560	R2.80	Local community
Butternuts (bags)	53	R24.00	Local community
Potatoes (bags)	20	R30.00	Local businesses
Green Mealies (cobs)	71	R4.00	Local community

*Source: department of social development, Mbashe2011.*

**Figure 5.1: Collection of cabbages from Mbosi, FCP site at the inception of the project.**



*Source: The FCP, Mbosi project leader (Image taken on 26/01/2008).*

The two community project sites are currently losing substantial income due to the issue of road access alone. The transportation problem is mainly affecting marketing as it is difficult to move produce timeously from the project to the village or to Willowvale. The fresh produce from the project site cannot be marketed as efficiently as it previously was, due mainly to these problems (Text Box 5.2).

**Text box 5.2: The access road to Foundation Community Project and its impact on marketing.**

Mr Maposela, the Project Coordinator for Foundation Community Project at Mbosi, had this to say on the deplorable situation of the access road in the community and how it has affected the profitability of the project:

“According to our calculations, we can plant between 35,000 and 40,000 heads of cabbages per hectare. Taking the minimum number of 35,357 cabbages per hectare, if we sell it at R3, 50 per head we are currently losing R123, 750 incomes per hectare. For 5 hectares that is R618, 750 incomes per cycle. In a year we have a minimum of 4 cycles; therefore we lose a minimum of R2, 5million income. If the access road is not addressed quickly, the project loses about R2, 5million income each year to its competitors who are the commercial white farmers around East London and Komga. From the above figures we think that Mbashe Local Municipality cannot afford to let about R2, 5 million to go to East London and Komga white commercial farmers, instead of developing local emerging semi-commercial farmers due to access road only.”

A discussion with the Local Municipality Manager revealed that plans are in place to begin the reconstruction of the road, and efforts are being made to ensure that good road network is created to link the farm sites. It should however be highlighted, that FCP members probably also need to take some responsibility for maintaining the road, as far as possible, since it only services their project currently.

In addition to road infrastructure, the projects do not have adequate packaging facilities with potable water supply. This also limits the range of market outlets that they can supply. They supply fresh produce to the local communities but do not have any form of infrastructure such as a farm stall to facilitate this.

### 5.2.1.2 Equipment and machinery

The existing physical assets, as well as associated challenges and other identified needs are summarized below for the two community projects.

**Table 5.10: Existing physical capital at Foundation Community.**

Physical capital	Existing Challenges
Irrigation pump and infrastructure (pipes and sprinkles)	Engine breakdown
Fencing	Fencing destroyed by wild pigs
Tractor	No money for repairs
Planters	Damaged completely
Disc plough	Good working condition
Mould board plough	Good working condition
Chisel plough	Good working condition

*Source: FCP group project survey, 2011.*

It is clear that the projects have a fair amount of physical capital in terms of machinery, equipment and other forms of infrastructure. While much of the infrastructure and equipment at the two projects is similar, the lack of a tractor at Ciko is an obvious deficit (they currently hire a tractor for land preparation purposes), though the one at FCP is in fact not currently an effective asset as the project members do not have the resources to undertake repairs. Physical capital needs, as perceived by the members of each of the projects, are summarized below (Table 5.12).

Land is considered a form of natural capital however lack of physical capital can reduce the effectiveness of this asset. For example, at the Ciko project, out of the 10 hectares that were allocated, only 2ha is irrigated while 4ha is used for planting dry land maize. This is because they do not have the equipment required to irrigate the entire fenced area.

**Table 5.11: Existing physical capital at Ciko Santrini project.**

Existing Physical infrastructures	Existing Challenges
Irrigation engine	Engine breakdown
Sprinklers (12)	Some are not functioning
Hoes (9)	Not too efficient
Wheel barrows	Not too efficient
Fencing	Good working condition
Electricity	Stable
Communication facilities e.g. radio, cell phones, TV sets etc.	Almost all the project members have cell phones,  information is readily available to them via TV and radio; but being able to access quality and relevant information is a major challenge due in part to the low literacy level among project members.

*Source: Ciko Group Survey, 2011*

## 5.2.2 Description of social capital

Focus group discussions held with farmers of both the Ciko and Mbosi projects revealed the nature of existing social capital in the study area.

### 5.2.2.1 Networks and connections

The study revealed that there are existing networks with the community members in both project sites. Members of the local community are patronizing the group projects by way of buying fresh produce from them and some members are convinced that they will get good discounts on whatever is being purchased, compared to buying elsewhere.

**Table 5.12: Summary of physical capital needs identified.**

Foundation Community Project	Ciko Santrini Project
<ul style="list-style-type: none"> <li>• Access road to the farm</li> <li>• Trailers (needed for transporting produce from the field to the village)</li> <li>• Boom sprayer</li> <li>• Potato planters</li> <li>• Transport (Note: the existing cost of transportation is by hiring a bakkie at R250/day)</li> <li>• Electricity.</li> </ul>	<ul style="list-style-type: none"> <li>• Tractor (currently one is hired for land preparation)</li> <li>• Planters</li> <li>• Mould board plough</li> <li>• Chisel plough</li> <li>• Access road</li> <li>• Transport</li> <li>• Storage facilities</li> <li>• Internet.</li> </ul>

*Source: FCP and Ciko group project survey, 2011.*

With respect to opportunities for networking between the two community projects, it was clear from the various discussions that there is no active relationship or exchange between the two projects. Despite being funded by a common agent and being in relative close proximity to each other, they do not engage in any joint ventures such as joint sales or joint harvesting and each project is focused on its own activities. Such linkages could strengthen both projects by ensuring greater consistency of supply.

### **5.2.2.2 Relations of trust and support**

In terms of trust between members and non-members of the project, the focus group discussion further revealed that non-project members sometimes buy from the project on credit with promise to pay at a later date. When this was explored further during key informant discussions with the coordinators of each project, it was revealed that some members of the community default on payment and such situations are then dealt with by refusing to sell on credit to anyone who has at one time or another defaulted on payment. In fact, members at both sites emphasized that due to past experiences, where some villagers will refuse to pay back; they have largely stopped selling on credits to community members.

### **5.2.2.3 Formal and informal groups**

The two community projects are formal groups that have separate legal personalities. Outside of these groups, there are informal groupings that operate within the

communities where they are situated. These informal groups could strengthen the cohesiveness of the groups, while also establishing networks that link the projects to the broader community.

For instance, a typical example of an informal group is a religious association among the project members. It was observed, and the two project leaders corroborated the fact, that most of the group project members belong to the same religious organization. At Mbosi, Foundation Community Project (FCP), all the current members of the group project are all members of the same church. According to the project leader, Mr Maposela, that has had helped to strengthen the ties existing between the group project members, and has impacted positively on the overall operation of the project.

Other forms of informal groupings that were encountered during discussions were local saving clubs termed ‘stokvels’, which help their members to save money for funerals and other purposes. In the light of the findings in this study we could infer that informal groups play very significant roles in strengthening the formal group.

Members of the two community projects are also members of the farmers’ associations that are supported by Department of Agriculture. Project members in both villages usually attend meetings once a month. The focus group discussions with the farmers revealed that they receive seedlings, fertilizer, and sometimes insecticides for their crops. It was gathered that individual household farmers are also usually part of the monthly meetings. The study revealed that members of the farmers’ association pay an annual fee of R20/person but they are not permitted to borrow money from the association. The farmers’ association is usually coordinated by the Department of Agriculture and the purpose of the monthly meeting is mainly to familiarize the farmers with current issues relating to crop improvement, disease outbreak and/or collective production input purchases. The association also ensures that members are made aware of information days, and always encourage farmers to attend.

#### **5.2.2.4 Training and mentorship**

The provision of training and mentorship support to the projects was investigated. The study revealed that mentoring and skills transfer are lacking among the famers in the study area. The number of days for the visitation of extension workers to the study area

has drastically reduced. The focus group discussions revealed that extension visits to the group project need to be strengthened; the farmers need regular visits that will keep them informed from time to time.

A key informant discussion with an extension officer for Ciko and Mbosi villages revealed one of the reasons for reduction in the number of days for visitation was due primarily to non-availability of transport for the extension workers coupled with the deplorable state of the road.

Apart from the two community projects initiated by DoSD, another form of formal government initiative encountered during the study, which is not directly related to the community projects, is the *Siyazondla* initiative. *Siyazondla* is a programme of the provincial DoA (Department of Agriculture). It is basically aimed at rural women with a view to teaching them the needed skills in vegetable gardening and supporting their engagement in household vegetable gardening. The focus group discussions revealed that some of the women in both community projects were once very active in *Siyazondla*.

In terms of the mentorship relationship between the project members and the key funder, DoSD, a key informant discussion with Ms. Nube<sup>2</sup> from DoSD revealed that at different times of the year, similar types of support is given to both group projects to actualize the main objective of initiating the project (See Table 5.13 for an example of support provided to FCP). It was also indicated that periodic training sessions are usually organized for project members, especially whenever the DoSD releases money for the project. The Department organizes training for the project members on that they develop skills relevant to what the money is meant to be used for.

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<sup>2</sup> Ms Nube is a staff member of the Department of Social Development at Willowvale. She is the direct coordinator of the community projects at Ciko and Mbosi.

**Table 5.13: Training and mentorship programme of at FCP.**

<b>Field of training or mentorship covered</b>	<b>Duration</b>	<b>Date started</b>	<b>Date completed</b>
Training on project and financial management and governance	10 Days	10/08/2010	20/08/2010
Mentoring	2 days	11/10/2010	25/10/2010
Training on crop production	10 days	24/05/2011	In progress

*Source: Department of Social Development, Mbashe 2011.*

This study also revealed that Old Mutual is involved with the training of project members in the study area. Trainings are designed specifically to meet the immediate needs of the project members. The projects have received training sessions on governance, project and financial management, as well as technical training on crop production. Through the current project, some level of mentorship is provided to the project by the University of Fort Hare. The University is involved with the project through research and developmental initiatives.

#### **5.2.2.5 Project support and monitoring**

A key informant discussion with a staff of the DoSD revealed that structures have been put in place to ensure that the project is provided with all the necessary support that will improve the livelihood of the farmers, and yet it was clear from the study that these needs have not all been met. A focus group discussion was conducted at the project site with members of Foundation community project at Mbosi. The discussion revealed a range of issues affecting the project, some of these issues raised questions regarding the sustainability of the project and the extent to which the project is able to support or contribute to the livelihoods of these farmers. Additional information was sourced from the officers in the DoSD who are directly in charge of monitoring the project (See Table 5.14 below).

The study revealed that there is inadequate project monitoring. The project was designed in such a way that regular visits and monitoring are meant to serve as avenues for regular project appraisal, but the current trend in both project sites revealed that the

project is not being well monitored.

**Table 5.14: Project monitoring and visitation at FCP, Mbosi during the month under review.**

<b>DSD officials</b>	<b>Date of visit</b>	<b>Items discussed or observed during visit</b>
District manager , area manager, Manager	N/A	No visits
Assistant Manager	N/A	No visits
Community development supervisor	No visits	No visits
Community development practitioner	09/04/2011	Supervision for progress and monitoring project progress
Auxiliary community development practitioner and	08 March 2011	Supervision for progress
Provincial office staff	No visits	No visits

*Source: Department of Social Development, Mbashe 2011.*

#### **5.2.2.6 Leadership and power relations**

**Government support:** In terms of power relations, the study revealed that the two community projects, as initiatives of the Department of Social Development, have little power in terms of decision-making related to expenditure of funds. A focus group discussion with members of both group project reveals that the members are not allowed to take decisions regarding monetary issues on their own, they must seek and the approval from the DoSD. Project leaders from both Ciko and Mbosi identified this as a major challenge to the project because when money is given to the project, the project members are not allowed to decide what to buy and thus they have no power over how the money should be spent.

They have identified certain needs (such as Mbosi members wishing to purchase a tractor- drawn trailer to assist with transport of produce from the fields), but these purchases have not been permitted by DoSD, which has its own understanding of what the grant funding should be used for. While it is perceived by project members that the

rules are laid down by the DoSD, a key informant discussion with Mr. Siya<sup>3</sup> from DoSD revealed that rules governing the activities of two project sites are enshrined in the constitution that established the projects. He indicated that adequate measures have been put in place to ensure that these rules are adhered to. He further stressed that a project steering committee is in place to give directives on what needs to be done and how the projects are to be funded.

The issue of stipends (or incentives for participation) was raised during focus group discussions. At Ciko, members cited the lack of labour as a challenge to production. They said that when the project was started in 2008 there were 25 members but that membership has been reduced to 6 members due to the lack of tangible benefits and proposed that government should provide some form of incentives. A similar problem of reduced membership has been experienced at FCP. The discussions with DoSD revealed that the department is not in support of providing incentive to the farmers as a way of encouraging them. Mr. Siya emphasized that the central aim of the project is to encourage entrepreneurship among the farmers, with a view to ensuring that the project is sustainable in the long run. The DoSD is to provide funding for the projects for a certain period of time before the overall activities of the project are transferred to the local municipal office of DoA. The study also revealed that integrated funding is needed from the local municipality and other relevant government organizations in order to ensure the sustainability of the projects.

The relationship between DoSD and DoA is not clear, nor is the split of responsibilities in terms of supporting the community projects. Since the DoSD initiated and funded the projects, they are seen to be the lead agent, however DoA is probably better suited to providing technical support. The unclear split of these responsibilities between the two Departments is an arrangement that does not facilitate the provision of support to the project members.

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<sup>3</sup> Mr. Siya is a senior staff of the Department of Social Development at Idutywa; his office is in charge of receiving reports and coordination of project activities in the study area.

During a key informant discussion with Mr. Cwaka Batandwa<sup>4</sup> from Mbashe Local Municipality, he confirmed the fact that the project is facing some challenges with respect to inadequate support structures and proper coordination on the part of the Departments that are directly involved with the activities of the project (i.e. DoSD and DoA). He stressed the need for a strategic meeting of the Local Municipality with both Departments in order to clarify the challenges faced by the project with a view to providing immediate solutions.

Mr. Cwaka emphasised the need for strategic partnership with other government institutions. He cited the National Development Agency (NDA) as potential partner/funder of FCP and Ciko Santrini Project. However, he stressed that caution needs to be exercised while trying to form alliances or partnership with other government organisations. He added that permission must be sought from the DoSD to clarify the viability and the possibility of such partnerships. He suggested another possible funder/partner for the project as Independent Development Trust (IDT), which is another government institution that could support the two project sites. He emphasized that with a good memorandum of understanding (MoU) in place, a good working relationship could be established.

The study reveals that due to the lack of adequate support structures, the FC project at Mbosi has not been able to contribute significantly to the improvement of the smallholders' livelihood. The project has a lot of potential but the present support structures are not sufficient to guarantee the sustainability of the project and the various forms of capital are yet to be adequately harnessed. More still needs to be done to ensure a sustainable livelihood for the smallholder farmers in the study area.

Traditional leadership within the local community: The hierarchy of power within the village level and the municipality level are illustrated below:

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<sup>4</sup> Mr. Cwaka Batandwa is the IDP/ LED/ Strategic Manager for Mbashe Local Municipality at Idutywa, his office is responsible for managing strategic programs and projects, and he reports directly to the district manager.

*Hierarchy of power at the village level*

Chief→ Headmen→ Sub-Headmen

The sub-headmen are most accessible to the people. They are the first level of leadership within the community and villagers report issues to them, especially matters relating to disputes over land allocation or water utilization. The sub-headmen report matters to the village headman, who is empowered to take decisions after due consultation with the chief. Chieftaincy position is inherited and it is highly respected.

The traditional leaders in both villages do not play any role in making decision on how the group projects operate.

Local government structures:

*Hierarchy of power at the municipality level*

District municipality → Local municipality → Ward councillor → Ward committee

The ward committee represents the community at the level of the municipality, the positions are usually appointed by the people. The function of the ward committee is to mediate between the community and the municipality. The persons occupying the positions of the ward committee also work closely with the chief, the headmen and the sub-headmen to disseminate information and to act as the mouthpiece of the people.

The person occupying the position of ward councillor is politically appointed through electoral processes and represents the interest of the people politically at the Local Municipality. The Local Municipality is headed by an appointed Municipal Manager and an elected Mayor. The Local Municipality falls under the District Municipality, which comprises a number of Local municipalities.

### **5.3 Applying Williamson's approach to Social analysis**

Williamson's approach to social analysis has been used to undertake a social analysis of the study site, and the community projects in particular. The focus of the analysis has been on Level 1 (embeddedness), Level 2 (institutional environment) and Level 3 (Governance).

As discussed earlier in the report, the first level comprises the context that exists at a local level, influencing all activities that take place. The institutional environment consists of the more formal rules of the game, while the extent to which the institutional environment actually influences the activities that communities engage in is assessed at the third level.

### **5.3.1 Social embeddedness**

The core element of Williamson's 1<sup>st</sup> level of social analysis (Social theory) is referred to as embeddedness. According to Williamson (2000), the social embeddedness level is where norms, customs, morals, traditions, etc. are located. The central objective of social capital theory is that social interactions in civic life, the day-to-day and face-to-face encounters in neighbourhoods and communities are the basis upon which common values are based and trust is built. This is often referred to as the 'informal rules of the game'.

It suffices to say that the group projects in both Ciko and Mbosi were built upon this notion. This report further describes two key components of social embeddedness, namely trust, norms and values.

#### **5.3.1.1 Trust**

While it could be a bit difficult to evaluate the level of trust that exists between the group members and between them and the broader community, certain attributes of the group project members revealed that a measure of trust exists among the members. The fact that the projects are not prepared to sell on credit to members of the local community indicates some lack of trust due to past experiences.

Trust, according to Slangen (2008), can be important and it can increase credible commitment, but it also has another role. For example, trust lowers the cost of seeking information and monitoring projects, because trusting people are less secretive and more ready to supply information. Trust could thus be an asset or a liability. Trust reduces the cost of contracting and control because it lowers the fears of opportunism and accepts more influence from the contracting partner.

The study reveals that relationships also exist between projects and private institutions and that these relationships facilitate access to agricultural inputs. The key informant

discussion with the manager of Umtiza revealed that this private institution is assisting farmers in terms of input and equipment procurement. The company is making provision for payment in instalments and the farmers have been meeting up to expectation with regards to repayment. Umtiza is also working in partnership with the Department of Agriculture to provide training for these farmers, but findings revealed that these farmers sometimes do not seem interested in the training sessions.

#### **5.3.1.2 Norms and values**

Traditional norms, beliefs and value are very significant in the study area. The key informant discussions with local chiefs and traditional leaders revealed some interesting belief systems in the study area which impact on various agricultural enterprises. One of the traditional leaders confirmed that a part of their traditions forbids women from entering animal kraals. This might be one of the reasons why few people, especially women, embark on raising cattle. Another traditional norm forbids people from engaging in farming activities in the village if any member of the village is recently deceased. In addition, the land of the deceased person must not be cultivated or given to anybody until such time as there is some sort of agreement from the family of the deceased in terms of what to do with the land (this being related to showing respect for the deceased). This means that the land will remain uncultivated until the family of the deceased is ready to allow the land to be cultivated.

#### **5.3.2 Institutional environment**

A core element of Williamson's 2<sup>nd</sup> level of social analysis (Economics of property) is the institutional environment, which describes the 'formal rules of the game'. The institutional environment operates by established laws. The group projects are established through formal government programmes and they have their own constitution governing their activities.

The components of institutional environment are: property rights, bureaucracy etc. Laws related to abstraction of water from rivers for irrigation purposes are some of the rules that define the institutional environment within which the community projects function.

Besides the role that government departments play in regulating the institutional environment, traditional leaders play significant roles, especially in the allocation of

land in the study area. They ensure that the right of individual smallholder farmers to land is protected through a traditional panel of leaders. They settle any dispute resulting from land utilization (or non- utilization) and no individual is allowed to fraudulently claim ownership of land. The traditional institution works with the DoA and the Department of Land affairs in ensuring that land is equitably distributed among the smallholder farmers. It is however acknowledged that some of the allocated lands are not being used for productive purposes due to some of the factors that have already been identified in the previous report, including lack of money, remote location of the land, lack of fencing, etc.

### **5.3.3 Governance**

Governance is a key element of Williamson's 3rd level of social analysis (Transaction cost economics). There are usually structures in place to facilitate effective implementation of projects. As mentioned earlier in this report, the DoSD, as initiator and key funder of the community projects, plays a strong role informing decisions that they take. Being mandated to support agricultural development, the DoA is also providing support to these farmers, however, there is problem with the definition of roles and responsibilities of these two principal stakeholders, and some indication of power relationships being at play between them.

Though neither DoA nor DoSD seem to recognize that there are conflicts over roles and responsibilities and decision-making processes, the farmers at both community projects, who are the direct recipients of their services, attested to the fact that there is some conflict in terms of whose duty it is to manage the projects. It might be that the roles and responsibilities have not been clarified with the project members, however a key informant interview with the manager from the Local Municipality also revealed that the two Department needs to clarify their individual roles on how best to manage the project in the study area.

### **5.3.4 Chapter summary**

This chapter dealt with the existing support structures of social and physical capital available to individual farming households as well as members of the two community projects within the study area; and this has revealed that there are some key gaps that are

nullifying the potential impact of that which does exist. The findings from this chapter suggest a very important policy consideration with respect to achieving food security in the study area; this will be discussed in details in subsequent chapters. The objectives set forth were examined under the two broad categories of physical and social capital with particular reference to individual farming households and the community irrigation projects in Ciko and Mbosi villages (Ciko Santrini project and Foundation Community Project (FCP) at Mbosi). The key value chains that have been given attention at the Willowvale site are cattle production by individual households and the irrigated production of cabbage and maize in the two community projects. However, chicken and butternuts production seems to suggest very strong indication of having potential for marketing by these smallholder farmers. The chapter concluded by identifying different governance organs available to farmers in the study area, the overall assessment based on the descriptions and the analysis in this chapter revealed that these smallholders lack the needed support; it also highlighted the existing support structures and profiled their inefficiencies and inadequacies.

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**RESULTS OF THE INFERENCE ANALYSIS**

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**6.1 Introduction**

This chapter focuses on the inferential analysis of market access for butternuts and chicken among smallholder farmers in the study area. The main objective of this chapter is to present inferential results of the model that was formulated in Chapter 3, with respect to the research objective (3) stated in chapter 1 (to analyse various technical and institutional factors preventing farmers in the study area from accessing the mainstream market). Within the chapter, the independent variables (factors that could enhance market access) are tested for their significance and conclusions are drawn using these results. The chapter gives emphasis on model specification, where the variables are fitted into the model using binary logistic regression. These variables are then defined, giving their anticipated signs. Overall, 6 predictor variables were used in the model to test for factors that could be responsible for market access for butternuts, while 8 predictor variables were used for chicken. Furthermore, additional analysis was carried out using the discriminant analysis; this becomes necessary due to the uncertainty surrounding the nature of the distribution i.e. whether the distribution is normal or not. The chapter goes on to indicate empirical results of the binomial logistic regression model, commenting on the significance of the given variables. A detailed explanation is provided for the significant variables in both logistic regression and discriminant analysis for both butternuts and chicken, and relevant conclusion was drawn to sum up the chapter.

**6.2 Model empirical results of binary logistic regression**

This section presents the results of the binomial logistic regression model and discusses results of the significant variables determining market access for butternuts and chicken among smallholder farmers in Mbashe local municipality of the Eastern Cape Province. The dependent variable for chicken was CHIRM, which represents the availability of a ready market for chicken; while BUTTRM was used as the dependent variable for butternuts, which represents the availability of a ready market for butternuts as defined in chapter 3 All the variables that were discussed in the previous section were considered for

the model and tested for their significance. The binomial logistic results for butternuts and chicken are presented in Tables 6.1 and 6.2 respectively. The tables show the estimated coefficients ( $\beta$  values), standard error, Wald statistics, significance values and Exp (B) of the predictor or independent variables in the model. Market access for chicken was measured by using CHIRM as the dependable variable; while BUTTRM was used for butternuts, and the question was asked in the questionnaires on whether farmers have ready market for chicken or butternuts, this question was based on the fact that from field experience some of the farmers do have ready market but are being constrained to accessing the market due to some technical and institutional factors which this study reveals.

**Table 6.1: Estimation of binary logistic regression for smallholder farmers on market access for butternuts in the study area.**

	<b>Parameter estimate</b>	<b>Std Error</b>	<b>Wald statistic</b>	<b>P-value</b>	<b>Exp(B)</b>
PROMEM	-0.722	0.491	2.159	0.142	0.486
GOVSUBS	1.187	0.571	4.328	0.037**	3.277
GOVSUBF	0.681	0.485	1.976	0.160	1.976
BUTTPRO	1.929	0.735	6.889	0.009***	6.886
ASSTDOS	-1.377	0.524	6.905	0.009***	0.252
INCOMES	0.644	0.496	1.688	0.194	0.525
CONSTANT	-0.518	0.591	0.768	0.381	0.596
Observations:	N=100				
Correct prediction	71.0%				
Cox & Snell R square	0.252				
Nagelkerker R square	0.338				
<u>Hosmer Lemeshow test</u>					
Chi-square	6.180				
Significance	0.519				

\*\*\*, \*\*, \* statistically significant at 1 percent, 5 percent and 10 percent respectively

**Table 6.2: Estimation of binary logistic regression for smallholder farmers on market access for chicken in the study area.**

	<b>Parameter estimate</b>	<b>Std Error</b>	<b>Wald statistic</b>	<b>P-value</b>	<b>Exp(B)</b>
PROMEM	1.093	.805	1.847	.174	2.984
ASSTDOS	3.325	1.214	7.502	.006***	27.791
INCOMES	1.849	.916	4.081	.043**	6.356
CHFMAR	22.858	6673.302	.000	.997	8.454E9
CHIASO	1.177	.873	1.818	.178	3.245
ASSTMU	.809	.855	.896	.344	2.247
PARTAO	-4.474	1.265	12.506	.000***	.011
AGRDEVP	-1.709	.870	3.864	.049*	.181
Constant	-1.470	1.104	1.771	.183	.230
Observations:	N = 100				
Correct prediction	87.0%				
Cox & Snell R square	0.598				
Nagelkerker R square	0.803				
<u>Hosmer &amp; Lemeshow test</u>					
Chi-square	4.219				
Significance	0.838				

\*\*\*, \*\*, \* statistically significant at 1 percent, 5 percent and 10 percent, respectively

Gujarati (1992) observed that the coefficient values measure the expected change in the logit for a unit change in each independent variable, all other independent variables being equal. The sign of the coefficient shows the direction of influence of the variable on the logit. It follows that a positive value indicates an increase in the likelihood that a smallholder farmer (respondent) will have access to the market for the produce under consideration, that is, market access for butternuts or chicken. On the other hand, a negative value shows that it is less likely that the alternative will be the case (Gujarati, 1992). The significance values (also known as p-values) show whether or not a change in the independent variable significantly influences the logit at a given level. It should be noted that in this study, the variables were tested at 5% significance level. Thus, if the significance value is greater than 0.05, then it implies that there is insufficient evidence to support that the independent variable influence a change from not having market access for either butternuts or chicken. If the significance value is equal to or less than 0.05, then there is enough evidence to support a claim presented by the coefficient value. The standard error measures the standard deviation of the error in the value of a given variable (Gujarati, 1992). The Wald statistic provides an index of the significance of each predictor in the equation. EXP (B) is interpreted in terms of the change in odds. If the value is more than 1 then the odds of an outcome occurring increase; if the figure is less than 1, any increase in the predictor leads to a decline in the odds of the outcome occurring.

### **6.2.1 Interpreting logit model empirical results for butternuts**

The results of the logistic regression that estimates market access for butternuts are presented in Table 6.1. The results of the omnibus test of model coefficients were highly significant with  $P < 0.001$  with a chi-square value of 28.999. The Hosmer and Lemeshow test also supports the model as being worthwhile. Pallant (2007) argues that this test is the most reliable test for goodness of fit in SPSS. The chi-square value for the Hosmer and Lemeshow test is 6.180 with a significant level of 0.519. This value is greater than 0.05 indicating support for the model. The model as a whole explained between 25.2 percent (Cox and Snell R square) and 33.8 percent (Nagelkerke R square) of the variability of smallholder farmers' market access status for butternuts.

Prediction success overall was 71.0 percent which represents the accuracy of classification; the sensitivity of the model shows that 60.5 percent of the smallholder farmers who are having access to market are correctly specified while the specificity of the of the model is

78.9 percent (this indicates that the smallholder butternuts farmers who are not having access to market have been correctly classified). The Wald criterion demonstrated that three variables in the equation have a significant contribution to market access for butternuts in the study area; these three variables are: Government subsidy (GOVSUBS) for inputs procurement, whether butternuts are produced for marketing purposes (BUTTPRO), and assistance/support from the Department of Social Development (ASSTDOS), it is worth mentioning that the negative sign in the coefficient for ASSTDOS (for butternuts) signifies that it is less likely that the individual butternut producer will have access to market, though this factor is very significant in our analysis, it thus implies that other factors are required to be put in place, as this alone will not guarantee market access. However, for chicken production the sign is positive, indicating that this significant factor will greatly influence market access for chicken production in the study area.. Input subsidy was significant at 5 percent (0.037) this agrees with what Crawford *et al.*, (2003) observed about inputs subsidy “Agricultural input subsidies have long been used to promote smallholder farmers’ use of inputs, increase wages, reduce food prices, and promote economic growth” (Crawford *et al.*, 2003).

The decision by the smallholder farmers to produce butternuts for marketing purposes is significant at 1 percent (0.009), this corroborates what Nicholson (1992) and Rauniyar (1990) observed; that when farmers have access to information it tends to improve their decision-making skills. These, then, affect the probability of market participation since information service never lowers the expected utility (Nicholson (1992); Rauniyar (1990)

Support from government agency is also significant at 1 percent (0.009); this suggests that when smallholder farmers have government support in terms of access to land, provision of credit facilities, good road and transportation, extension services, etc. market access and market participation tend to be more possible for these farmers.

### **6.2.2 Interpreting logit model empirical results for chicken**

The results are presented in Table 6.2. The results of the omnibus test of model coefficients were highly significant with  $P < 0.001$  with a chi-square value of 91.192. The Hosmer and Lemeshow test also supports the model as being worthwhile. The chi-square value for the Hosmer and Lemeshow test is 4.210 with a significant level of 0.838. This value is greater than 0.05 indicating support for the model. The model as a whole explained between 59.8

percent (Cox and Snell R square) and 80.3 percent (Nagelkerke R square) of the variability of smallholder farmers' market access status for chickens.

Prediction success overall was 87.0 percent which represents the accuracy of classification; the sensitivity of the model shows that 86.0 percent of the smallholder farmers who are having access to market are correctly specified while the specificity of the of the model is 88.4 percent (this indicates that the smallholder chicken farmers who are not having access to market have been correctly classified). The Wald criterion demonstrated that four variables in the equation have a significant contribution to market access for chicken in the study area; these four variables are: Support from government agency (ASSTDOS) which is significant at 1 percent (0.006), this corroborates the results obtained for butternuts which equally justifies the significance of support from government agency; producing chicken as the only source of income (INCOMES) is significant at 5 percent (0.043), in other words this favours the perception that given the needed priority and the needed government supports, chicken farmers who depended solely on marketing chickens for income could have access to market, this is in agreement with Avila (1985) who suggested that of the small livestock, poultry should have high priority in respect of food and income generation. Partnership arrangement with either private or public organization (PARTAO) is significant for chicken farmers at 1 percent, and lastly the perception that involvement of smallholder farmers in agricultural development projects (AGRDEVP) could aid market access is also significant at 5 percent (0.049). However, it good to mention that although both PARTAO and AGRDEVP are both significant they carry a negative sign in their coefficient; this implies that these factors are less likely to contribute to market access for the chicken production in the study area, especially when they are considered as separate factors from all other significant factors for market access for chicken..

### **6.3 Model empirical results of discriminant analysis**

This section presents the results of the discriminant analysis model and discusses results of the significant variables determining market access for butternuts and chicken among smallholder farmers in Mbashe local municipality of the Eastern Cape Province, the results from discriminant analysis were then compared with the results obtained using binary logistic regression. All the variables that were discussed in the previous section were considered for the model and tested for their significance. The discriminant analysis results for butternuts and chicken are presented in Tables 6.3 and 6.4 respectively. The tables

show the estimated Wilks' Lambda, F-test, degree of freedom 1 (df1) and degree of freedom 2 (df2) and the significance values of equality of group means.

According to Crammer (2003), discriminant function analysis is a parametric technique used in determining which weightings of quantitative variables or predictors best discriminate between 2 or more groups of cases and do so better than chance. However, Ramayah et al (2010) observed that caution must be taken since the focus of discriminant analysis is not to predict but to explain the relationship, as such; equations are not normally written when the measures used are not objective measurements.

**Table 6.3: Estimation of discriminant analysis for smallholder farmers on market access for butternuts in the study area.**

Tests of equality of group means					
	Wilks'	F	df1	df2	Sig.
GENDER	0.993	0.685	1	98	0.410
HH SIZE	0.999	0.102	1	98	0.750
AGE HH	1.000	0.001	1	98	0.977
INCOMES	0.985	1.470	1	98	0.228
GOVSUBF	0.998	0.194	1	98	0.661
GOVSUBH	0.990	0.981	1	98	0.324
GOVSUBP	0.992	0.812	1	98	0.370
GOVSUBS	0.973	2.696	1	98	0.104
BUTTPRO	0.852	17.062	1	98	0.000***
BUTTMD	0.983	1.647	1	98	0.202
BUTTASSO	0.995	0.512	1	98	0.476

Observations= 100; Original group correctly classified= 72.0 percent; Eigen value = 0.268<sup>a</sup>.

*Wilks' Lambda test:* Chi-square = 21.941; Significance = 0.025; \*\*\*, \*\*, \* statistically significant at 1 percent, 5 percent and 10 percent respectively.

**Table 6.4: Estimation of discriminant analysis for smallholder farmers on market access for chicken in the study area.**

Tests of equality of group means					
	Wilks'	F	df1	df2	Sig.
GENDER	0.933	4.179	1	58	0.045**
HH SIZE	0.987	0.786	1	58	0.379
AGE HH	0.980	1.187	1	58	0.280

LEVED	0.948	3.152	1	58	0.081
INCOMES	0.815	13.140	1	58	0.001
PRO MEM	0.999	0.087	1	58	0.769
AGRDDEVP	0.985	0.886	1	58	0.350
CHFMAR	0.715	19.232	1	58	0.000***
CHIASO	0.994	0.350	1	58	0.556
PARTAO	0.874	8.382	1	58	0.005***
ASSISTDOS	0.864	9.114	1	58	0.004***
SOCIALG	0.988	0.117	1	58	0.734
COLWAT	0.998	0.732	1	58	0.396

Observations= 100; Original group cases correctly classified= 88.3 percent; Eigen value = 2.066<sup>a</sup>.

*Wilks' Lambda test:* Chi-square = 57.703; Significance = 0.000; \*\*\*, \*\*, \* statistically significant at 1 percent, 5 percent and 10 percent respectively.

### 6.3.1 Interpreting discriminant analysis results for butternuts

The results are presented in Table 6.3 . The results of the Wilks' Lambda test of model coefficients were significant at 0.025 with a chi-square value of 21.941. The canonical correlation of 0.460 shows that most variance in the discriminant scores cannot be attributed to group differences. The perception that farmers' decision to produce butternuts for marketing purposes (BUTTPRO) being the only variable that was significant at 0.000; implies that one could reject the null hypothesis for Wilks' Lambda that the two groups have the same mean discriminant function score the only significant variable; hence we conclude that the model is discriminating. The Lambda value at the point of significance is 0.852 as shown in Table 6.3.

### 6.3.2 Interpreting discriminant analysis results for chicken

The results are presented in Table 6.4 above. The results of Wilks' Lambda test of model coefficient were significant at 0.000 with a chi-square value of 57.703. The canonical correlation of 0.821 shows that nearly all the variance in the discriminant scores can be attributed to group differences. Out of the 13 variables that were tested for equality of group means only 5 variables were significant. These variables are: Gender (GENDER), perception that marketing chicken is the only source of income (INCOMES), perception that the farmer is producing chicken for marketing purposes (CHFMAR), partnership with public and private organizations (PARTAO), and assistance from government agency (ASSTDOS). This implies that one could reject the null hypothesis for Wilks' Lambda that the two groups have the same mean discriminant function score for the five significant variables for market access. Hence, we conclude that the model is discriminating. The

Lambda values at the point of significance for each of the variables are shown in Table 6.4 above.

#### **6.4 Chapter Summary**

This chapter provided empirical evidence of factors affecting market access for butternuts and chicken value chains among smallholder farmers in the study area. These factors were tested using binary logistic model and discriminant analysis. The significant variables for butternuts at the 1% level using binary logistic regression are as follows: farmers' decision to market butternuts and assistance from government agency; while at 5% for butternuts is government subsidies for seeds/seedlings. The significant variables for chicken at 1% level are: assistance from government agency and partnerships with private or public organizations; at 5% level the variables are: the decision of the farmers due to access to information to market chicken as the only income source and farmers' membership of agricultural development projects.

The discriminant analysis corroborates the results obtained from using logistic regression, due to the fact that some of the variables that were significant under logistic regression were found to be possible determinants of group differences as a result of variance in the discriminant scores for these significant variables; these include assistance from government agency, partnership with public and private organizations, and farmers' decision to market chicken as the only income source. Based on the results of this study several suggestions could be given to the farmers on how best they could access market, and these factors will also be relevant in policy decisions. These factors are typically representative of the various support structures needed by the farmers in this study area to be able to effectively penetrate markets with a view to contributing to the mainstream economy. However, this study reveals that the farmers are having challenges in penetrating markets due to lack of the support structures, and this calls for policy intervention which forms the basis of the discussion in the next chapter.

These findings have significance to this study in that they revealed the constraints and challenges of the smallholders in having access to market. These smallholder farmers need adequate supports for them to be able to access market; they have no access to irrigation water; they depend mostly on rain fed water or water from the dams for their crops and

livestock. Assistance from the government as well as the support from public-private is needed if these farmers will ever be able to access the mainstream market.

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**SUMMARY AND POLICY RECOMMENDATIONS**

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**7.1 Introduction**

The subject of support structures for smallholder farmers is very crucial if these farmers are to become participants in the mainstream economy. This dissertation had focussed extensively on this issue and the various issues having to do with smallholder farmers' activities were broadly covered. The concept of institutional economics was employed to explain the issues of social capital and social embeddedness. Collective and individual approaches to smallholder farming were investigated; these issues were succinctly highlighted in this study within the context of what characterise the study area. The study is entirely related to the issue of governance, with respect to the nature of support available to both individual and collective smallholder farmers in the irrigated and rain-fed farming communities of Eastern Cape Province of South Africa. Relevant conceptual frameworks and well-articulated empirical analysis were conducted in order to consolidate the findings in this study.

**7.2 Summary**

The dissertation is broadly divided into seven chapters. Chapter one comprised of the study introduction, research objectives, research questions and justification for the study. Chapter two dealt with a comprehensive review of literature that focused on the issue of governance for smallholder farmers, it gave a detailed review of relevant literatures on social capital, collective action, conceptual frameworks of Williamson's 4-level of institutional analysis and the frameworks for sustainable livelihoods. Seasoned authors were cited and acknowledged.

Chapter three was based on the methodology employed for the study. It gave a detailed description of the South African agricultural sector with particular focus on the Eastern Cape Province. The chapter also highlighted the various research tools and methods used in this study, and it provided relevant justification for the each of the research tools and methods employed. Chapter four focussed on collective and individual resource utilization; the chapter enumerated the relevant issues relating to the two community group projects in

the study area while also highlighting some of their challenges and opportunities. The subject of support structures of physical and social capital was discussed in chapter five and its relevance to the two community group projects in the study area was well illustrated. The chapter provided a justification for this study to practically analyse the various support structures available to the group projects farmers and compare it to what the individual farmers are experiencing in the study area with respect to support systems. Chapter six presented the results of the inferential analysis; two inferential analyses were used in this study, the binary logistic regression and the discriminant analysis. The results of the two analyses confirmed the need for support structures for smallholder farmers in the study area.

### **7.2.1 Summary of collective and individual resource use**

The research was conducted in the study area near Willowvale at Mbashe local municipality; two community group projects were critically researched over a period of one year. The idea is to compare the activities of the group project farmers with those of the individual farmers over a considerable period of time. The core objective of the research was to investigate how these farmers utilize the resources at their disposal. The number of individual smallholder farmers was 100, questionnaires and other relevant research tools were used in accessing information from these farmers. It was observed that the farmers in the community group project were able to have access to some level of support as opposed to individual farmers, findings also revealed that individual farmers have access to land and water in the study area, although the study revealed that some the individual farmers as well as group project farmers still have abandoned land. Some of the reasons given for under-utilization of land include but not limited to the following: Lack of money to cultivate the land, the distance of the land, lack of fencing, production inputs challenges, death of land owner, etc. Water usage in the study area was characterized into three categories: Water usage for crop production, water usage for livestock production, water for domestic uses. Water resources are generally shared by the community for crop production as 57% of the people indicated. This could be referred to as communal water use rather than collective water use, as the water source is shared, but utilisation takes place on an individual basis. The survey further revealed that nobody pays for water in either community. The chapter was able to establish the importance of collective action

among the smallholder farmers, as one of the panacea for market penetration by the smallholder farmers in the study area.

### **7.2.2 Summary of support structures of physical and social capital**

Support structures are central to the improvement of smallholder farmers, the chapter discussed support structures with particular emphasis on the following: institutional arrangement including property rights, social embeddedness, including trust, loyalty and power relationships, mentorship and skills transfer, transport and marketing infrastructure and information to access market.

Sustainable livelihood framework was employed to characterize the individual farmers in the study area, and Williamson's 4-level of social analysis described the various level of analysis as observed in the study area. Existing support structures available to individual farmers as well as group farmers in the study area were described and analysed. The provision of adequate support to strengthen social and physical capital is important to improving the profitability of the smallholder agriculture. This will contribute in no small measures to improving their livelihood and at the same time guaranteeing food security in the study area. The chapter explores some of the implications of some important issues such as culture and tradition of the people as well as the issue of power and power relationships. These are very important factors, though one might not be able to attach any economic value to them. They are very central to how these smallholder farmers operate in the context of certain norms and beliefs, and such factors have implications for the sustainability of their agricultural ventures. The chapter however revealed that social embeddedness is said to have some economic benefits attached to it, especially when economic transactions are conducted among individuals that share social ties.

### **7.2.3 Summary of inferential analysis**

The results of the binomial logistic regression model for butternuts revealed that the provision of input subsidy for smallholder farmers is very significant to market access for these farmers. The statistically significant predictor variables, at the 5% level are the perceptions that; input subsidy for smallholder farmers favours market access, also the decision of the farmers based on access to information to market butternuts as the only income source significant at 1% level; thus, when farmers have access to information it could help their decision to produce with the aim of making of a living. Assistance from

government agency is significant at 1% level; this suggests that when farmers have timely access support in the form of, community irrigation facilities, , good road network linking farm to the market, good transportation systems and adequate farm implements, there will be good incentives to access market. The regression results for chicken also revealed that at 1% level; assistance from government agency, sole income from chicken marketing, and partnerships with both public and private organizations would encourage market access for these smallholder farmers. Also, at 5% level of significance membership of agricultural development project would contribute in assisting the smallholder farmers in the study area to access market, this corroborates the role of social capital within the study area. The chapter further revealed that the discriminant analysis corroborates the results obtained from using binary logistic regression, due to the fact that some of the variables that were significant under logistic regression were found to be possible determinators of group differences as a result of variance in the discriminant scores for these significant variables; these include assistance from government agency, partnership with public and private organization, and farmers' decision to market chicken as the only income source

### **7.3 Policy recommendation**

The provision of adequate support to strengthen social and physical capital is important to improving the profitability of smallholder agriculture. This will contribute in no small measures to improving their livelihood and at the same guaranteeing food security in the the study area Given the relatively low contribution that farming appears to be making to individual smallholder farmers in the study area and the heavy reliance on social grants, it is suggested that there is a need to intensify efforts in their farming activities. One of the reasons for this very low productivity is the issue of little or no support for these smallholder farmers. They lack support in the area of provision of inputs, marketing their produce, accessing market information, transport infrastructure, etc. Interactions with farmers in the study area revealed that these farmers are willing to increase production, if given the needed support. It is likely that this will require organisation of farmers into structures that facilitate the provision of support by relevant government agency. This would facilitate access to training (to develop human capital) and other inputs such as seed or fertilizer. It should perhaps be stressed that while government programmes and policies aim to improve smallholder production, their interventions are not always effective in achieving this. Participatory monitoring of projects and programmes that identify gaps in

terms of social and physical capital could be effective in improving the impact of these interventions.

The main policy challenges revealed by the empirical results are suggested in this section. A number of options to develop policies and initiatives that will assist the smallholder farmers in accessing the mainstream economy are presented as follows:

✓ **Policy implementation on improved extension services to smallholder farmers:**

The existing structure of extension services in the study area needs to be improved upon, regular visits and dissemination of timely information by the extension officers will contribute immensely to improved farming production in the study area. Due to the nature of farming operations in the two villages and the challenges that they face, it would be beneficial to consider the establishment of structures that would facilitate access to water, land and production inputs and to marketing farm produce. In all likelihood this would consist of two levels of structures – one at the farmers' level, that would allow for cooperation between farmers, and that at the service provider level, allowing for cooperation between different spheres of government and other key parties such as the private sector, non-governmental organisations and community-based organisations; this could be made possible when extension services are tailored specifically to help farmers meet these needs. Literatures revealed that some of these policies are on paper but they lack implementation.

✓ **Policy priority on road reconstruction in farming communities:**

Poor road networks among these rural smallholder farmers is making it difficult for fresh produce buyer to patronise the smallholder farmers, on the other hands, the farmers have limited access to good transportation systems that could encourage them to carry their produce to the potential buyers. When the problem of poor road network is combined with deficient or inefficient transportation services, produce are delayed in getting to the market or they may not even get there at all; with little or no good storage facilities in place the produce will lose their market value and consequently the market price, these will subsequently have effect on the economy due to the fact that income per capita of these farmers will be drastically reduced. Most road networks in rural farming communities are in bad shape, and this calls

for urgent policy priority to be put in place to address the problem, especially when one considers the positive impact and difference it will make to the agricultural economy among the rural smallholder farmers.

✓ **Public-private partnerships needs to be in place among smallholder farmers:**

In some situations, public-private partnerships have provided effective mechanisms to improve service delivery to smallholder farmers, whether it be through providing access to inputs or land, technical support, equipment or reliable markets. Cooperative governance is a term that is normally used to refer to how different government departments need to work together in order to implement development programmes. One of the issues discussed in the study was whether there exist any alternative cooperative governance structures that could assist with input acquisition or product marketing. There is some assumption that certain organisational arrangements could facilitate access to inputs and markets, addressing the issues such as small volumes and irregular supplies of produce as well as small individual requirements for inputs, which are often coupled with high transaction costs. The cooperation could involve private institutions, NGOs and relevant public agencies; such synergy would have positive impact on agricultural sector, especially among the rural smallholder farmers.

✓ **Food value chain among small holder farmers needs to be restructured:**

Priority should be given to the produce that gave the farmer better returns. Smallholder farmers must be encouraged to focus on food chain in which they have a comparative advantage. The case in this study is butternuts for crop and chicken for livestock; farmers in this study area could be supported to be more productive in those food chains, focus should be on how these produce will improve their livelihoods both in the short and long run.

✓ **Cooperative societies and collective action should be strengthened among smallholder farmers:** The establishment of structures that allow for collective action by smallholder farmers are seen as a mechanism to increase their bargaining power, with the assumption being that they are stronger if they function collectively than if they function as individuals.

#### **7.4 Area of further research**

As detailed as this study may have covered some specific areas, it is however not exhaustive in its scope; hence, there is the need for further research in the area of making market become more accessible to the smallholder farmers. A comprehensive research is needed on how efficiently the smallholder farmers could participate in the mainstream market. Gaining access to the market is not sufficient; studies need to be carried out on efficient market participation by smallholder farmers, with a view to researching into what the farmers must do in order for them to become key players in mainstream market while contributing to the economy and improving their livelihoods.

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APPENDICES

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DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

**CHECKLIST FOR KEY INFORMANT**

**DISCUSSION**

**Objective 6: Individual and Collective Resource Use**

Interview No ----- Interviewee's Name -----, Tel -----  
-----

Date -----, Village -----

Local Municipality, Province -----

**LAND ACQUISITION AND USAGE**

A. What are the ways and methods of acquiring land for Crop and Livestock production in your locality? -----

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**B.** -----  
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**C. What are the problems associated with land acquisition and how do you think these problems could be solved? Highlight these problems and suggest possible solutions**-----  
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**D. What are the rules/Laws governing land acquisition and tenure in your locality? Discuss** -----  
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**E. How do the agricultural community project members use land, is it collectively or individually? Describe** -----  
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**F. What are some of the challenges associated with collective usage of land in your project group? Highlight** -----  
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**G. How do you think these problems could be mitigated? Discuss** -----

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**H. Would you rather prefer individual land usage as opposed to the collective usage? Outline and Discuss your reason(s) for either Yes or No** -----

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**I. Does your opinion in G above reflect the opinion of most of the project group members? Discuss** -----

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**J. How do you handle dispute within your project group over which purpose the land is to be utilised?** -----

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**K. Do members of your project group use the group land for any other purposes other than crop/ livestock production? Discuss** -----

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**L. Do they use the group land individually? Discuss (whether we have members who use the land for individual purpose) -----**

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**WATER USAGE**

**M. What are the challenges or constraints associated with irrigation system of farming with particular reference to your project site? -----**

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**N. What do you think could be done to address these challenges and constraints? -----**

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**O. What are the rules/Laws governing water usage in your locality? Highlight ----**

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**P. How have you been handling problems associated with drainage and drainage systems? Explain -----**

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**Q. Other than the collective water usage, do project members use water meant for the group for individual purposes? Explain and state the purpose -----**

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**R. In terms of the maintenance of your irrigation facilities, who bears the financial burden? and explain your members' opinions in that regards -----**

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**S. Who does your repairs for irrigation facilities, and where are they based? -----**

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**PRODUCTION INPUT AND EQUIPMENT ACQUISITION:**

**T. What are the challenges associated with production input acquisition for your project group? -----**

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**U. How do you think these challenges could be addressed? Explain -----**

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**V. Seeing Labour as a production input, how do you normally acquire Labour? Discuss -----**

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**W. How do you reward labour? Discuss** -----

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**X. Discuss the traditional system of Labour sharing in this community?** -----

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**Y. How did you acquire your tractor and other production equipment on your project site? Explain** -----

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**Z. What are those challenges associated with maintenance of your tractor and other production equipment? Discuss** -----

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**AA. Do you have access to subsidies or credit facilities for the procurement of these production inputs? Discuss in detail** -----

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**BB. Highlight the assistance you have received from the Department of Agriculture in the past and in recent time with respect to production input and equipments acquisition?** -----

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**CC.** In terms of transporting your production inputs to the project site, who bears the financial burden and on the average how much do you normally spend in transporting? Discuss -----

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**DD.** What type of assistance or support have you received from the municipality in terms of procurement of these equipments and production inputs? Highlight -----

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**EE.** Do think there is need for partnership with private or public organisation for the procurement of these inputs and equipments? Discuss -----

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**FF.** Do members sometimes procure production inputs individually? Explain -----

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**MARKETING WITHIN SELECTED FOOD VALUE CHAIN:**

**GG. How do you market your produce, individually or collectively? Explain**

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**HH. How do you normally share the proceeds from the market? Discuss ----**

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**II. How do you ensure that you have access to market information and feed back from consumers? -----**

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**JJ. Does prevailing market prices usually affect your marketing decisions? Discuss-----**

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**KK. How will you describe your project's production capacity with respect to market demand? Discuss -----**

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**LL. What are the factors informing your project's group decision on the type of crop/Livestock to produce/market? Discuss -----**

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**MM. What are the aims and objectives of your project group? Highlight ----**

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**NN. Are these aims and objectives being achieved? Discuss -----**

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**OO. What aspect of your project group's functions would you like to see major improvements? Highlight -----**

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EXTENSION**

**FOCUS GROUP DISCUSSION FOR OBJECTIVE 6:  
INDIVIDUAL AND COLLECTIVE RESOURCE USE**

Interview No ----- Date ----- Village -----

Local Municipality ----- Province -----

Number of focus group participants in Attendance -----

**A.PROJECT MEMBERS' PROFILE**

Total number of Project members	Active members	Non-active members	Any aspiring member	Any physically challenged member (sick, etc)	Total number of women	Total number of men	Any under age member	Total willing to leave the group	Youth below 35 yrs

Any additional information on project members -----  
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**LAND (Acquisition and Usage):**

**B. How did you acquire project Land? -----**

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**C. Are there rules or law governing Land acquisition in your locality? Explain for either Yes or No with respect to your project -----**

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**D. Do you allow/encourage your members to use the Land for private farming apart from the collective usage? -----**

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**E. Do you have any constitution or written documents on how members of the project should conduct or comport themselves? Explain for either Yes or No -----**

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**F. Do you have any fallow land (Mention land size in Hectares) meant for the project that you are not currently using (Yes/No), if yes why are you not using the Land? -----**

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G. Apart from Agricultural purposes, do you use the project land for other purposes?

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H. What are the laws/regulations governing land acquisition or tenure with respect to your project group? -----

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**WATER USAGE BY THE PROJECT GROUP**

<p><b>I.</b>                  Indicate the different types of water usage for your project site.</p>	<p><b>J.</b>                  Indicate for each of the water usage, the sources of water.                  1.River 2.Dams 3.Communal taps                  4.Individual household taps 5.Municipal water tanks 6.Boreholes 7.Harvested water</p>
<p>1. Crop production</p>	
<p>2. Livestock production</p>	
<p>3. Domestic usage</p>	

K. What are the rules/Laws governing water usage in your area? Describe in details -

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L. What are some of the challenges associated with irrigation system of farming with particular reference to the ones your project is facing at the moment? -----

M. How have you been handling these challenges? -----

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N. Do members of the project group use project water for any other purposes other than crop production? explain-----

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O. How do you normally maintain your irrigation machine and other equipment relating to that? -----

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**COLLECTIVE PRODUCTION INPUT AND EQUIPMENT ACQUISITION**

<b>P.</b>	<b>Q.</b>	<b>R.</b>	<b>S.</b>	<b>T.</b>	<b>U.</b>
Indicate the various types of production inputs used in the	Indicate sources of production input procurement	How often do you procure ?	Are there subsidies from either private organisation or government agencies on	How do you transport these inputs to the project site?	What is the cost of transportation?

<b>project.</b>			<b>the procurement of any production input?</b>		

**V. Are you normally given concession on the mode of payment for any of these production inputs for your project? Yes/No -----, if Yes what type of concession? -----**  
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**W. What are the challenges or constraints to production input acquisition in your project group? -----**  
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**X. What are you doing or have done as a group to mitigate these challenges? -----**  
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**Y. Describe ways in which the government is assisting your project group with respect to production input acquisition? -----**

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**Z. How did you acquire the tractor and other equipments you are using for crop/livestock production on your farm? -----**

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**AA. In terms of maintenances of these tractor and other equipments, how have you been sourcing fund for maintenances? -----**

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**AB. Are there important production equipments still lacking in your project group? Yes/No ----- If yes, highlight them and give reason(s) why you have not gotten them? -----**

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**MARKETING WITHIN SELECTED VALUE CHAIN**

<p><b>AC.</b> <b>Indicate group crop/Livestock produce</b></p>	<p><b>AD.</b> <b>Indicate marketing outlets</b></p>	<p><b>AE.</b> <b>Do you actually produce for marketing?</b>                       Answer Yes/No for each</p>	<p><b>AF.</b> <b>If Yes what portion of your produce do you market</b></p>	<p><b>AG.</b> <b>Do you have a ready market for any of your produce</b></p>	<p><b>AH.</b> <b>Do you always meet the market demand?</b>                      Yes/No</p>	<p><b>AI.</b> <b>Do you have access to Market information for any of your</b></p>
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		crop/Livestock indicated	?	?		produce? Yes/No

**AE1. Give reasons for either Yes or No on whether you actually produce for marketing -----**

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**AE2. If Marketing is not your primary reason for producing why are you not encouraged to sell? Explain in detail -----**

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**AG1. Give reasons for why you do not have a ready market for your produce---- -- ----**

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**AH1. Explain your reasons in detail for why you do not always meet the market demand ( If No, what factor(s) contribute to your not meeting market demand)-----**

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**AI1. Explain your reasons for having or not having access to market information -----**

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**AJ. How do you normally store your produce? -----**

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**AK. How do you normally transport your produce to the market? -----**

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**AL. How much does it cost to transport your produce from the project site to the market? Full explanations needed -----**

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**AM. How do you normally share the proceeds from the marketing activities among members? -----**

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AS. Is your project group part of any market or farmers' association? Give reasons for either Yes/No -----

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AT. Is your project group benefitting from UMTIZA FARMERS CORP? Describe in details and explain some of the functions of this group -----

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AU. Highlight some of the challenges your project group is currently facing and what do you think could be done to mitigate these challenges? -----

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**PUBLIC-PRIVATE PARTNERSHIPS FOR RESOURCE USE AND INPUT/PRODUCT MARKETING**

AV. Is your project group in any partnerships with either public or private organisation? Describe in details, the name of the organisation and what the partnership stands for -----

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**AW. If yes, what are the benefits of such partnership** -----

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-----**AX. If you are not in any partnership, do you think such initiative is necessary? Explain for either Yes/No** -----

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DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

## CHECKLIST FOR KEY INFORMANT

### DISCUSSION

#### Objective 6: Individual and Collective Resource Use

Interview No ----- Interviewee's Name -----, Tel -----  
-----

Date -----, Village -----

Local Municipality, Province -----

#### LAND ACQUISITION AND USAGE

A. What are the ways and methods of acquiring land for Crop and Livestock production in your locality? -----

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**B. What are the problems associated with land acquisition and how do you think these problems could be solved? Highlight these problems and suggest possible solutions** -----

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**C. What are the rules/Laws governing land acquisition and tenure in your locality? Discuss** -----

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**D. How do the agricultural community project members use land, is it collectively or individually? Describe** -----

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**E. What are some of the challenges associated with collective usage of land in your project group? Highlight** -----

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**F. How do you think these problems could be mitigated? Discuss** -- -----

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**G. Would you rather prefer individual land usage as opposed to the collective usage? Outline and Discuss your reason(s) for either Yes or No -----**

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**H. Does your opinion in G above reflect the opinion of most of the project group members? Discuss -----**

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**I. How do you handle dispute within your project group over which purpose the land is to be utilised? -----**

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**J. Do members of your project group use the group land for any other purposes other than crop/ livestock production? Discuss -----**

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**K. Do they use the group land individually? Discuss (whether we have members who use the land for individual purpose) -----**

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**WATER USAGE**

**L. What are the challenges or constraints associated with irrigation system of farming with particular reference to your project site? -----**

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**M. What do you think could be done to address these challenges and constraints? -----**

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**N. What are the rules/Laws governing water usage in your locality? Highlight ----**

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**O. How have you been handling problems associated with drainage and drainage systems? Explain -----**

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**P. Other than the collective water usage, do project members use water meant for the group for individual purposes? Explain and state the purpose -----**

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**Q. In terms of the maintenance of your irrigation facilities, who bears the financial burden? and explain your members' opinions in that regards -----**

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**R. Who does your repairs for irrigation facilities, and where are they based? -----**

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**PRODUCTION INPUT AND EQUIPMENT ACQUISITION:**

**S. What are the challenges associated with production input acquisition for your project group? -----**

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**T. How do you think these challenges could be addressed? Explain -----**

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**U. Seeing Labour as a production input, how do you normally acquire Labour? Discuss -----**

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**V. How do you reward labour? Discuss -----**

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**W. Discuss the traditional system of Labour sharing in this community? -----**

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**X. How did you acquire your tractor and other production equipment on your project site? Explain -----**

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**Y. What are those challenges associated with maintenance of your tractor and other production equipment? Discuss -----**

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**Z. Do you have access to subsidies or credit facilities for the procurement of these production inputs? Discuss in detail -----**

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**AA. Highlight the assistance you have received from the Department of Agriculture in the past and in recent time with respect to production input and equipments acquisition? -----**

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**BB.** In terms of transporting your production inputs to the project site, who bears the financial burden and on the average how much do you normally spend in transporting? Discuss -----

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**CC.** What type of assistance or support have you received from the municipality in terms of procurement of these equipments and production inputs? Highlight -----

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**DD.** Do think there is need for partnership with private or public organisation for the procurement of these inputs and equipments? Discuss -----

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**EE.** Do members sometimes procure production inputs individually? Explain -----

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**MARKETING WITHIN SELECTED FOOD VALUE CHAIN:**

**FF.** How do you market your produce, individually or collectively? Explain -----

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**GG.** How do you normally share the proceeds from the market? Discuss ----

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**HH.** How do you ensure that you have access to market information and feed back from consumers? -----

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**II.** Does prevailing market prices usually affect your marketing decisions? Discuss-----

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**JJ.** How will you describe your project's production capacity with respect to market demand? Discuss -----

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**KK.** What are the factors informing your project's group decision on the type of crop/Livestock to produce/market? Discuss -----

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**LL.** What are the aims and objectives of your project group? Highlight ----

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**MM.** Are these aims and objectives being achieved? Discuss -----

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**NN.** What aspect of your project group's functions would you like to see major improvements? Highlight -----

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CHECKLIST FOR THE DEPARTMENT OF SOCIAL DEVELOPMENT

NAME OF INTERVIEWEE-----

POSITION IN THE DoSD-----

LOCAL MUNICIPALITY-----

PROVINCE-----, VILLAGE-----

DATE-----, TEL-----



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**DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

**A. PROJECT ESTABLISHMENT:**

1. What are the reasons for establishing these agricultural community projects?-----  
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-----
2. Are these projects currently justifying the reasons of their establishment? -----  
-----
3. What does your Department stands to benefit from these projects? -----  
-----
4. Are these benefits currently being met? -----  
-----

**B. PROPERTY RIGHTS, NORMS AND VALUES:**

1. What role is your Department playing in land acquisition for the project sites? -----  
-----
2. How is your Department ensuring that collective utilization of land for agricultural projects does not lead to misunderstanding among project members? -----  
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3. In what ways are the cultural beliefs of the people impacting on the success of the projects? -----  
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4. What are the conditions to be fulfilled before a community is approved by your Department to be started on agricultural community project? -----  
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5. In terms of attitude to work, what can you say about the commitment of project members to these agricultural community initiatives? -  
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**C. FINANCE AND ADMINISTRATIONS:**

1. In what ways have you assisted these farmers in having access to credit facilities? -----  
-----

2. Mention those other government Departments that are involved in managing these projects. -----  
-----

3. What roles is MAFISA playing in ensuring that agricultural projects have access to finances? -----  
-----

4. What measures do you have in place for accountability? -----  
-----

**D. MONITORING AND EVALUATIONS:**

1. What measures do you have in place to monitor how these projects are performing? -----  
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2. What measures do you have in place to ensure that these projects are sustainable in the long run? -----  
-----

3. How often do you organise training for these farmers? -----  
-----
4. Would you say the Ciko Santrini Project and Foundation community projects are performing very well? Give reasons for yes/No -----  
-----
5. What are some of the challenges currently facing these two projects? -----  
-----
6. How do you intend mitigating these challenges? -----  
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**E. TRUST, LOYALTY AND POWER RELATIONS:**

1. What can you say about the level of trust and loyalty among project members? -----  
-----
2. Does your Department have trust in the membership of the project? -----  
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3. So you have any criteria for approving membership into the projects? -----  
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4. How does your Department ensure that there is no conflict of interest between you and Department of agriculture? -----  
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5. In terms of power relations how do you manage the involvement of other interested stakeholders in the projects? -----  
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6. Do you have any structure in place that could encourage NGOs, private individuals and companies to get involved in the management of these projects? Explain for Yes/No -----  
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**F. MENTORSHIP AND SKILLS TRANSFER:**

1. Is there any mentorship programme between the community project farmers and commercial farmers/ do you encourage such initiative? -----  
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2. Do you have any mentorship programme from AgriSETA designed for these farmers? -----  
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3. Considering the fact that some of the project members are old, what mentorship programmes do you have in place to encourage youth's involvement in these community projects? -----  
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4. What are some of the skills these farmers are currently lacking? -----  
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5. How do you intend ensuring that they possess these skills? -----  
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**G. TRANSPORT AND MARKETING INFRASTRUCTURES:**

1. Why is your Department not interested in providing transportation for these projects? -----  
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2. Marketing and storage facilities are lacking in both project sites, what is your Department doing to fix these problems? -----  
-----

3. The road leading to these two projects site is currently bad, what are you doing to fix the roads? -----  
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**H. INFORMATION TO ACCESS MARKETS:**

1. What structures are in place to ensure that these farmers have access to relevant market information? -----  
-----

2. Do you think the farmers will be open to new information? -----  
-----

3. What have you done in the past to assist the farmers with relevant market information? -----  
-----



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## **DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

### **FOCUS GROUP DISCUSSION FOR OBJECTIVE 6: INDIVIDUAL AND COLLECTIVE RESOURCE USE**

**Interview No ----- Date ----- Village -----**

**Local Municipality ----- Province -----**

**Number of focus group participants in Attendance -----**

**A.PROJECT MEMBERS' PROFILE**

<b>Total number of Project members</b>	<b>Active members</b>	<b>Non-active members</b>	<b>Any aspiring member</b>	<b>Any physically challenged member (sick, etc)</b>	<b>Total number of women</b>	<b>Total number of men</b>	<b>Any under age member</b>	<b>Total willing to leave the group</b>	<b>Youth below 35 yrs</b>

**Any additional information on project members** -----  
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**LAND (Acquisition and Usage):**

**B. How did you acquire project Land?** -----  
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**C. Are there rules or law governing Land acquisition in your locality? Explain for either Yes or No with respect to your project -----**

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**D. Do you allow/encourage your members to use the Land for private farming apart from the collective usage? -----**

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**E. Do you have any constitution or written documents on how members of the project should conduct or comport themselves? Explain for either Yes or No -----**

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**F. Do you have any fallow land (Mention land size in Hectares) meant for the project that you are not currently using (Yes/No), if yes why are you not using the Land? -----**

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**G. Apart from Agricultural purposes, do you use the project land for other purposes? -----**  
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**H. What are the laws/regulations governing land acquisition or tenure with respect to your project group? -----**  
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**WATER USAGE BY THE PROJECT GROUP**

<p><b>I.</b>                  Indicate the different types of water usage for your project site.</p>	<p><b>J.</b>                  Indicate for each of the water usage, the sources of water.                  1.River 2.Dams 3.Communal taps                  4.Individual household taps 5.Municipal water tanks 6.Boreholes 7.Harvested water</p>
<p>1. Crop production</p>	
<p>2. Livestock production</p>	
<p>3. Domestic usage</p>	

**K. What are the rules/Laws governing water usage in your area? Describe in details -----**  
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**L. What are some of the challenges associated with irrigation system of farming with particular reference to the ones your project is facing at the moment?** -----

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**M. How have you been handling these challenges?** -----

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**N. Do members of the project group use project water for any other purposes other than crop production? explain**-----

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**O. How do you normally maintain your irrigation machine and other equipment relating to that?** -----

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**COLLECTIVE PRODUCTION INPUT AND EQUIPMENT ACQUISITION**

<b>P.</b> Indicate the various Types of production inputs used in the project.	<b>Q.</b> Indicate sources of production input procurement	<b>R.</b> How often do you procure?	<b>S.</b> Are there subsidies from either private organisation or government agencies on the procurement of any production input?	<b>T.</b> How do you transport these inputs to the project site?	<b>U.</b> What is the cost of transportation?

**V. Are you normally given concession on the mode of payment for any of these production inputs for your project? Yes/No -----  
-----, if Yes what type of concession? -----  
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-----**

**W. What are the challenges or constraints to production input acquisition in your project group? -----  
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**X. What are you doing or have done as a group to mitigate these challenges? -----  
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**Y. Describe ways in which the government is assisting your project group with respect to production input acquisition? -----  
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**Z. How did you acquire the tractor and other equipments you are using for crop/livestock production on your farm? -----  
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**AA. In terms of maintenances of these tractor and other equipments, how have you been sourcing fund for maintenances? -----**

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**AB. Are there important production equipments still lacking in your project group? Yes/No ----- If yes, highlight them and give reason(s) why you have not gotten them? -----**

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**MARKETING WITHIN SELECTED VALUE CHAIN**

<b>AC.</b> Indicate group crop/Livestock produce	<b>AD.</b> Indicate marketing outlets	<b>AE.</b> Do you actually produce for marketing?  Answer Yes/No for each crop/Livestock indicated	<b>AF.</b> If Yes what portion of your produce do you market?	<b>AG.</b> Do you have a ready market for any of your produce?  Yes/No	<b>AH.</b> Do you always meet the market demand?  Yes/No	<b>AI.</b> Do you have access to Market information for any your produce?  Yes/No

**AE1. Give reasons for either Yes or No on whether you actually produce for marketing -----**  
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**AE2. If Marketing is not your primary reason for producing why are you not encouraged to sell? Explain in detail -----**

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**AG1. Give reasons for why you do not have a ready market for your produce--- -- -----**

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**AH1. Explain your reasons in detail for why you do not always meet the market demand ( If No, what factor(s) contribute to your not meeting market demand)-----**

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**AI1. Explain your reasons for having or not having access to market information -----**

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**AJ. How do you normally store your produce?** -----  
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**AK. How do you normally transport your produce to the market?** -----  
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**AL. How much does it cost to transport your produce from the project site to the market? Full explanations needed** -----  
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**AM. How do you normally share the proceeds from the marketing activities among members?** -----  
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**AN. How do you reward members for participating actively in the group project? -----**  
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**AO. How do you discipline erring project members? Explain -----**  
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**ALTERNATIVE COOPERATIVE GOVERNANCE STRUCTURE FOR INPUT AND EQUIPMENT AQUISITION/ PRODUCT MARKETING.**

**AP. Is your project group being supervised/ supported by any organisation or Government agencies? Explain -----**  
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**AQ. If yes, what is the name of the organisation? -----**  
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**AR. Have you received assistance from any organisation recently or in the past? If yes describe the type of the assistance and the name of the agency or organisation.**-----  
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**AS. Is your project group part of any market or farmers' association? Give reasons for either Yes/No** -----  
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**AT. Is your project group benefitting from UMTIZA FARMERS CORP? Describe in details and explain some of the functions of this group** -----  
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**AU. Highlight some of the challenges your project group is currently facing and what do you think could be done to mitigate these challenges?** -----  
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**PUBLIC-PRIVATE PARTNERSHIPS FOR RESOURCE USE AND INPUT/PRODUCT MARKETING**

**AV. Is your project group in any partnerships with either public or private organisation? Describe in details, the name of the organisation and what the partnership stands for** -----  
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**AW. If yes, what are the benefits of such partnership** -----  
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-----**AX. If you are not in any partnership, do you think such initiative is necessary? Explain for either Yes/No** -----  
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**DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

**CHECKLIST FOR KEY INFORMANT DISCUSSION**

**Objective 6: Individual and Collective Resource Use**

**Interview No ----- Interviewee's Name -----, Tel -----**

**Date -----, Village -----**

**Local Municipality, Province -----**

**LAND ACQUISITION AND USAGE**

**A. What are the ways and methods of acquiring land for Crop and Livestock production in your locality? -----**

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**B. What are the problems associated with land acquisition and how do you think these problems could be solved? Highlight these problems and suggest possible solutions -----**

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**C. What are the rules/Laws governing land acquisition and tenure in your locality? Discuss -----**

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**D. How do the agricultural community project members use land, is it collectively or individually? Describe -----**

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**E. What are some of the challenges associated with collective usage of land in your project group? Highlight -----**

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**F. How do you think these problems could be mitigated? Discuss -- -----**

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**G. Would you rather prefer individual land usage as opposed to the collective usage? Outline and Discuss your reason(s) for either Yes or No -----**

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**H. Does your opinion in G above reflect the opinion of most of the project group members? Discuss -----**  
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**I. How do you handle dispute within your project group over which purpose the land is to be utilised? -----**  
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**J. Do members of your project group use the group land for any other purposes other than crop/ livestock production? Discuss -----**  
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**K. Do they use the group land individually? Discuss (whether we have members who use the land for individual purpose) -----**  
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**WATER USAGE**

**L. What are the challenges or constraints associated with irrigation system of farming with particular reference to your project site? -----**  
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**M. What do you think could be done to address these challenges and constraints? -----**  
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**N. What are the rules/Laws governing water usage in your locality? Highlight -----**  
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**O. How have you been handling problems associated with drainage and drainage systems? Explain -----**  
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**P. Other than the collective water usage, do project members use water meant for the group for individual purposes? Explain and state the purpose -----**

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**Q. In terms of the maintenance of your irrigation facilities, who bears the financial burden? and explain your members' opinions in that regards** -----

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**R. Who does your repairs for irrigation facilities, and where are they based?** -----

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**PRODUCTION INPUT AND EQUIPMENT ACQUISITION:**

**S. What are the challenges associated with production input acquisition for your project group?** -----

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**T. How do you think these challenges could be addressed? Explain** -----

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**U. Seeing Labour as a production input, how do you normally acquire Labour? Discuss** -----

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**V. How do you reward labour? Discuss -----**

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**W. Discuss the traditional system of Labour sharing in this community? -----**

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**X. How did you acquire your tractor and other production equipment on your project site? Explain -----**

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**Y. What are those challenges associated with maintenance of your tractor and other production equipment? Discuss -----**

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**Z. Do you have access to subsidies or credit facilities for the procurement of these production inputs? Discuss in detail -----**

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**AA. Highlight the assistance you have received from the Department of Agriculture in the past and in recent time with respect to production input and equipments acquisition? -----**

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**BB. In terms of transporting your production inputs to the project site, who bears the financial burden and on the average how much do you normally spend in transporting? Discuss -----**

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**CC. What type of assistance or support have you received from the municipality in terms of procurement of these equipments and production inputs? Highlight -----**

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**DD. Do think there is need for partnership with private or public organisation for the procurement of these inputs and equipments? Discuss -----**

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**EE. Do members sometimes procure production inputs individually? Explain -----**

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**MARKETING WITHIN SELECTED FOOD VALUE CHAIN:**

**FF.** How do you market your produce, individually or collectively? Explain -----  
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**GG.** How do you normally share the proceeds from the market? Discuss -----  
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**HH.** How do you ensure that you have access to market information and feed back from consumers? -----  
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**II. Does prevailing market prices usually affect your marketing decisions? Discuss-----**  
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**JJ. How will you describe your project's production capacity with respect to market demand? Discuss -----**  
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**KK. What are the factors informing your project's group decision on the type of crop/Livestock to produce/market? Discuss ---**  
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**LL. What are the aims and objectives of your project group? Highlight -----**  
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**MM. Are these aims and objectives being achieved? Discuss -----**  
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**NN.      What aspect of your project group's functions would you like to see major improvements? Highlight -----**

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