An Impact Assessment of the Revitalisation of Smallholder Irrigation Schemes Program:

A Case of Tšwelopele Irrigation Scheme in Sekhukhune District of Limpopo Province

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An Impact Assessment of the Revitalisation of Smallholder Irrigation Schemes Program:

A Case of Tšwelopele Irrigation Scheme in Sekhukhune District of Limpopo Province

By

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DECLARATION

I declare that “An Impact Assessment of the Revitalisation of Smallholder Irrigation Schemes Program: *A Case of Tšwelopele Irrigation Scheme in Sekhukhune District of Limpopo Province*” mini-dissertation hereby submitted to the University of Limpopo, for the degree of Masters in Development has not been previously submitted by me for a degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

_____ _____

Maepa MA (Mr) **Date**

[redacted]

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ABSTRACT

Agricultural development programs under the former apartheid homeland system which was dissolved in 1994 could not successfully achieve their objectives. The current democratic government reviewed the policies and programs put in place during apartheid era which eventually led to the implementation of the Revitalisation of Smallholder irrigation Schemes (RESIS) in line with the Reconstruction and Development Program (RDP) and Growth, Employment and Redistribution (GEAR) programs. It was anticipated that RESIS would among others improve agricultural productivity, play a role in local economic development, improve food security, provide improved benefits and the livelihoods of the rural communities where the schemes are situated.

The aim of the study is to assess whether the RESIS program has had an impact so as to make recommendations for future similar programs. The objective of the study is to assess the impact of RESIS program on the livelihoods of the participants and to shed light on whether such programs can be used for poverty reduction, which is a key objective in the programs of LDA**.** Tšwelopele irrigation scheme in Greater Tubatse Municipality within Sekhukhune District Municipality was selected as the area at which the study was conducted.

A random sample of 50 beneficiaries was selected from a total of 75 RESIS beneficiaries and divided into two strata, namely, full-time farmers (both male and female) and part-time farmers (male and female) farmers. Interviews were conducted through completion of questionnaires responded to by the selected participants and key informants in the scheme. Qualitative and quantitative methods were used to obtain the responses from the scheme participants and the data processed using SPSS.

Based on the analysis of respondents' perceptions of the farmers, the study concludes that RESIS is perceived to have had a positive impact on the livelihoods of the beneficiaries. Gross margin analysis supports the farmers' perceptions.

TABLE OF CONTENTS

Page

List of abbreviations and acronyms **8**

Chapter 1: Background of the study **10**

1.1 Introduction 10

1.2 Problem statement 13

1.3 Motivation for the study 14

1.4 Aim of the study 15

1.5 Objectives of the study 15

1.6 Research questions 15

1.7 Significance of the study 16

1.8 Operations definitions 16

Chapter 2: Literature review **18**

2.1 An overview of some of Africa's agricultural development guiding policies 18

2.2 Constitutional and legislative requirements for agricultural development policies 20

2.3 State support to agricultural infrastructure development in Limpopo province 21

2.4 Appreciative impact assessment approach for development programs on livelihoods 23

Chapter 3: Research methodology **28**

3.1 Research Design 28

3.2 Area of Study 28

3.3 Population 30

3.4 Sampling method 30

3.5 Data collection methods 30

3.6 Data analysis 31

3.7 Ethical considerations 31

Chapter 4: Presentation and interpretation of results **32**

4.1 Introduction 32

4.2 Sample characteristics 32

4.3 Crop budgets for operations at Tšwelopele Irrigation Scheme 36
4.4 Analysis of perceived RESIS' impact on the livelihoods of the beneficiaries 38

Chapter 5: Conclusion and Recommendations **46**
5.1 Introduction 46
5.2 Limitations of the study 48
5.3 Recommended areas of further study 49

List of tables

Table 1.1 Summary of LDA operational RESIS irrigation schemes 12
Table 4.1 Sample characteristics 32
Table 4.2 Income estimates for TIS beneficiaries 37
Table 4.3 Perceptions of RESIS' impact on beneficiaries 39
Table 4.4 Perceptions of RESIS' impact potential on livelihoods 40
Table 4.5 Perceptions of RESIS respondents' on use of earnings 43

List of figures

Figure 2.1 Impact assessment process 24
Figure 2.2 Sustainable rural livelihoods framework for analysis 26
Figure 3.1 Location of TIS in Greater Tubatse Municipality 29
Figure 4.1 Source of technical support 33
Figure 4.2 Types of technical support 34
Figure 4.3 Adequacy of technical support 35
Figure 4.4 Usefulness of technical support 35

Appendices

Appendix 1 Simple schematic representation of livelihood 54
Appendix 2 Potatoes crop production budget (February to September 2009) 55
Appendix 3 Sugar beans crop cash flow (February to September 2009) 56
Appendix 4 Maize crop production budget (December 2009 to March 2010) 57
Appendix 5 Makuleke potato crop production (February to September 2009) 59
Appendix 6 Mbahela potato crop production (February to September 2009) 60

LIST OF ABBREVIATIONS AND ACRONYMS

ANC	African National Congress
ARDC	Agricultural and Rural Development Corporation
AU	African Union
CAADP	Comprehensive African Agricultural Development Program
CADU	Chilalo Agricultural Development Unit
CASP	Comprehensive Agricultural Support Program
CHF	Community, Habitat, Finance
CIRAD	French Agricultural Research for Development Centre
DAFF	Department of Agriculture, Forestry and Fisheries]
DFID	Department for International Development
DRDLR	Department of Rural Development and Land Reform
DWAF	Department of Water Affairs and Forestry
FAO	Food and Agriculture Organization of the United Nations
GEAR	Growth, Employment and Redistribution
GLAD	Gurage Livelihood and Agricultural Development
GSDM	Greater Sekhukhune District Municipality
GTM	Greater Tubatse Municipality
IDP	Integrated Development Plan
IMT	Irrigation Management Transfer
IWMI	International Water Management Institute
KPA	Key Priority Area
LAC	Lebowa Agricultural Corporation
LandCare	Land Care Program
LDA	Limpopo Department of Agriculture
LEGDP	Limpopo Employment, Growth and Development Plan
LPG	Limpopo Provincial Government
LRAD	Land Redistribution of Agricultural Development
MERECAS	Mechanisation Revolving Credit Access Scheme
NDA	National Department of Agriculture and Land Affairs

NEPAD	New Economic Partnership for Africa
PGDS	Provincial Growth and Development Strategy
PLAAS	Program for Land and Agrarian Studies
RDP	Reconstruction and Development Program
RESIS	Revitalisation of Smallholder Irrigation Schemes
RSA	Republic of South Africa
SIS	Smallholder irrigation schemes
SNNPRS	Southern Nations Nationalities and People's Regional State
SPSS	Statistical Package for Social Sciences
SRB	Steelpoort river basin
SWOT	Strengths, weaknesses, opportunities and threats
TIS	Tšwelopele irrigation scheme
WADU	Wolaita Agricultural Development Unit
WUA	Water Users Association

Chapter 1

Background of the study

1.1 Introduction

In 1996 Limpopo Department of Agriculture (LDA) established the Agricultural and Rural Development Corporation (ARDC), which became the government development agency for agricultural development (Van Rooyen and Nene (1996), Van Averbeke and Mohamed (1998) and Lahiff, 2000). The corporation's activities focused on areas in formerly apartheid homelands of Gazankulu, Lebowa and Venda. This corporation did not have specific agricultural development programs. Instead of developing farmers, the corporation was involved in management of smallholder irrigation schemes (SIS) through a complicated top-down command and support system, which later proved to be unsustainable (Tshuma, 2009:17). The schemes under the ARDC were fully subsidised with modern agricultural equipment used for cultivation, planting and fertilizer application in the schemes. That type of arrangement made the government an indirect owner of most of the schemes' economic capital resources such as the machinery, water and the working capital used in the schemes.

In 2004 LDA realised that the then existing ARDC policy, was not producing the desired impact on the farmers' livelihoods. According to Denison and Manona (2007:285) all financial and management support was withdrawn and schemes were handed over to the farmers, thus leaving them with the responsibility of acquiring their own farming resources. SIS farmers' situation was exacerbated by the adoption of the Growth, Employment and Redistribution (GEAR) macro-economic strategy in 1996. The Program for Land and Agrarian Studies (PLAAS) (2004:3) believes that the macro-economic strategy introduced cutbacks in state agricultural support. The withdrawal of the funding meant that small-scale farmers can no longer rely on the state for support to access agricultural capital and other livelihood resources.

To alleviate the problem LDA in 1998 subsequent to ARDC, introduced the WaterCare program in three phases with the last phase completed in 2004 (Denison and Manona, 2007) concurred by Arcus Gibb (2005) and cited by van Averbeke and Mohamed, (n.d). The WaterCare program's strategic focus was participatory and focused on aspects of irrigation infrastructure development

and production cycle with less emphasis on other local economic development issues such as livestock development, food production and livelihoods of the participants. It then became imperative for the government and the farmers to find ways of closing gaps left by WaterCare program, and Revitalisation of Smallholder Irrigation Schemes (RESIS) became the alternative program in 2004.

RESIS incorporates infrastructure development to address the irrigation problems, in anticipation to (a) improve agricultural productivity, (b) play a role in local economic development, (c) improve food security, (d) provide improved benefits and the livelihoods of the rural communities where the schemes are situated (LDA: 2005, 2004 and 2003). RESIS' approach proposes to combine the revitalisation, rehabilitation, commercial production approach, installation of efficient infield irrigation systems and revamping the supportive bulk infrastructure to supply the necessary services of water, electricity, access roads, value adding facilities and food protection. Denison and Manona, (2007) assume that the approach was informed by the realisation that past efforts to support the farmers at irrigation schemes has not achieved the desired outcomes, which ought to be among others, moving away from the subsistence farming practices to co-operative commercial farming systems to attain improved livelihoods.

As the state withdrew funding from SIS, revitalisation became linked to Irrigation Management Transfer (IMT). Perret (2002:4) defines IMT as “state withdrawal, promotion of the participation of water users, development of local management institutions, transfer of ownership and management of irrigation schemes from the state to farmers”. Among the different IMT initiatives nationwide, RESIS of the Limpopo provincial government (LPG) stood out for its comprehensiveness and potential to improve the socio-economic status of the majority of SIS farmers (Van Averbeke Mohamed, 2006).

One other attribute of RESIS is that it incorporates infrastructure development and addresses the livelihoods impact in the form of observable and non-observable outcomes of the program. In this study Tšwelopele irrigation scheme (TIS) will be the focus of discussion as it forms part of the 11 RESIS operating schemes in Limpopo province; namely, Elandskraal, Homu, Krokodilheuwel, Mbahela, Makuleke, Mapela, Mogalatšane, Phetwane, Setlaboswana and Strydkraal (Table 1.1).

Table 1.1 shows that the total developed area under RESIS in Limpopo is 1 694 ha with 1 554 planned and 770 current or active beneficiaries at an estimated cost of R152 535 245.

Table 1.1 Summary of completed and operational RESIS irrigation schemes in Limpopo Province

Name of the Scheme	Command area actually irrigated (ha)	Irrigation technology	Planned beneficiaries (Current beneficiaries)	Average plot size per beneficiary (ha)	Nearest town/Land marks (Name)	The Cost of Rehabilitation (R)
Krokodilheuwel	243	Floppy Sprinklers	202 (188)	1.2 ha Commercial with Strategic Partner	Tompi Seleka College	20 267 465
Mbahela	102	Floppy Sprinklers	100 (86)	1.2 ha Commercial with Strategic Partner	Thohoyandou	18 717 425
Makuleke	195	Centre Pivots	243 (41)	0.8 ha Commercial with Strategic Partner	Malamulele (Kruger National Park)	15 008 318
Tšwelopele (Praktiseer)	440	Floppy Sprinklers	312 (75)	1.41 ha Commercial with Strategic Partner	Burgersfort	22 503 809
Elandskraal	180	Centre Pivot Permanent Overhead Sprinklers	97 (38)	1.86 ha Commercial with Strategic Partner	Marble Hall/Tompi Seleka College	22 064 272
Homu	126	Micro/Drip	22 (22)	5.7 ha Commercial with Strategic Partner	Giyani	10 815 924
Strydkraal (Phase 1)	34	Floppy Sprinklers Drip	281 (18)	1.2 ha Commercial with Strategic Partner	Apel	1 996 111
Phetwane (Hindustan)	52	Floppy Sprinklers	43 (48)	1.21 ha Commercial with Strategic Partner	Tompi Seleka College	4 956 107
Mogalatjane	131	Floppy Sprinklers	98 (98)	1.34 ha Commercial with Strategic Partner	Tompi Seleka College	11 430 197
Setlaboswane	119	Floppy Sprinklers	99 (96)	1.2 ha Commercial with Strategic Partner	Tompi Seleka College	12 185 629
Mapela	72	Floppy Sprinklers Drip Irrigation	57 (60)	1.26 ha Commercial with Strategic Partner	Potgietersrus	12 589 988
Total	**1694**		**1554 (770)**			**152 535 245**

Adapted from LDA RESIS for audit purposes as at 31 August 2009.

It is important to mention that some schemes have not achieved the planned number of beneficiaries. For instance at TIS it was established that currently there are 75 of the 312 planned beneficiaries.

1.2 Problem statement

Post-apartheid South is faced with the reality of widespread poverty and inequality in the midst of political stability and strong economy with positive economic growth except during the economic crisis years, (Bhorat and Kanbur, 2006:77). These authors claim that while the economic empowerment benefits are expanding, mainly among the urban black middle class, the majority of people continue to live in poverty and mass unemployment. Masria-Neeta and February (2008:276) and Smith (2007) concur that the developmental problems facing South Africa come forth in the form of (a) unemployment, (b) landlessness, (c) homelessness, (d) lack of basic services, (e) human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), (f) food insecurity and (g) unacceptable levels of crime and violence. Greater Tubatse Local Municipality (GTM) in its Integrated Development Plan (IDP) 2008's strengths, weaknesses, opportunities and threats (SWOT) analysis also identifies high poverty rate, unemployment, high rate of school drop-out and HIV/AIDS as threats among other developmental challenges. In contrast to the strengths in the existence of revenue collection policy, skills development plan and available skills, GTM claims that the above threats hamper the municipality's efforts towards creation/crafting of sound local economic development (LED) programs and effective execution of the IDP initiatives (GTM, 2008:102, 103-116).

It is suggested in the IDP 2008 document's LED Key Priority Area (KPA) number 3 that firm economic growth strategies would have to be developed to grow the economy that would lead to more employment and business development opportunities through investment. It is also acknowledged in its Basic Service Delivery KPA 2 that the challenge is to ensure that the well-being of communities is improved or enhanced as there are the opportunities such as political stability, potential growth, technology, stakeholder support and youthful population available. Among others, the Portfolio Committee on Agriculture, Land, Water and Environment has in its report expressed concern as to whether the benefits of RESIS are reaching the intended beneficiaries (LDA, 2008).

In one of the studies conducted by Oni (1998:12) a conclusion was reached after consultations, perusal of government reports, field observations and advice from other stakeholders such as the International Water Management Institute (IWMI) that SIS in Limpopo province was "performing marginally and intervention was deemed necessary". It would be assumed that such proposed "intervention" came forth in the form of RESIS. However it should be noted that the said "marginal performance" referred to might be in reference to the efficiency and effectiveness of the irrigation systems and not the impact of the program on the livelihoods of the farming community. In view of the above sentiments, it could be inferred that the need exists to assess whether RESIS has had the desired impact on the schemes' participants, using their current livelihoods as a measure against those before implementation of the RESIS program. It is envisaged that the findings will respond to the question "Has the RESIS program had positive or negative impact on the livelihoods of the intended beneficiaries?", thus leading to which options could be considered in future policy and program development.

1.3 Motivation of the study

From the mid 1990s, the government withdrew its financial and management support for SIS consequently leaving most of the schemes lying fallow and unproductive because farmers were not adequately capacitated to discharge such responsibilities (CIRAD and the University Pretoria, 2002:4, NDA, 1998 and Stimie *et al*, 2001:29-32). However some periodic and *ad hoc* maintenance was undertaken by government through programs such as WaterCare, flood damage assistance (Veldwisch and Denison, 2005). The interventions had little effect on the schemes' ability to produce on a commercial basis mainly due to inefficient infield water delivery systems, inadequate bulk infrastructure, subsistence farming and dysfunctional farmer institutions on the schemes.

Bhorat and Kanbur, (2006:75-78) argue that the adoption and implementation of the Reconstruction and Development (RDP) framework in 1994 by the democratic South African government was meant to identify, revive and transform the dysfunctional apartheid-led government economic entities, as a result SIS was instituted. Accordingly NDA, (1998) contends that RDP's core values has four principles namely, (a) meeting basic needs, (b) developing human resources, (c) building the economy and (d) democratising the state and society. As it became questionable when the RDP closed its office in the Office of the Presidency, critics as

claimed at http://www.anc.org.za/show.php?id=2345, found an opportunity to condemn it for its failure to achieve the above objectives. In 1996 when the Growth, Employment and Redistribution (GEAR) macro-economic strategy was introduced, the ANC argued in defence of its RDP's stance that GEAR should not be taken as an indication to RDP's failure but the latter's supportive role to achieve the above objectives.

According to the government website http://www.info.gov.za/view/DownloadFileAction?id=70507 it would be accepted that GEAR is a strategy for rebuilding and restructuring the economy as set out in the document and in keeping with the goals set in the RDP. In the context of this integrated economic strategy, it is envisaged that the challenge relating to the achievement of the RDP's four areas of principle mentioned above lies in the development and implementation of the program. Thus the argument presented by the ANC that GEAR seeks to be a macro-economic framework for and not against the RDP would positively be considered during the study under review.

1.4 Aim of the study

The aim of the study is to assess whether the RESIS program has had desired impact on the livelihoods of the participants and to make recommendations to guide future similar programs.

1.5 Objectives of the study

Given that this study provides an assessment of the impact of RESIS on the livelihoods of the beneficiaries, the objective of the study is;

- to assess the impact of the RESIS program on the livelihoods of the participants,
- to shed light on the effectiveness of RESIS and similar programs used for poverty reduction, which is a key objective in the programs of LDA**.**

1.6 Research questions

The major questions guiding this inquiry are:

(a) Has the RESIS program had an impact on the livelihoods of the intended beneficiaries?

(b) If RESIS has had an impact on the livelihoods of the beneficiaries, has it been positive or negative?

(c) Can the impact of RESIS on the livelihoods of intended beneficiaries be quantified?

(d) Can programs similar to RESIS be used as models for alleviating poverty?

1.7 Significance of the study

This study is based on the hypothesis that agriculture constitutes one of the key components, within a broad spectrum of strategies that can be adopted to improve the livelihoods of those that are engaged in farming activities and contribute towards LED. It is anticipated that the study will contribute to the existing body of knowledge on the subject and provide lessons to LDA, farmers, practitioners and policy makers engaged in agricultural development.

1.8 Definition of concepts

Assessment: It is the systematic identification and evaluation of a potential outcome (e.g. socio-economic and cultural impact) of a proposed development on the lives and circumstances of people, their families and communities, (Tshuma, 2009).

Beneficiaries: According to Perret *et al*, (2003), beneficiaries are those persons who own irrigable plots within the scheme. Among those, farming beneficiaries are the ones who actually grow crops on these plots.

Full time farming: Full time commitment to agricultural production as employment and source of livelihood, (LDA, 2005).

Part time farming: The combination of a small amount of farming with an occupation not connected with farming, (LDA, 2005).

Impact: It is the measure of the tangible and intangible effects (consequences) of one thing's or entity's action or influence upon another (http://www.businessdictionary.com/definition/impact.html).

Livelihoods: Conceptually, “livelihoods” imply the means, activities, entitlements and assets by which people make a living. Assets, in this particular context, are defined as not only natural / biological, e.g. land, water, common-property resources, flora, fauna, but also social (i.e., community, family, social networks, participation, empowerment, human (knowledge, creation by

skills) and physical or infrastructure such as, roads, markets, clinics, schools, bridges), (Elasha, Elhassan, Ahmed and Zakieldin, 2005).

RESIS program: It is an integrated revitalisation of smallholder irrigation schemes program initiated by the LDA. The program is led by farmers and facilitated by LDA to provide bulk water supply to the irrigation schemes, infield irrigation system, access roads to the schemes, stock watering systems for the communities, dipping tank systems, training and capacity building for both irrigation and rain-fed farmers, institutional arrangements and structure in the form of Water Users Association (WUA) or any other appropriate institutional structure in the irrigation schemes and training of their members, LDA (2005).

Smallholder farmers: In the South African context it refers to agricultural producers who are mainly black and otherwise distinct from the dominant (white dominated) commercial farming. They are engaged in smallholder agriculture which is consistent with informal sector and tends to constitute a minority share of the livelihoods, Lahiff et al (2004) cited in Denison and Manona (2007).

Chapter 2

Literature review

2.1 An overview of some of Africa's agricultural development guiding policies

The African Union (AU) heads of states and ministers expressed their recognition of the crucial role played by agriculture to improve the livelihoods of the rural communities (Blair et al, (2005:222-238). It is observed in the report that despite Africa's agricultural potential, the continent is constrained by a wide range of obstacles that include the decline of investment in rural infrastructure in the post-1980s. In July 2003, responding to the phenomena, the African Union / New Economic Partnership for Africa (NEPAD) adopted the Comprehensive African Agricultural Development Program (CAADP) as its highest policy framework for the development of agriculture in Africa. CAADP's overall goal is to "help African countries to reach a higher level path of economic growth through agricultural development" that would ultimately lead to improved livelihoods (http://www.nepad.org/foodsecurity/agriculture/about).

The Ethiopian government developed policies and programs along the lines of CAADP. Among others is the Community, Habitat, Finance (CHF) an international program designed to strengthen the livelihoods of rural communities in Ethiopia. The program was implemented and piloted specifically in the Silti and Gurage zones of the Southern Nations Nationalities and People's Regional State (SNNPRS) of Ethiopia in 2004, hence the name Gurage Livelihood and Agricultural Development (CHF/GLAD) (Paulos, 2005:iv-vi). The CHF/GLAD program was designed to strengthen the livelihoods of rural communities and thereby increase their resilience in times of severe economic and climatic disasters. In conclusion Paulos (2005:xxvii-xxviii) acknowledges that the study could not make conclusive remarks on the impact of the CHF/GLAD because of the short lifespan of the program. Nonetheless he concludes that it had influenced the beneficiaries' attitudes to rather focus their energies and available resources towards improvement of their livelihoods than to wait for relief aid. Scoones, Devereux and Haddad (2005:7) observed that in other parts of Ethiopia similar programs such as Chilalo Agricultural Development Unit (CADU) and Wolaita Agricultural Development Unit (WADU) were implemented with positive impacts on agricultural yields and socio-economic development indicators. However, such gains were short-lived and not sustainable due to dependence on national government and financial institutions'

support, when the programs were disbanded or incorporated into local government or line ministries (Cohen 1987 cited by Scoones *et al*, 2005). This study, while assessing the impact of RESIS on the livelihoods of TIS beneficiaries will also seek to reveal its (RESIS) achievements and challenges with the aim of making adjustment on its current form or adopting it as is.

By comparison the RSA Department of Agriculture developed and implemented specific agricultural programs under the auspices of the RDP framework and GEAR strategy (Averbeke and Mohamed, 2006). According to the RSA Department of Agriculture, the national economic policy objectives of agriculture articulated in the RDP, and later encapsulated in the GEAR strategy are: (a) economic growth, (b) reducing income inequalities, especially along racial lines and (c) eliminating poverty. Conceptually, it is assumed that RDP and GEAR if compared to CADU and WADU fall within the scope of the CAADP, while ARDC, WaterCare and RESIS could be compared to CHF/GLAD due to similar objectives and operations as indicated above. However, Scoones *et al* (2005:3-4) citing Peters (2004), Pottier (1999), Guyer (1997), Nyerges (1997) and Berry (1993) argue that regardless of studies conducted by among others by the Consultative Group on International Agricultural Research (CGIAR) on the social dimensions of agrarian settings, policies and programs developed by institutions such as CAADP and CHF through the World Bank and the private sector had little impact on beneficiaries' livelihoods. It is envisaged that as this study discusses the impact (negative or positive) of similar policies and programs on the beneficiaries' livelihoods, the findings referred to by Scoones *et al* above would be confirmed or disputed in the case of RESIS for adoption and/or review.

To arrive at a point of whether RESIS has achieved the desired impact on the livelihoods of TIS beneficiaries, reference will be made to Van Averbeke and Mohamed (2006) as they recognized that smallholder irrigation and associated livelihoods are affected directly by three policy domains namely (a) irrigation policy, (b) agricultural policy and (c) rural development policy. Based on the above authors' claim that these three policies have an effect on smallholder irrigation and associated livelihoods, an assumption could be that they have been developed to positively contribute towards social and economic viability. Therefore the following discussion around public policy alignment towards constitutional and legislative prescripts would hopefully provide important factors that would be taken into consideration in the proposed policy. Accordingly analysis of the South African government administration is important as it will provide guidance to how objectives

set out in political mandates, policies and programs will unfold and/or executed to positively impact on the livelihoods of program beneficiaries.

2.2 Constitutional and legislative requirements for agricultural development policies

National and provincial departments have responsibilities towards development and administrative practice policies that seek to promote efficient and integrated development of the public. These responsibilities are prescribed in broad terms by the Development Facilitation Act 67 of 1995 section 3 (1) (c) and sections 30-47 read together with the Constitution Act of 108 of 1996 (Schedule 4). In summary the policies thus developed seek to (a) promote the integration of the social, economic, institutional and physical aspects of land development, (b) promote the availability of employment opportunities and (c) optimise the use of existing resources including such resources relating to agriculture, land, bulk infrastructure, roads, transportation and social facilities. Therefore the above mentioned acts serve as the foundation of all developmental policies in all structures of the national and provincial departments including National Department of Agriculture and Land Affairs (NDA) now Department of Agriculture, Forestry and Fisheries (DAFF) and LDA respectively.

It is on the basis of the above acts that DAFF developed the Agricultural Policy in 1998 for discussion and implementation throughout the Republic of South Africa (Oni, n.d). The agricultural policy according to Oni, presents the departmental mission and goals that could be summarised as; to establish an environment where opportunities for higher incomes and employment are created for resource-poor farmers alongside a thriving commercial farming sector. As Oni claims, the commercial farming sector would eventually build the RSA into an efficient and internationally competitive agricultural sector that supports the emergence of a more diverse structure of production with a large increase in the numbers of successful smallholder farming enterprises. As could be observed, Oni's sentiments are in line with the objectives of the RESIS program and as such would be kept in check after the impact analysis of TIS beneficiaries' livelihoods.

The DAFF's summarised mission and goals mentioned above led to the development of various Provincial Growth and Development Strategies (PGDS). Limpopo's PGDS's vision is; *"A peaceful, prosperous, united, dynamic and transformed province".* To enable this vision, the Limpopo

Provincial Government (LPG) formulated its mission as "*[t]o stimulate, promote and sustain unity and an enabling environment conducive for economic development, social justice and improved quality of life for its entire people"* (LPG, 2004). Due to changes in government leadership and structures, some of the strategies, policies and programs have been reviewed. Early in 2010 the Limpopo government's PGDS strategy was renamed to LEGD plan with the same principles but with minor amendments to the approaches (LPG, 2010).

With regard to agriculture the plan sets out four categories that qualify for support from the LDA, i.e. (a) off-farm infrastructure where grant funding will enable individuals or groups to develop and improve production efficiency, (b) on-farm infrastructure in the form of irrigation mainlines, minimum stock watering facilities, essential productive assets, boundary fencing and dipping infrastructure, (c) construction of capacity building infrastructure for training and aftercare programs in order to enhance the capacity of local decision-making, management and administration, and (d) input cost support that would enable farmers, more especially in the lower hierarchy to acquire medium and long term financing production inputs for draught tolerant crops where external funding is not possible. One of the prioritized key strategic areas related to agriculture in the LEGDP is the subsistence and emerging farmers' category, an area inherent with RESIS activities. There are two major strategic objectives in that regard, namely (a) income generation and (b) self-development. It would therefore require that LDA's intervention strategies focus on integrating modern production techniques and indigenous production and storage techniques to generate more income to save costs wherever possible (LPG, 2010). Consequently the thinking above devolved into interventions, strategies and plans that would sustain RESIS.

RESIS policy document has become a tool which will guide LDA to comply with the constitutional requirement and related acts of the RSA aimed to achieve the goals and mission of the national agricultural and provincial plans, policy and programs. Thus the role of government in the form of policy frameworks and interventions is reflected in Table 1.1 above in light of the amount of funds spent on developing some of the identified schemes.

2.3 State support to agricultural infrastructure development in Limpopo province

Emanating from the state's responsibilities in terms of the Development Facilitation Act 67 of 1995 Constitution Act of 108 of 1996 (Schedule 4) as mentioned above, the state is obliged to support

agricultural development financially through various programs on the farm sector (Ministry of Agriculture and Land Affairs, 1998). According to Manona (2005), the obligation has to incorporate the LED programs as agriculture is seen as a key element of a local economic development strategy, which would eventually reduce poverty. In efforts to pursue the implementation of the development strategy, the *Agricultural Policy for South Africa 1998* outlines objectives that seek to minimise the dualistic approach that financially favoured white commercial farmers at the expense of smallholder subsistence farmers applied by the previous apartheid regime (University of Witwatersrand, 2005 and Kirsten, Van Zyl and Vink, 2005). Therefore the strategy becomes applicable in favour of the black South African emerging and smallholder farmers such as those found in TIS.

Viljoen (2005) concurs with the above mentioned authors but further argues that the fiscal policy measures that supported the apartheid policies as claimed, did not favour the agricultural sector in general or the commercial farming sector in particular. Viljoen (2005) offers as an example in support of his argument that the decline in state spending illustrated by the rapid decline of government funding of agricultural research impacted negatively on the agricultural sector. TIS was also negatively affected as it was previously managed by ARDC as mentioned in Chapter 1 (1.1 Introduction). His argument concludes that it was not only the poorly resourced subsistence farmers that suffered financial constraints, government's parastatals. Manona (2005) concurs with Viljoen's view and adds that the double-barrel approach of using agriculture for poverty reduction, on the one hand, and commercialization, on the other, did not work and cannot work under the current circumstances. Therefore the RESIS program's impact assessment study on the livelihoods of TIS beneficiaries becomes relevant and important to reveal whether it has achieved the desired objectives or whether there is room for positive adjustment to attain such desired results.

To illustrate the state's commitment towards supporting agricultural development, DAFF and the Department of Rural Development and Land Reform (DRDLR) inherited policies from their predecessors NDA and Department of Water Affairs and Forestry (DWAF) for implementation by various provincial departments and ultimately branches at service delivery level. Some of the programs are (a) Land Redistribution for Agricultural Development (LRAD) aimed to provide grants to black RSA citizens to access land specifically for agricultural purposes, (b) Comprehensive

Agricultural Support Program (CASP) to provide post settlement support to the targeted beneficiaries of land reform and to other producers who have acquired land through private means and are, for example, engaged in value-adding enterprises domestically or involved in export and (c) the Land Care Program (LandCare) which is a community-based support program aimed to develop and implement integrated approaches to natural resource management, which are efficient, sustainable, equitable, and consistent with the principles of ecologically sustainable development (NDA, 2005). For the poorly-resourced farmers with potential, who are engaged in agricultural activities, LDA developed and implemented (a) the Mechanisation Revolving Credit Access Scheme (MERECAS), a revolving credit scheme designed for farmers to purchase agricultural mechanised equipment such as tractors and tools and (b) the Irrigation, Rehabilitation and Development Program aimed at revitalising small-scale irrigation schemes (LDA, 2006). The latter includes RESIS and research policies which are concerned with the provision of agricultural infrastructure, e.g. bulk water supply, in-field irrigation systems and equipment, technology development and improvement. Oni (1998) suggests that RESIS and the research policies mentioned above are developed to have focus on generation and diffusion of new technology to increase the productivity of the resources at the farm level to benefit small-scale irrigation farmers according to provincial programs that will include RESIS program and TIS beneficiaries.

2.4 Appreciative impact assessment approach for development programs on livelihoods

The impact assessment of the agricultural development program is a process cycle involving different types of impact studies at different phases (Alene, Manyong, Gockowski, Coulibaly, and Abele, n.d.). The authors suggest that the assessment phases could be in the following sequence: (a) priority setting (*ex ante*), (b) on-farm technology evaluation, (c) adoption and (d) the after effect or event (*ex post*) impact. The suggestion implies that *ex ante* impact assessment should be undertaken to measure the intended impact of future programs and policies, given a potentially targeted area such as TIS' current situation and may involve simulations based on how the economy works. In contrast *ex post* impact measures actual impacts accrued by the beneficiaries that are attributable to program intervention (Alene, Manyong, Sanogo, Coulibaly, Abele and Nkamleu, (2006:11). Figure 2.1 is used to illustrate the authors' suggestion.

Coincidentally Van Averbeke and Mohamed (2006) and Denison and Manona (2007) provide details of the situation before the introduction (the *ex ante*), of on-farm technology evaluation and

adoption of RESIS and the argument in support of the RESIS program under review with regard to irrigation schemes in Limpopo province.

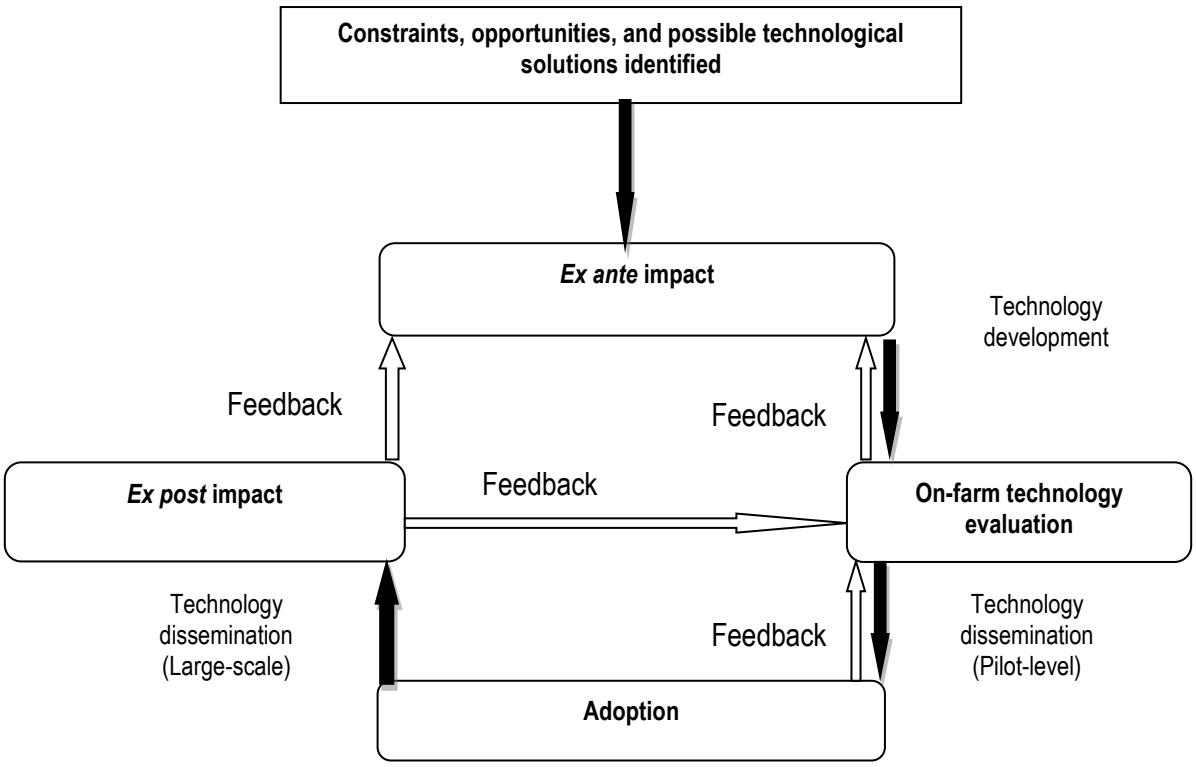

Figure 2.1 The impact assessment process.
*Adapted from Alene et al. (2006a)***.**

The authors concur as they claim that the RESIS program is the largest program in RSA that systematically addresses the major challenges associated with the presently underutilized smallholder irrigation schemes located in the former homelands. According to Van Averbeke and Mohamed (2006) and Denison and Manona (2007), the lessons learned from the initial WaterCare Program and the continually evolving RESIS program activities are unique in South Africa and present important further lessons and experiences on irrigation revitalisation. Therefore it is necessary to investigate the impact of RESIS, especially because some schemes including Tšwelopele are referred to in their discussion, while LDA has included them in the priority scheme list for rehabilitation/revitalisation (Table 1.1). Nonetheless, before embarking on the process of impact assessment itself, common understanding of the proposed and/or adopted approaches and their desired livelihoods outcomes should be explored.

There is a variety of approaches to analyse impacts on livelihoods. The framework developed by Scoones (2002) (Figure 2.2) together with the simplified version by de Haan (2000:351) as in Appendix 1 and adopted by van Averbeke and Mohamed (2006) would be assumed to be relevant under the current study.

In Figure 2.2: *Sustainable rural livelihoods: a framework for analysis*, by Scoones it is presumed that farmers are seen to build their livelihood strategies on five fields that are often called 'capitals', i.e. (a) natural capital referring to land, water, forests and pastures and minerals, (b) physical capital referring to houses, tools and machinery, food stocks or livestock and farm equipment, (c) economic or financial capital in the form of money in a savings account in a bank or in an old stock, a loan or credit, (d) human capital referring to labour and skills, knowledge, experience, creativity and resourcefulness and (e) social capital referring to the quality of relations among people, e.g. whether one can count on support from one's family or assistance from neighbours. Assuming that a combination of policy, capitals, institutions and organizations and livelihood strategies have been employed effectively, the study will focus on the 'four capitals' as they appear in Appendix 1 namely, social, financial, physical and human and on the livelihood outcomes analysis as in Fig 2.2.

With reference to the Figure 2.2 Scoones (2002) identifies livelihood indicators in the form of (a) increased numbers of working days created. In his elaboration he suggests that this indicator (a) relates to the "ability of a particular combination of livelihoods strategies to create gainful employment for a certain portion of the year"; (b) poverty reduction – referring to whether poverty has been reduced or not; (c) well-being and capabilities – citing Sen, (1984'1987) Scoones states that it refers to "what people can do or be with their entitlements"; (d) livelihood adaptation, vulnerability and resilience and (e) natural resource base sustainability.

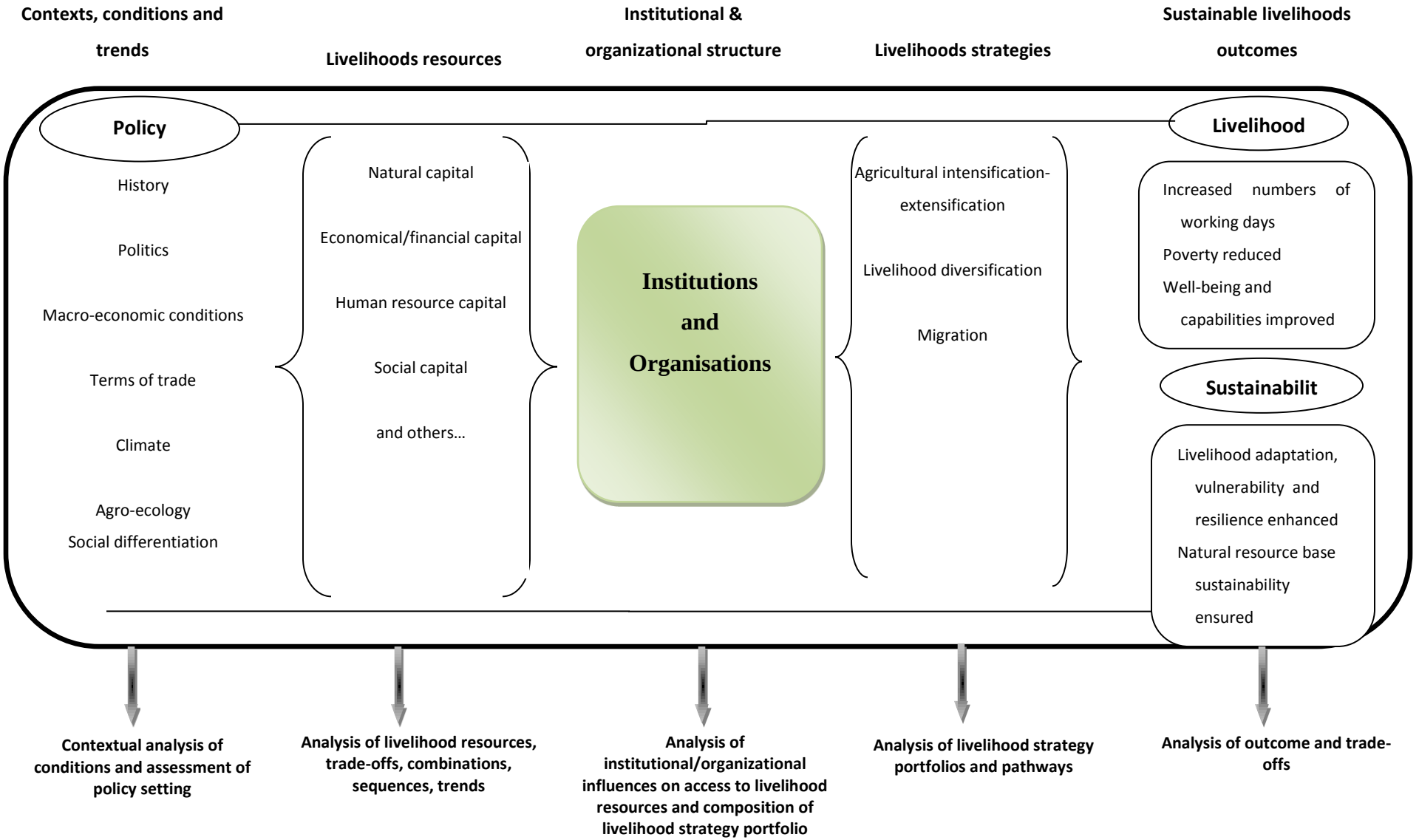

Figure 2.2 Sustainable rural livelihoods: a framework for analysis.

Adapted from Scoones, (2002:4)

Scoones (2002:5) and Chambers and Conway (1992) among others, explain that “a livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base”. Irrespective of the fact that the ability of a livelihood to be able to cope with and recover from stresses and shocks is central to the definition of sustainable livelihoods, this would not be discussed in detail because of its broadness and therefore calls for a separate study. Based on the clarification mentioned above, beneficiaries who are unable to adjust or adapt to current RESIS arrangements may find themselves vulnerable and unlikely to achieve sustainable livelihoods in a longer term. That could emanate from application of an inefficient and/or ineffective combination of policies, capitals, structures and strategies referred to above. The last outcome in Fig. 2.2 related to sustainability is the natural resource base. This outcome refers to the ability of a system to maintain productivity when it is subjected to disturbing forces, whether small, regular and predictable with a cumulative effect or large infrequent, unpredictable disturbance with immediate impact. This would also not be dealt with under the current work.

Chadwick, Springate-Bagiski and Blaikie, (n.d) take the view that the process of assessing impacts on livelihoods could be done by making a “with-without” comparison in different locations during the same period in time, or a “before-after” comparison in the same location at different points in time. In this study, due to lack of baseline information, the with-without approach would have been appropriate. It would have been ideal to involve participants who are in the vicinity of the project but who do not have access to the RESIS program and compare their livelihoods to that of RESIS beneficiaries. However, the perception was that those in the vicinity of RESIS projects who would have liked to be part of the projects, would be uncooperative to such a “with-without” study. Therefore the “before-after” approach has been simulated by asking RESIS beneficiaries to remember their livelihoods before the RESIS program and comparing it to their current status.

Chapter 3

Research methodology

3.1 Research design

This chapter begins with a detailed description of the study area namely the Tšwelopele Irrigation Scheme (TIS) in terms of biophysical and socio-economic characteristics. After the site description there will be a section that explains in detail the methods used to collect, analyse and interpret data. The framework of analysis as well as its application in this study is also explained in this chapter.

3.2 Area of study

The study was conducted at TIS located at GTM within Steelpoort River Basin (SRB) about 7km north of Burgersfort town (Figure 3.1) in Sekhukhune District Municipality of Limpopo Province in South Africa. The main consideration for the choice was the schemes' accessibility. The irrigation scheme is one of the three largest and oldest irrigation schemes previously managed by the Lebowa Agricultural Corporation (LAC) and later ARDC. Surprisingly no mention is made of the existence of TIS in the Sekhukhune District Municipality IDP's study conducted by Womiwu (Sekhukhune IDP 2009-2010:16-18) and Stimie, Richters, Thompson, Perret, Matete, Abdallah, Kau and Mulibana (2001:32) observed the omission.

There are 29 wards within the GTM. Burgersfort, the biggest town in the municipality falls under Ward 1 and has the highest population within the local municipality as it accommodates 20 926 people. The high population results from the employment opportunities created by the local mining industry (GDSM, 2005).

The most fertile soils in the region are found in the lower lying areas of Burgersfort and Steelpoort, which are deep, well-drained and characteristic of deep sandy-loam soils of exceptional quality. These soils are suitable for most agricultural purposes. The weather conditions for the Steelpoort, Ohrigstad and Burgersfort region as a whole are of a subtropical nature and conducive to agricultural production. The summers tend to be extremely hot and humid with temperatures often exceeding 35 degrees Celsius between the months of October and March, while the winters tend to be warm during the day and cool to cold at night and in the early mornings.

Settlements are small and scattered due to extensive broken terrain. Ridges and mountains form linear dividers between the settlements. Some such settlements that benefit from SRB in farming are Manok, Alverton, Ga-Motodi, Mabocha, Matokomane, Bothashoek, Taung, Mafarafara, Pretoria Farm, Ga-Mashamothane, Kgautswane, Driekop (Maruleng), Makua, Maandagshoek and Tubatse Township. Besides Steelpoort river, there are two more rivers in the GTM, namely, the Spekboom and the Olifants, the latter being the largest of the three. The existence and topography of these water sources present an opportunity to create water storage facilities for future economic development opportunities (GTM 2008-2010 and Stimie *et al,* 2001).

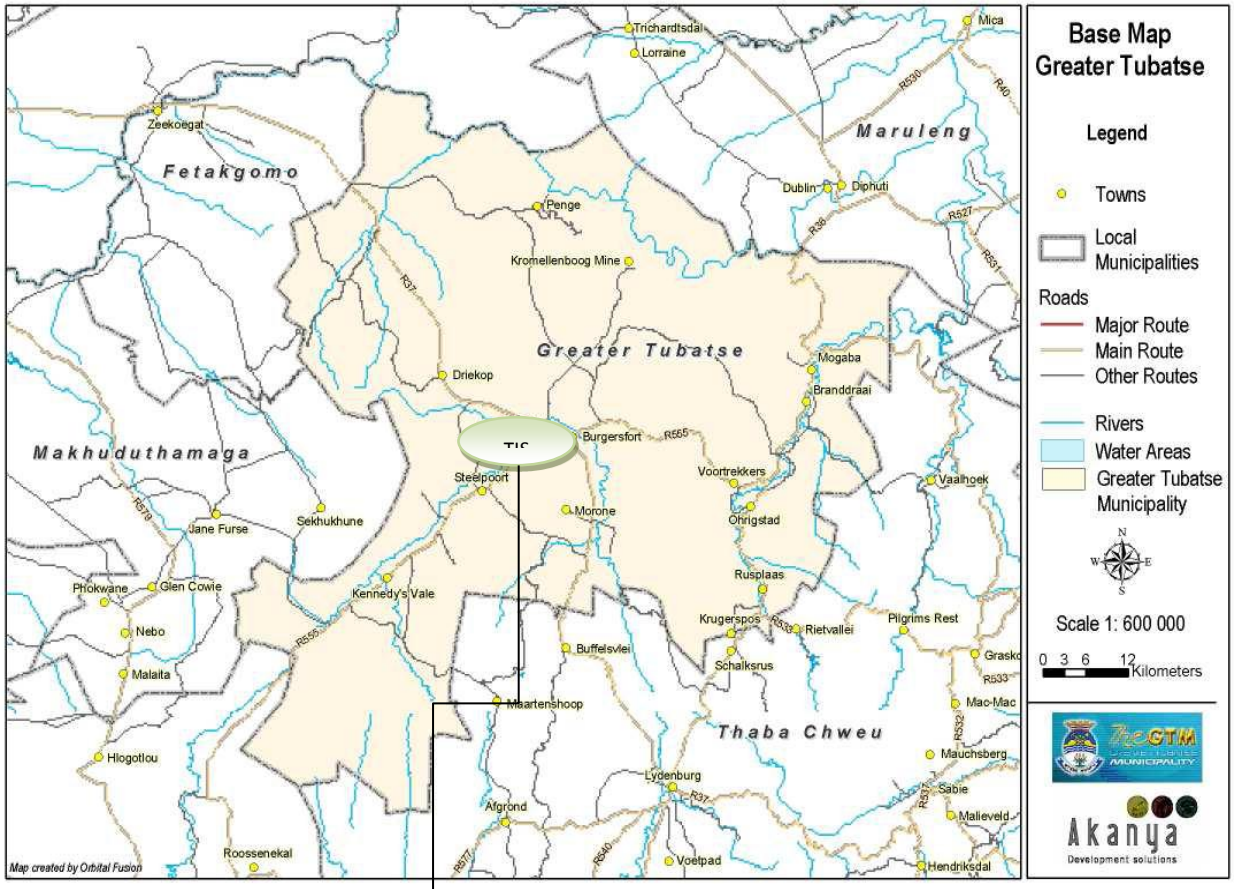

Figure 3.1 Location of Tšwelopele Irrigation Scheme.

Source: Greater GTM Municipality (IDP 2008 Final, 2008:31)

3.3 Population

Sekhukhune District Municipality has a population of 893 538 with GTM accounting for 343 468 or 38 percent of the district population. The Tšwelopele scheme comprises of 1 020 ha with an intended 312 small-scale farmers who are supposed to lease the land from the state. Of the 1 020 ha, 440 ha are under irrigation and occupied by 75 farmers in the RESIS program as shown in Table 1.1. These 75 farmers constitute the sample population for this study. Of the remaining land some is lying fallow while some of the portions have been invaded by squatters who use it for different purposes including agriculture and RDP housing project by the GTM local municipality.

3.4 Sampling method

Due to both budget and time constraints, a sample of 50 beneficiaries has been selected from the 75 RESIS beneficiaries. The sample has been divided into two strata namely, gender and those involved in full-time farming and those who have other sources of income but are also involved in farming on a part-time basis for income generation purposes. Based on these two strata the 50 beneficiaries have been proportionately sampled in these two categories using the random sampling method within the strata.

3.5 Data collection methods

Two meetings were held with the RESIS beneficiaries before distribution of questionnaires. One meeting in November 2009 was held with members of the scheme beneficiaries committee and the other on the 17 June 2010 with all the scheme beneficiaries in the presence of local agricultural technicians. Those meetings were necessary as they were used to explain the importance of the study and how the beneficiaries will participate in the completion of individual questionnaires before distribution of questionnaires. Participating beneficiaries were given three weeks in which to complete the questionnaires with the assistance of agricultural technicians for those who may find it difficult to complete on their own. The questionnaire attempts to establish the livelihoods of the participants before and after the RESIS program. Some of the data were collected by the use of unstructured interviews with key informants**.**

3.6 Data analysis

The analysis employs both qualitative and quantitative methods. The qualitative analysis was applied to comprehensive statements and narrative descriptions from key informants and participants. The quantitative analysis mainly employed tools like graphs, frequency counts and percentages. The Statistical Package for Social Scientists (SPSS) software was used to analyse household level primary data. Household interview questionnaire data have been collected and classified according to strata both in text and numeric form, coded and entered into the SPSS for processing.

From the analyses, tables and charts depicting percentages of respondents were generated. To assess the impact of RESIS on beneficiaries' livelihoods, qualitative data obtained mainly from key informant interviews (e.g. departmental officials) are used to validate the responses from the household questionnaires.

3.7 Ethical considerations

Issues of ethics during the research process have been adhered to as recommended by Babbie and Mouton (2001). Amongst others are the following:

- Participation during research has been voluntary or on request. Respondents have been politely asked to participate if they do not volunteer.
- Their names, ages, income levels, marital status, etc, have been kept confidential even though some requested to identify themselves.
- Participants have not been coerced by incentives nor by beneficial advantage in their favour to participate.
- Care has been taken to respect their beliefs, values and religion, and observe that they are not prejudiced one way or another.
- Anonymity and confidentiality have been observed at all times.
- Respondents have been informed about the purpose of the research and at least three successful appointments have been made to consult with them.
- Authorship acknowledgments have been made and plagiarism avoided.
- Respondents have not been subjected to harmful situations.
- Professionalism has been maintained throughout the study.

Chapter 4

Presentation and interpretation of results

4.1 Introduction

This chapter summarises the results of this study based on gross margin analysis and perceptions of beneficiaries on the impact of RESIS on their livelihoods. It starts by defining sample characteristics, followed by gross margin analysis and finally analysis of perceptions.

4.2 Sample characteristics

Table 4.1 shows the characteristics of the sample by the hypothesised strata of male and female and whether they are full time or part farmers.

Table 4.1 Sample characteristics by gender and farming category (n=50)

Gender	Farming Category		
	Full time	Part time	Total (%)
Male	20 (40)[1]	15 (30)	35 (70)
Female	10 (20)	5 (10)	15 (30)
Total	30 (60)	20 (40)	50 (100)

1= Percentages in brackets

Source: Study survey (2010)

Table 4.1 shows that 70 percent of the sample from TIS is male and 60 percent of the sample are engaged in full time farming. Of the full time farmers 40 percent are male and 20 percent are female. Of the part time farmers 30 percent are male and 10 percent are female. This table shows that the two strata are dominated by males. Due to the small sample of 50 individual cells of the strata end up with few observations; for example there are only 5 female part time farmers. This makes it difficult to draw statistically relevant conclusions. The sample of only 50 could not be avoided due to budget constraints. Although the strata will not be completely ignored, the major conclusions are therefore going to be based on the full sample of the analysis. This will be illustrated more clearly in the analysis to follow.

Some of the beneficiaries of RESIS program access the services by paying other farmers who were the original beneficiaries. In many cases this occurs if a farmer is old and retired and therefore sells his/her rights to access RESIS services to another

farmer. To assess the degree to which this is happening in TIS, farmers were asked whether they paid to access RESIS services. Less than 10 percent of the sample farmers confirmed that they paid to access RESIS services. Since this practice is not encouraged within RESIS it was difficult to get the information regarding how much they paid to access RESIS services. Thus this agenda was not pushed too much as all the questions that relate to finances were regarded as extremely sensitive by the respondents.

Respondents were asked how long they have been involved in the scheme. This was done due to the fact that RESIS is a rehabilitation program designed for schemes that existed in the homelands during the apartheid era. More than 90 percent of the respondents reported that they had 10 years or less of experience in the scheme. To assess the level of farming experience it was found that all the beneficiaries had some experience with the scheme before RESIS. Respondents were also asked whether they received technical support. All respondents reported that they received technical support from different sources. Figure 4.1 summarises their source of technical support.

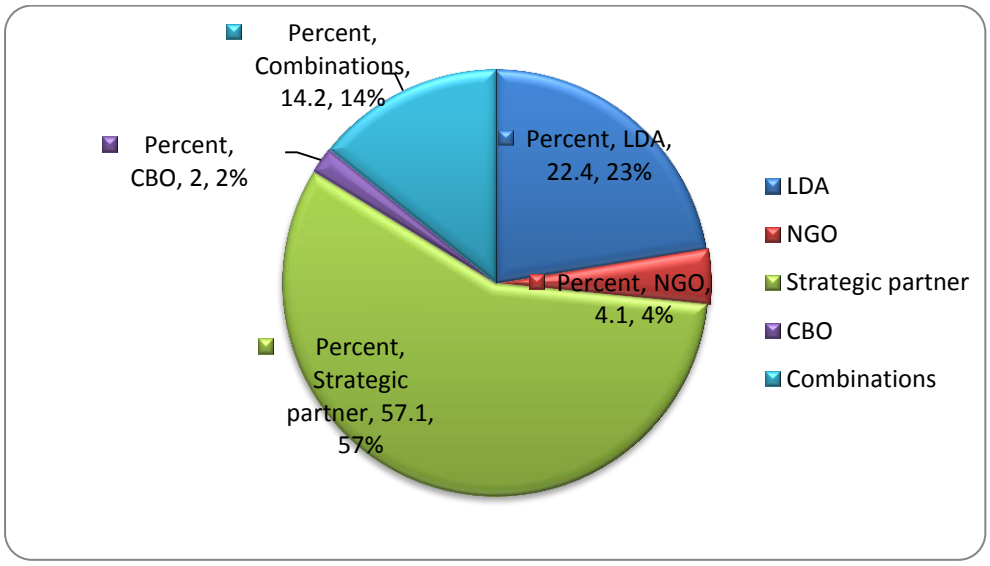

Figure 4.1 Source of technical support

Source: Study survey (2010)

Figure 4.1 shows that 57 percent received their technical support from a strategic partner and more than 22 percent received technical support from LDA. Others got

support from NGO's, CBO's and various combinations of the different sources. When asked what kind of support they received, respondents reported that they received financial support, training support and advice. Financial support refers to provision of farming input capital while training support refers to agricultural training conducted in the form of workshops, farmers' days, demonstrations and exposure tours. Advice refers to providing advice to farmers with regard to among others, types and uses of fertilisers, seed selection, cultivation methods, pests and insects control, grading, access to market and market demand. Combinations refers to a combination of financial support, training and advice. Figure 4.2 summarises their responses.

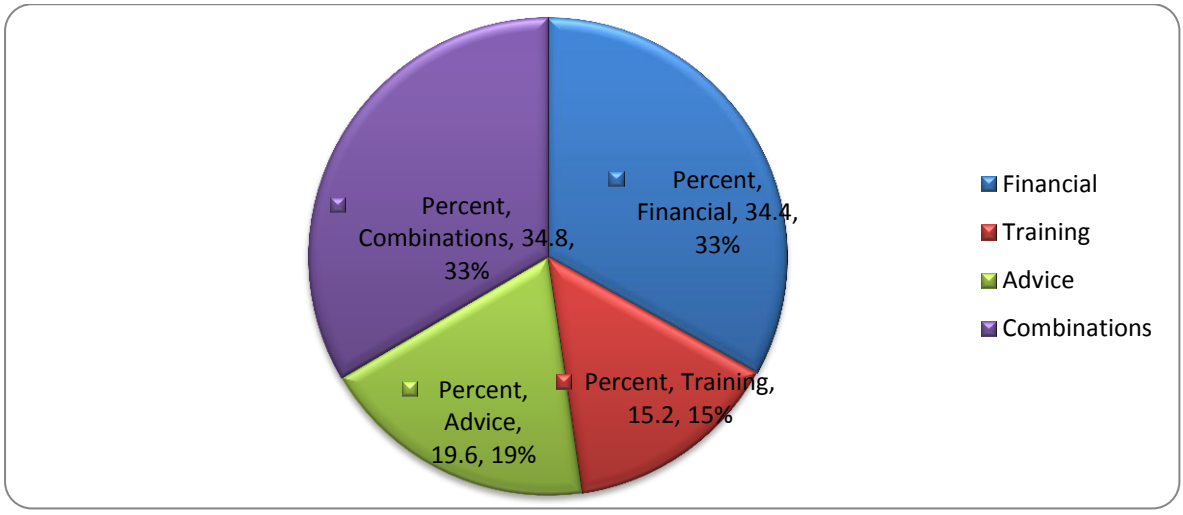

Figure 4.2 Types of technical support

Source: Study survey (2010)

Figure 4.2 shows that more than 30 percent received financial support, 15 percent received training support and 19 percent received advice, while 33 percent received a combination of the different types of support on offer.

Respondents were asked whether the technical support they received was adequate or inadequate. Figure 4.3 summarises the results that shows that 37 percent regarded the support as not adequate while 22 percent each said the support they received was adequate and somewhat adequate respectively. 19 percent rated the technical support they received as adequate.

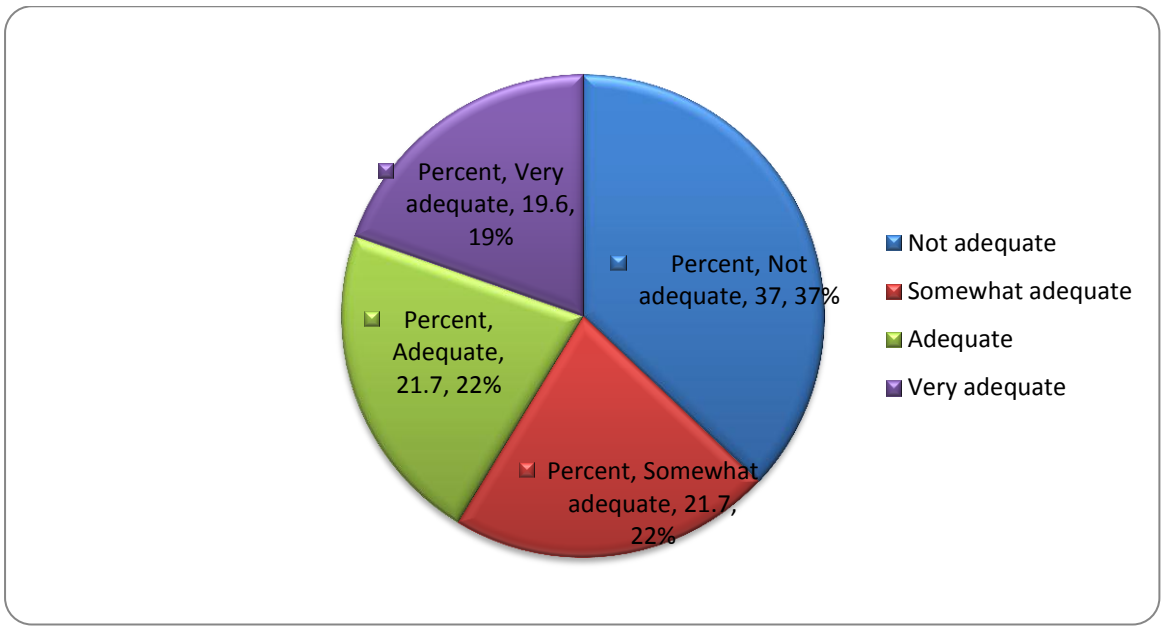

Figure 4.3 Adequacy of technical support

Source: Study survey (2010)

Respondents were also asked about the level of usefulness of the technical support they received, from service providers, i.e. LDA, NGO's, strategic partner and CBO's. Figure 4.4 summarises the results.

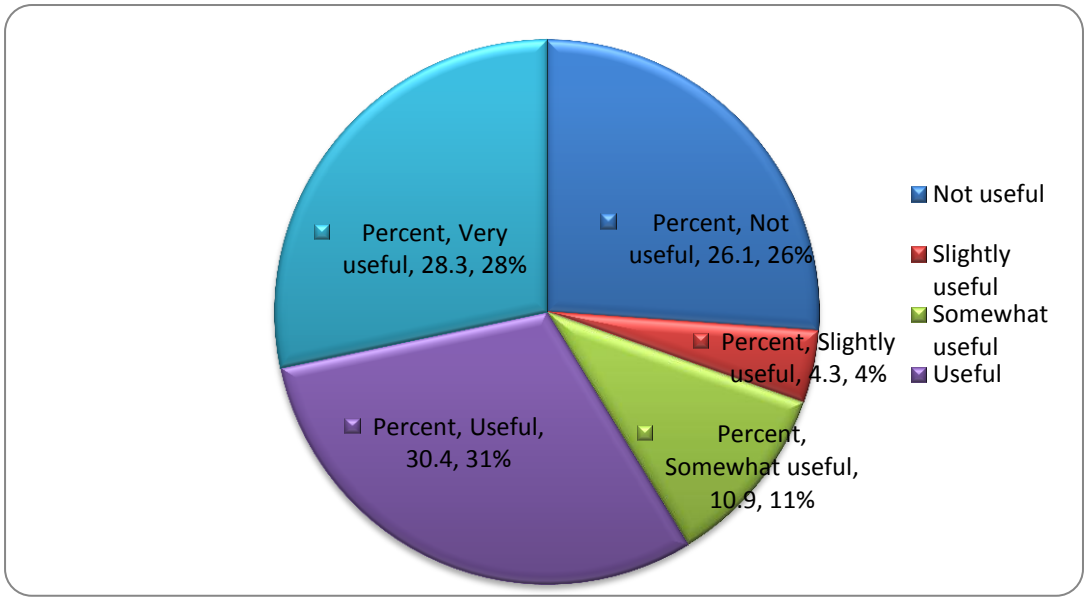

Figure 4.4 Usefulness of technical support

Source: Study survey (2010)

Figure 4.4 shows that 26 percent regarded the support as not useful, while the majority regarded it as useful to different degrees.

4.3 Crop budgets for operations at Tšwelopele Irrigation Scheme

Income estimates for TIS beneficiaries were made using crop budgets for 2009/2010 production operations. In 2009, 224 hectares of potatoes were planted in February 2009 and harvested in August/September 2009. Concurrently 174 ha of sugar beans were also grown but were harvested in July 2010. Sixty ha of maize were planted in November/December 2009 and were harvested in March/April 2010. The maize crop was harvested late due to the conflict that occurred between the beneficiaries and the strategic partner.

The current irrigated area of TIS developed under RESIS is 400 ha. If it were not for the conflict, more area could have been cropped with maize. This conflict also interfered with data collection for this study. The beneficiaries were sensitive to questions particularly those related to income. It was the intention of the study to analyse perceptions of the beneficiaries regarding their incomes before and after RESIS. This would have been one clear assessment of the impact of RESIS on the livelihoods of the beneficiaries. However the conflict between beneficiaries and the strategic partner and resultant infighting among the beneficiaries rendered the "before and after" comparison impossible. As a result of this conflict situation income estimates in this study are based on gross margins for one complete cycle in TIS for 2009/2010 season.

Appendices 2 to 4 show a cash flow for sugar beans and gross margins for potato and maize. Appendix 2 shows the crop budget for potatoes for the production period February to September 2009, Appendix 3 shows a cash flow for sugar beans for the same period as these are grown concurrently and Appendix 4 shows a crop budget for maize for the period December 2009 to March 2010. These production periods roughly cover a cycle of one year.

Table 4.2 shows the beneficiaries' income estimates based on gross margin. It also reflects the 50/50 percent dividend due to the farmers and strategic partner respectively as per their agreement. From the table the income per beneficiary, based on gross margin, is R1473 per month or R17 676 per annum during the first year of RESIS program's intervention.

Table 4.2 Income estimates for TIS beneficiaries based on gross margin

Crop	Potatoes	Beans	Maize
Area (ha)	202	174	60
Time period	Feb-Sept 2009	Feb-July 2009	Dec 2009-March 2010
Gross margin (total R)	1 973 980	520 670	157 418
Beneficiaries margin (50%)	986 990	260 335	78 709
Margin per beneficiary (R; 75 beneficiaries)	1 3159	3 471	1 049
Margin per beneficiary per month (R)	1 097	289	87

Source: Limpopo Department of Agriculture (2009/10)

Therefore RESIS' performance in monetary terms could be regarded as being positive, especially because TIS is located in a rural setting. However if the same amount of income should be related to their status as farm owners, managing and operating their farming entities, it might be regarded as negative as they should attain and be paid according to their manager-owner status. Given that the agreement between beneficiaries and strategic partner is for the beneficiaries to learn the relevant production skills, this income could potentially double assuming that productivity remains unchanged and that the terms of this agreement can be met by both parties.

Assuming that the agreement with the strategic partner would be adequately adhered to, and that all other aspects related to best farming practice are employed with relation to the first year of RESIS' intervention, each farmer would earn a net income of R2 946 per month or R35 352 per year. Also, if it were not for the conflict between beneficiaries and the strategic partner, the area under maize could potentially be equivalent to the total cropped area for the preceding crops of potatoes and sugar beans which was 398 ha. Taking into consideration that the RSA Department of Labour's Sectoral Determination for the Agricultural Sector, which sets minimum wages and employment conditions for the industry, has determined that the minimum farm worker's wage per month is R1041 in urban areas and R989 in rural areas, the monetary benefits in respect of TIS exceeded the set minimum wage of both urban and rural areas. The above analysis shows that RESIS has the potential to improve the livelihoods of beneficiaries through increased income that

would lead to improved livelihoods only if their spending of such income is in line with the desired outcomes as discussed in Fig. 2.2.

4.4 Analysis of perceived RESIS' impact on the livelihoods of the beneficiaries

One measure that can be used to assess the impact of RESIS is how it has empowered beneficiaries in terms of creating livelihoods opportunities thus enabling participants to improve their livelihoods. Respondents were asked how RESIS has impacted them regarding (a) improvement of lifestyle, (b) creation of new business opportunities, (c) increased business confidence, (d) creation of new job opportunities for family members, (e) creation of productive employment, (f) gained new technical skills, (g) gained increased awareness in farming environment, (h) increased communication and/or marketing skills, (i) increased access to credit, (j) increased lead time to family, (k) increased feeling of responsibility, (k) gained independent income, (l) built their self-confidence, (m) see the future as bright, (o) gained respect in the community, (p) gained respect in the household, (q) improved social network, (r) improved ability to cope with shocks and (s) got motivated to pursue livelihood within the agriculture industry.

The above mentioned characteristics were constructed as "Yes/No" questions. Responses to these questions provide a simple indicator as to whether beneficiaries perceive the impact of RESIS as positive or negative. If, for instance more than 50 percent of the responses to the question whether RESIS "improved your lifestyle" are "Yes", then we can draw the conclusion that RESIS had a positive impact at least regarding lifestyles. The converse is also true. The broader picture of whether RESIS had a positive or negative impact can be gleaned from the responses to the questions listed above. This analysis was performed using the strata of gender and farming category as summarised in Table 4.3.

Table 4.3 shows that there was a majority answering positively for every single question. The interpretation of the results presented in Table 4.3 can be performed as follows; under the question "Has RESIS improved your lifestyle?" 64 percent responded "Yes" and 36 percent responded "No". Of those who responded "Yes" 66 percent are male and 34 percent are female, 50 percent are full time farmers and 50 percent are part time farmers.

Table 4.3 Perceptions of whether RESIS had positive or negative impact on beneficiaries

Attribute	Responses by gender and farming category										Sample size (Valid responses)
	Yes					No					
	Percent	Gender (%)		Category (%)		Percent	Gender (%)		Category (%)		
		M	F	F/T	P/T		M	F	F/T	P/T	
Improved lifestyle	64	66	34	50	50	36	82	18	76	24	49
New business opportunities	58	82	18	55	45	42	65	35	71	29	46
Business confidence	70	72	28	57	43	30	63	37	73	27	46
Job opportunities for family members	68	65	35	56	44	32	91	9	69	31	47
Productive employment	64	63	37	56	44	36	62	38	79	21	46
Gained new technical skills	88	91	9	57	43	12	85	15	75	25	50
Gained increased awareness	78	62	38	59	41	22	66	34	56	44	48
Communication and/or marketing skills	78	85	15	54	46	22	79	21	80	20	49
Increased access to credit	58	66	34	62	38	42	67	33	60	40	49
Lead time to family	60	79	21	60	40	40	87	13	66	34	48
Increased feeling of responsibility	70	67	33	57	43	30	64	36	67	33	50
Gained independent income	66	87	13	48	52	34	100	0	81	19	49
Built self-confidence	68	64	36	56	44	32	64	36	71	29	48
See the future as bright	64	100	0	53	47	36	90	10	72	28	50
Gained respect in the community	58	64	36	62	38	42	62	38	56	44	47
Gained respect in the household	62	90	10	61	39	38	80	20	53	47	48
Improved social network	60	62	38	60	40	40	70	30	65	35	47
Improved ability to cope with shocks	66	80	20	58	42	34	72	28	69	31	50
Got motivated	72	70	30	53	47	28	60	40	70	30	46

Source: Study survey (2010)

The rest of the table can be interpreted in a similar manner. Since the items to which the responses were “Yes” all what is implied is that there has been an improvement

on livelihoods of the beneficiaries, therefore we can with some degree of confidence, infer that the beneficiaries perceive the impact of RESIS on their livelihoods to have been positive.

Table 4.3 is also used to illustrate the issue of stratification in relation to the earlier mentioned small sample issue. For instance when all the strata are used the individual cells will contain very few observations. For instance under the question "Has RESIS improved your ability to cope with shocks?" 28 percent responded "No". Although percentages are reported the number of observations based upon in this cell is only 14. These small samples make it difficult to draw statistical conclusion. Hence given this problem which is clearly illustrated in Table 4.3 further analysis will be performed without the strata.

Participants were asked to give their perceptions with regard to the impact of RESIS on their livelihoods and their responses are summarised in Table 4.4.

Table 4.4 Perceptions of the impact of RESIS on beneficiaries' livelihoods

Proxies for livelihoods impact	Impact category level				Sample size (Valid responses)
	Very high	High	Low	Very low	
Household income	21 (42)	17 (34)	7 (14)	5 (10)	50
Household assets	21 (42.9)	16 (32.7)	6 (12.2)	6 (12.2)	49
Diversifying income	16 (33.3)	18 (37.5)	7 (14.6)	7 (14.6)	48
Diversifying skills	20 (43.5)	14 (30.4)	8 (17.4)	4 (8.7)	46
On-farm employment	22 (44)	16 (32)	6 (12)	6 (12)	50
Off-farm employment	11 (22.4)	9 (18.4)	20 (40.8)	9 (18.4)	49
Access to food	22 (44)	16 (32)	6 (12)	6 (12)	50
Social networking	22 (44)	17 (34)	5 (10)	6 (12)	50

Source: Study survey (2010)

The perceptions were focused on their (a) household incomes, (b) household assets, (c) diversification of income, (d) diversification of skills, (e) on-farm employment, (f) off-farm employment, (g) access to food and (h) social networking. Participants were

asked to classify the impact of RESIS on each of these variables in the categories; very high, high, low and very low. These responses were used as proxies for the impact of RESIS on participants' livelihoods.

From Table 4.4, 76 percent of the participants' perceptions indicated that RESIS had positively impacted on household income, i.e. 42 percent reporting that RESIS' impact on income is "very high" and 34 responding that the household is "high". This means that the respondents who form the majority in this regard are satisfied with the performance of RESIS program thus far. In terms of household assets, more than 75 percent reported that RESIS has a positive impact on household assets ownership. This means that they have acquired more household assets compared to assets they possessed before the introduction of RESIS program. More than 70 percent reported that the income diversification from RESIS is high. This statistic is possibly a result of the fact that RESIS introduced new income sources which participants did not have prior to its introduction.

More than 74 percent of the participants reported that the introduction of RESIS has led to skills diversification. Skills diversification comes in the form of the respondents' application of their past and/or present skills acquired in farming or non-agricultural activities to RESIS activities. One of the conditions for RESIS is that the participants are partnered with a strategic partner who has extensive knowledge of the crops that are being grown by the RESIS project, namely, potatoes, maize and sugar beans. Therefore diversification of skills acquired by the beneficiaries is displayed and employed as they interact with the knowledgeable strategic partner on their daily farming activities. This scenario is better explained by the categorisation of respondents into full time and part time categories. Part time farmers are those who have a combination of small amount of farming with an occupation not connected to farming, e.g. teaching, retail and wholesale business operations and passenger transport, farm foreman and woman, general management, etc, while full time farmers are those who are committed to agricultural production as their employment and source of livelihoods. This means that whatever skill acquired from their past and present engagements is applied if essentially relevant and applicable to RESIS.
RESIS participants were asked whether they felt that the RESIS project had an impact on the off-farm employment. Slightly less than 60 percent reported that the

impact of RESIS on off-farm employment is low and very low in all impact category levels and all impact proxies for livelihoods. This is consistent with the fact that RESIS is being used by the government to encourage agricultural production and therefore on-farm employment. In fact 76 percent reported that RESIS has a high impact on on-farm employment as shown by Table 4.4. Seventy six percent of the participants reported that RESIS has as high impact on access to food. Seventy eight percent of the participants responded that RESIS has a high impact on social networking, (i.e. specific types of interdependency, such as funeral societies, business clubs, farmers' associations, financial exchange clubs (stokvels) and religion). Although it is relatively easy to understand the respondents' perceptions on the impact of RESIS on most of the variables discussed above, it is would be interesting to understand why farmers perceive that RESIS has a high impact on social networks. Perhaps as the farmers learn the new skills from the strategic partner this might lead to more interaction between them, and hence an enhancement on social networks. However this appears to be a very appealing topic for further study.

In order to complement the above analysis participants were asked "How are you using your current or planning to use your future earnings from the livelihoods activities you are involved in?" As participants reported that RESIS has positive impact on their livelihoods it is therefore important to assess whether this positive impact results in a change of lifestyle. Participants were asked about their current and future use of earnings regarding (a) supporting family or partner, (b) social obligations or leisure, (c) savings, (d) business expansion, (e) house construction or renovation, (f) payment of school fees and materials (e.g. books), (g) buying clothing, (h) purchase farming inputs, (i) pay land rental, (j) purchase household furniture, (k) use for daily food consumption and (l) payment for household energy. Table 4.5 summarises the results of this analysis.

Table 4.5 shows the percentage of respondents who confirmed that they would spend current and future earnings on the above mentioned items. From the table we can conclude that earnings expenditure for all the items as they appear are not expected to change comparing current and future perceived expenditure of earnings. Table 4.5 shows that expenditure on business expansion is perceived to reduce

comparing current and future expenditure. This is to be expected as RESIS is meant to enable the beneficiaries to earn a decent living from agricultural activities.

Land rental is also perceived to be declining in the future as observed from the responses of the sample beneficiaries from Table 4.5; this is also consistent with the RESIS objectives as the beneficiaries would mostly rent land for agricultural activities.

Table 4.5 RESIS respondents' perception of current and future use of earnings

Items for which earnings are used	Time			
	Current		Future	
	Responses	Sample size (Valid responses)	Responses	Sample size (Valid responses)
Support family/partner	44 (89.0)	49	43 (89.6)	48
Social obligation/leisure	43 (91.0)	47	43 (89.6)	47
Saving (bank)	31 (66.0)	47	30 (62.5)	48
Business expansion	34 (70.8)	48	29 (61.7)	47
House construction/renovation	33 (70.8)	47	34 (70.8)	48
School fees and materials	39 (81.33)	48	40 (83.3)	48
Clothing expenses	34 (72.3)	47	34 (70.8)	48
Farming inputs expenses	29 (61.7)	47	30 (62.5)	48
Land rental	31 (70.5)	44	24 (50.0)	48
Household furniture	27 (57.4)	42	29 (60.4)	48
Daily food consumption	42 (89.4)	47	41 (87.2)	47
Household energy	41 (91.1)	40	40 (81.6)	49

Source: Study survey (2010)

During interviews with key informants it was discovered that change in livelihood type and/or status for TIS beneficiaries was brought about by participating in RESIS activities. It was acknowledged by the key informants that such changes could be observed by the participants' appointment as employees while retaining the shareholders status at TIS. This means that beneficiaries filled the opportunities available for employment as farm workers, foremen, machine operators, tractor drivers and others and thus eligible to earn an income, while they also earn an income in the form of dividends as plot holders. It was further acknowledged by the key informants that RESIS changed the farmers' style of farming, i.e. transforming from the subsistence farming to market-orientated farming within a short space of time. This understanding of the commercialised farming bodes well for the RESIS' beneficiaries because they would no longer lose their produce due to poor quality

produce, lack of markets and low prices as it used to be the case before RESIS' introduction.

Another key aspect that affected the positivity or negativity of RESIS' impact on the livelihoods of TIS beneficiaries as would be expected was the income per beneficiary that should be transformed into real livelihood outcomes. According to key informants, the number of hectares each farmer contributed to the total consolidated farming unit became the determinant factor of the income each would earn from the total dividend. As key informants explained, this meant that the plot owners (farmers) share proportionally according to their land size that has been incorporated in the farming unit. In turn the utilisation of such proportionally distributed income has determined the degree of achievement of the livelihood outcome. As is shown in Appendices 5 and 6 namely, Makuleke and Mbahela are schemes listed in Table 1.1 that participate in the RESIS program. Farmers who are beneficiaries in those schemes under RESIS, would not necessarily experience the same impact level of RESIS on their livelihoods compared to their counterparts in TIS due to the difference in the total amount each beneficiary received as income from dividends because some contributed a minimum of one hectare while others contributed a maximum of six hectares.

For comparison purposes while taking into consideration that schemes such as Makuleke and Mbahela which had 41 and 86 farmers respectively realised more than R20 706 and R9 943 per beneficiary, TIS with 75 beneficiaries distributed R13 159 per beneficiary from potatoes proceeds (Appendices 2). It would thus be concluded that all three schemes performed satisfactorily in relation to the determination set by the Department of Labour as discussed in 4.3 above. However note should be taken that it is not only the income brought about by best practices that could have an impact on the livelihoods of individuals, but the manner in which the income is spend so as to reveal the level of impact that would have been made.

The determining livelihood outcomes factors as indicated in Figure 2.2 are (a) increased numbers of working days (b) poverty reduced (c) well-being and capabilities improved. From the above analysis starting with 4.2 to 4.4 it could be safely concluded that despite the limitations as listed in Chapter 5, RESIS had a

positive impact on the livelihoods of the TIS beneficiaries. This is a reality because from the employment (number of working days) opportunities and share dividends they received they managed to pay for food, health services (well-being), education (improved capabilities) and other deserving basic necessities to a certain degree.

Chapter 5

Conclusions and recommendations

5.1 Introduction

The original objective of the study was to shed light on whether programs like RESIS can be used for poverty reduction and hence the improvement of beneficiaries' livelihoods. This is a key objective in the programs of LDA. According to the GTM's Integrated Development Plan 2009-10 citing the Demarcation Board's municipal information, households with no income and those that earn less than R18 000 per annum are deemed to be living in poverty (GTM Integrated Development Plan 2009-2013). Within the GTM 41 percent households have no income. A total of 7 percent earn between R0 and R4 800 per annum, followed by 25 percent households that earn between R4 800 to R19 200. Therefore the conclusion that could be drawn from the GTM's IDP is that the majority of households in Greater Tubatse Municipality are poor.

Among the key objectives of the study was also the intention to establish whether the impact of RESIS on the livelihoods of beneficiaries can be quantified. Gross margin and perceptions analysis were used to address the above. Based on gross margin analysis the annual income of beneficiaries of TIS was estimated to be about R16 000.00 per beneficiary, with the potential to double it if all conditions for the agreement between the beneficiaries and the strategic partner are met. Responses from interviews held with key informants who have direct involvement with the scheme indicate that after expiry of the strategic partner's contract with TIS RESIS beneficiaries, the likelihood of an increase in income per beneficiary exists. It has been confirmed that the increase in income would be possible because the 50 percent share that used to be the strategic partner's share will be distributed amongst the beneficiaries.

Key informants also confirmed that RESIS has had a positive impact on beneficiaries' current incomes. One of the key informants categorically stated that "This problem with the strategic partner is negatively impacting the incomes and lifestyles that we had established while working with the strategic partner". This

lamentation came as result of the fact that the conflict at Tšwelopele Irrigation Scheme has led the strategic partner to contemplate withdrawing his services. In fact the conflict got so heated that up to the write-up of this study, the strategic partner has not taken his share of the gross margin from the last maize crop and is not intending to make any preparations for the next crop. This is clear evidence to the effect that although RESIS at Tšwelopele had a positive impact on the incomes of the beneficiaries the conflict is negatively impacting on the future of the program. Increasing income alone does not necessarily improve livelihoods, but creates a very real potential for the improvement of livelihoods if the additional income from RESIS is properly utilised. We can therefore conclude that RESIS has the potential for livelihoods improvement.

Based on the perceptions of the respondents, many of the aspects related to improved livelihoods were reported to have been positively impacted by the RESIS program. For instance, 64 percent of the sample responded “Yes” to the question “Has RESIS improved your lifestyle?” (Table 4.3), showing that they perceive RESIS to have had a positive impact on lifestyles. Eighteen other similar aspects related to livelihood received “Yes” responses of more than 50 percent from the respondents, further supporting that RESIS generally has had a positive impact on the livelihoods of the beneficiaries. When asked whether the RESIS has had a “very high or high, low or very low” impact on household income 76 percent responded that the impact was high. Six additional and similar indicators also received responses that RESIS had a high and positive impact. Therefore based on these perceptions we can conclude that RESIS is perceived by the beneficiaries to have had a positive impact on their livelihoods.

As to the question whether the benefits of RESIS can be quantified this study was not able to provide a direct answer due to the conflict that existed during the study period. Any questions that related to any form of quantification especially related to income were viewed suspiciously by the beneficiaries. However since methodologies for quantifying the benefits of similar projects do exist, it still remains that some of these methodologies need to be tested on the RESIS program. Based on an analysis of the respondents’ perceptions and the gross margin it could be concluded

that, RESIS is one model that can be effectively applied to improve livelihoods in similar circumstances as Tšwelopele.

In view of the above conclusions, it is recommended that LDA should review the RESIS policy and make adjustment in particular the engagement of the strategic partnership model. If one takes into consideration that immediately after the TIS strategic partner withdrew his services, farmers were left with no option but to close down their operation because of their reliance on the strategic partner with regard to financial capital and skills. This led to failure on their part to operate independently. During the analysis it was evident that the farmers found the technical and financial assistance they received from the strategic partner as insufficient of ineffective. The model that would be proposed should hold LDA to account for skills development and instil the sense of ownership in favour of the farmers. Perhaps a management agency type of model could be piloted in future whereby the knowledgeable agency will be paid according to its performance, production and the income the entity would be making. If is further recommended that farmers should be effectively involved with regard to development of such model before its implementation than to impose the model on them.

5.2 Limitations of the study

5.2.1 The study could not measure and compare incomes of RESIS beneficiaries before and after RESIS.

5.2.2 The income estimates used is a point estimate derived from gross margin from one production cycle. If possible data from more production cycles are needed. This could not be done due to both time and budgets constraints.

5.2.3 The study used perceptions to support the findings from gross margin analysis where it could have been possible to quantify some aspects, e.g. how many business opportunities were created as a result of involvement in RESIS.

5.2.4 Due to the lack of baseline information, it was not possible to conduct the study using the “with-without” approach that would have been appropriate. It would have been ideal to involve participants who are in the vicinity of the project but who do not have access to the RESIS program and compare their livelihoods to those of RESIS beneficiaries. However, the perception was that

those in the vicinity of RESIS projects would have liked to be part of the project, but could be uncooperative to such a “with-without” study. Therefore the “before-after” approach has been simulated by asking RESIS beneficiaries to remember their livelihoods before the RESIS program and comparing it to their current status.

5.3 Recommended areas of further study

From the study we can conclude that the following areas need further research:

5.3.1 To quantify incomes of beneficiaries before and after RESIS so as to be able to make a comparison of “before and after” or “with-without” the RESIS program.

5.3.2 To estimate the direct and indirect costs of RESIS.

5.3.3 To estimate any possible environmental effects of RESIS, both positive and negative.

5.3.4 To compare costs and benefits of RESIS in order to establish whether RESIS is a cost-effective approach to improve livelihoods.

5.3.5 To compare RESIS with other alternative approaches to improving livelihoods in order to identify the most cost-effective.

5.3.6 To study the relationship between beneficiaries and the strategic partner in order to identify the nature, causes and potential resolutions for conflicts.

5.3.7 To estimate the viability of RESIS based on the enterprise cash flow in order to identify profitability, timing and amount of financial support needs that will stabilise the cash flows to ensure long-term program viability.

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Appendix 1

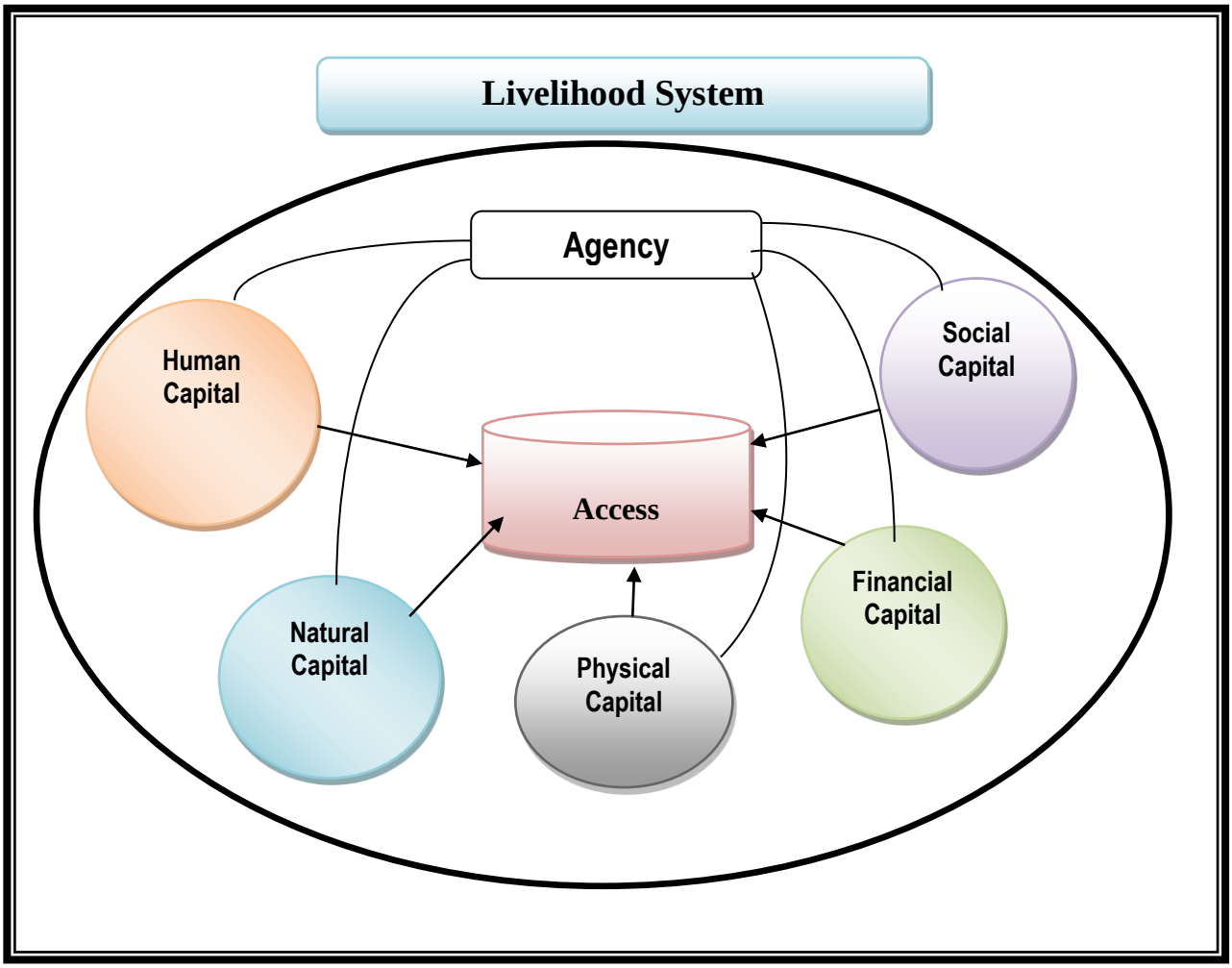

Figure 1 A simple schematic representation of livelihood

Adapted from de Haan, (2000:351)

Tšwelopele Potato Crop 2009

Floppy Irrigation System on 202 Hectares

Description	**Quantity**	**Income/ha**	**Value/202 ha**	
Average Yield (tons)		30.24	6 107.67	
Gross Income		**58 454.35**	**12 256 945.42**	**A**
Allocated Variable Costs				
	Quantity	**Cost/ha**	**Costs/202ha**	
Seeds	170 bags/ha@R121/bag	20 570.00	4 155 140.00	
Fertilizer				
At planting		6 200.00	1 252 400.00	
Top dressing		5 133.63	1 036 993.18	
Lime		1 256.01	253 714.02	
Temik	41 kg/ha@ R72/Kg	2 952.00	596 304.00	
Chemicals (Insecticides and Herbicides)		3 279.84	662 528.00	
Fuel (Diesel)		2 157.65	435 844.39	
Transport (Seed and Machinery)		2 475.75	500 102.37	
Spares & Repairs (Floppy & Electrical Repairs)		1 428.01	288 457.33	
Eskom		904.69	182 747.08	
Wages (Planting and Harvesting)		4 491.76	907 335.59	
Security (Jan 2009 - August 2009)		56.44	11 400.00	
Total Production Costs (R/ha)		**50 905.77**	**10 282 965.96**	**B**
Gross Margin per ha (A-B)		**7 548.58**	**1 973 980.00**	
50% share of profit between beneficiaries and the strategic partner (1 973 980 ÷ 2 ÷ 75)			**1 3159.00**	

Appendix 3 (Tšwelopele Sugar beans cash flow)

			CASH FLOW STATEMENT										
CASH FLOW STATEMENT FOR SUGAR BEANS FOR THE PERIOD FEBRUARY 2009 TO SEPTEMBER 2009 TŠWELOPELE PROJECT													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Operating Income(Sugar beans)													
Sales (Triotrade)					214 200.00	423 300.00							637 500.00
Sales (Jumbo peanuts)						238 000.00	238 000.00						476 000.00
Sales (Floppy Sprinkler)						26 000.00							26 000.00
Sales (Brennco Brands)							450 840.00		233 920.00	165 000.00			849 760.00
Sales (Wonderfontein Meule)										500 250.00			500 250.00
Sales (AW Creghton)										18 000.00			18 000.00
Sales (Lumcor)								22 000.00					22 000.00
Sales (Kontant)											13 950.00		13 950.00
Sales (Kgoshi)													0.00
Total Income	0.00	0.00	0.00	0.00	214 200.00	687 300.00	688 840.00	22 000.00	233 920.00	683 250.00	13 950.00	0.00	2 543 460.00
Operating Expenditure													
Seeds	380 450.00												380 450.00
Harvesting Costs(185 ha @ R680/ha)												150 800.00	150 800.00
Wages	34 860.00	54 524.10			70 300.00	20 637.50					17 555.00	32 575.00	230 451.60
Repairs and Maintenance	60 293.14	7 733.38	38 280.86		3 300.88						622.00		110 230.26
Diesel	59 541.38	31 285.00	113 224.00									49 980.00	254 030.38
Electricity	69 595.00	2 781.35											72 376.35
Transport	18 120.00	5 200.00					41 820.50		33 000.00	3 837.50			101 978.00
Chemicals	63 336.00	96 201.00	87 359.00	150 655.00									397 551.00
Fertilizer (with planting)		166											166 500.00

		500.00											
Fertilizer (Top dressing)		93 297.90											93 297.90
Packing					36 000.00	29 125.00							65 125.00
Total Expenditure	305 745.52	457 522.73	238 863.86	150 655.00	109 600.88	49 762.50	41 820.50	0.00	33 000.00	3 837.50	18 177.00	233 355.00	2 022 790.49
Surplus/Shortfall	-305 745.52	-457 522.73	-238 863.86	-150 655.00	104 599.12	637 537.50	647 019.50	22 000.00	200 920.00	679 412.50	-4 227.00	-233 355.00	520 669.51

Appendix 4

Tšwelopele maize crop production budget

For the period: December 2009 to March 2010

Tšwelopele:60 ha	**Komm. Mielies**	**2009**

Expense	**Description**	**Amount**
Fertilizer		
	Top dressing(300 kg x 60 ha @ R3,457.96)	R62 243.28
Temik	7 kg/ha @ R75 / kg	R31 500.00
Seed	79 bags @ R1,562.28	R123 420.12
Chemicals	Insecticides & Herbicides	R4 247.00
Transport		R4 800.00
Spares & Repairs		R22 686.23
Escom		R89 404.45
Wages	Planting & Harvesting etc	R84 275.50
Harvesting Cost		R52 800.00
Security		R1 000.00
	Total expenses:	***R476 376.58***

Total Income	R633 794.36
Profit	R157 417.78
Amount due:	**R157 417.78**

Appendix 5

Makuleke Crop Budget 2009

MAKULEKE POTATOES 2009		
	137 ha	***09-Sep-10***
VARIABLE COSTS	**QUANTITY**	***COSTS IN RANDS (R)***
Pestisides		1 299 903.00
Fertilizer	1,030kg/ha at R5,500	776 105.00
Top Dressing		521 306.38
Temik	42Kg at R78.00	448 812.00
Seed	200 bags/ha at R133.00	3 644 200.00
Wages		302 910.00
Eskom		56 395.62
Repairs & Maintenance		494 211.70
fuel		59 405.97
Transport		490 680.43
Income		**9 791 644.75**
Total Expenditure		**8 093 930.10**
Surplus/Loss		**1 697 714.65**
50% crop share		848 857.33
Share per beneficiary (41)	-	20 703.88

Appendix 6

Mbahela Potato crop 2009

Mbahela potatoes – 100 ha: 2009		
Top dressing		R798 686
Fertelizer	1030kg at R5500	R566 500
Insecticides	Temik 42kg @ R93	R390 600
Herbicides		R777 817
Potato seed	180 at R133	R2 394 000
Eskom		R117 374.05
Diesel		R325 650.12
Repairs & Maintenance		R43 923.62
Harvesting		R567 753
Transport		R291 654.50
Admin & miscellaneous	R3000/ha	R300 000
Income:		R8 284 119.22
Expend:		R6 573 958.29
Surplus /LOSS		R1 710 160.93
50% crop share		R855 080.47
Share per beneficiary (86)		R9 942. 80