# INVESTIGATION INTO THE PERFORMANCE OF STRATEGIC PARTNERSHIP PROGRAMME FOR SMALLHOLDER IRRIGATION SCHEMES IN LIMPOPO PROVINCE AND OPPORTUNITIES FOR REVITALISATION OF AFFECTED SCHEMES

Report to the

**WATER RESEARCH COMMISSION**

by

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# EXECUTIVE SUMMARY

## BACKGROUND

The Government of South Africa supports smallholder irrigation as a means to create jobs, alleviate poverty and boost pro-poor sustainable agricultural and economic growth. To this effect, the Limpopo Department of Agriculture (LDA) (now called Limpopo Department of Agriculture and Rural Development (LDARD)) identified potential farming areas to be developed into commercial irrigation schemes through the Revitalisation of Smallholder Irrigation Schemes (RESIS) programme. The RESIS programme was meant to address the problems on the smallholder irrigation schemes with the aim of improving agricultural productivity on the schemes, to enable the schemes to play a role in local economic development through improved incomes for beneficiaries and improving food security and thus generally improving the livelihoods of the rural communities where the schemes are situated. A number of smallholder irrigation schemes benefitted from the implementation of the RESIS programme through the installation of modern irrigation infrastructure such as floppy, centre pivots and drip irrigation systems in the Limpopo province. However, it was noted that after the installation of the modern irrigation infrastructure, there were no farming activities taking place within the irrigation schemes due to farmers not having the necessary inputs and machinery as well as skills such as marketing to operate on a commercial scale. A model which would require less support from the government was preferred as a more sustainable development alternative. The LDA then introduced the strategic partnership model to operationalise the smallholder irrigation schemes with the objective of commercialisation. This was to be achieved through providing smallholder farmers with assistance in farm production, skills development or empowerment, access to markets, and ensure that quality, supply and certification requirements of markets are met, while simultaneously recognising the interests of agribusiness to secure and even expand their operations.

Despite the significant opportunities and benefits that strategic partnership programme was likely to bring, however, the experience on the ground showed a mixed picture. Some smallholder irrigation schemes showed significant positive results, while others had not achieved the intended outcome and had performed poorly. The Water Research Commission study (**WRC Report TT 787/19**) noted that the issue of strategic partnership was cited several times as the leading cause of the failure of some of the smallholder irrigation schemes assessed. It is against this background that a study was commissioned to investigate performance of the existing strategic partnership model. AgriEng Consulting was thus appointed to carry out the study.

## METHODOLOGY

In order to achieve the objectives of this study, three (3) data collection tools were developed and employed with each targeted to collect data from smallholder farmers, government officials and the strategic partner(s). A multidisciplinary project team visited all the thirteen (13) smallholder irrigation schemes that were under the strategic partnership model to collect data from 03 to 24 May 2021. The smallholder irrigation schemes studied were located throughout the Limpopo Province as follows: Sekhukhune District (7), Capricorn District (2), Waterberg District (1), Mopani District (1) and Vhembe District (2). Semi structured interviews were conducted with farmers or their representative and government officers. Following the completion of the interview, a transect walk of the schemes were carried out where selected features and components of the scheme were assessed and pictures taken. Such components included: the soils, general crop appearance, irrigation infrastructure, pump station and power supply. For this project, the performance and success of the strategic partnership programme was measured by the number of smallholder irrigation schemes that were operational and the level of satisfaction of the farmers regarding the programme.

## RESULTS OF THE STUDY

The study showed that the strategic partnership programme failed in all thirteen (13) smallholder irrigation schemes in Limpopo Province. All 13 smallholder irrigation schemes were no longer under the strategic partnership programme. Of the three (3) smallholder irrigation schemes that were operational at the moment, two (2) schemes were leased out to a private entity by the farmers. The farmers were either working as labourers at the scheme or were paid dividends once per year after harvest. All the work and activities (farm operations; operation, management and maintenance of the irrigation system; decision on the crops to grow; marketing of the crop produce) were being done by the private entity. The smallholder farmers were not involved at all and there were no skills transfer and mentorship that took place. The other operational scheme was forcefully taken over by the local youth where the original members have been displaced. The youth have brought in another entity to operate the farm.

The study showed that the main causes of the failure of the strategic partnership programme were as follows: (i) the farmers were not involved in the identification and selection of the Strategic Partner; (ii) the farmers were not involved in key farm decisions such as crop selection, marketing of the farm produce; (iii) there was no transparency in financial matters and records, production sales records and farm outputs; (iv) the smallholder irrigation farmers were not involved in the farming activities and operation which meant that there was no skills transfer and mentorship; and (v) there was inadequate communication between the farmers and the Strategic Partner. All these inevitably led to a lack of trust from the smallholder irrigation scheme

farmers, division amongst farmers and consequently conflicts which resulted in some irrigation schemes collapsing and being vandalised.

Furthermore, the study showed that the cooperative approach where all farmers work on the land may not be the most suitable method for smallholder irrigation schemes. The one-plot-per family is the most preferred and ideal approach.

## FEEDBACK FROM STAKEHOLDER WORKSHOP

A stakeholder consultative workshop was held virtually on the 15th of June 2022 where the findings of this study were presented to thirty-five (35) participants who consisted predominantly of Government officials from the LDARD.

The participants in attendance were from local municipalities, district municipalities and the provincial department. The main sections represented in the stakeholder feedback workshop were as follows: management, engineering, advisory services, crop sections, livestock and horticulture. The workshop was divided into two sections, the first section included opening and introductions, and a presentation. The second solicited feedback from the stakeholders in the form of questions and comments to use their feedback to consolidate the final report.

### Summary of feedback stakeholder workshop

The following constitute the summary of stakeholder feedback workshop:

- The findings of the study as presented were well known by the stakeholders as they work in the areas where the schemes are located.
- The proposed farmer centered models can work but there is need to understand the current challenges experienced by the farmers and what changes would the farmers need to make so they are able to be assisted and eventually stand on their own.
- The smallholder irrigation schemes are owned by farmers who had no interest in farming in the first place. The current farmers inherited the schemes from their forefathers. In other words, the feedback workshop participants were querying the selection process that was followed in identifying the benefitting farmers.
- The farmers on the schemes are old and do not understand the issues of marketing and other business factors. The LDARD indicated that there is a need to profile the farmers before they can invest in the schemes.
- The floppy irrigation infrastructure for Flag Boshielo smallholder irrigation schemes have been completely vandalised. These are some of the schemes that proposed models can be piloted.
- The traditional authorities interfere in the irrigation schemes, which causes conflict and discourage the LDARD from investing in the schemes.

- The LDARD accepts the responsibility in terms of lack of consultation with the farmers as the top-down approach was used during the scheme's development. The stakeholders indicated that where the participatory extension approach was used and where the farmers were involved, these smallholder irrigation schemes have continued to operate well.

## POSSIBLE INTERVENTIONS AND OPPORTUNITIES FOR REVITALISATION OF AFFECTED SMALLHOLDER IRRIGATION SCHEMES

Based on the findings of the study, the most preferred models that can be used in the revitalization of the smallholder irrigation schemes that were under the strategic partnership programme in Limpopo Province are as follows.

- Sub-division of the smallholder irrigation schemes into individual plots within the schemes managed by a family unit or an individual. Using an irrigation system (drip or sprinkler irrigation systems) that is collectively owned and managed by the farmers which enables irrigating of individual plots within the scheme. Each farmer in the scheme will irrigate as and when they want to do so.
- Leasing the farm to private entity where smallholder farmers are not involved in the farming operations and collect rent for use of the land.
- Farmers managing the scheme under the assistance and guidance of the agricultural advisors from LDARD linked to the AgriPark Concept.
- Farmers to employ a Farm Manager to manage and operationalize the scheme linked to the AgriPark Concept.
- Strategic partnership that is closely managed by LDARD.

## CONCLUSIONS

The following conclusions were made from this study:

- The strategic partnership programme for smallholder irrigation schemes in Limpopo Province failed.
- All the smallholder irrigation schemes that were under the strategic partnership programme were not functional.
- The Limpopo Provincial government invested a lot of funds into smallholder irrigation schemes and there is need to develop and implement a new strategy that will ensure the operation of the schemes.
- The cooperative approach where all farmers should work together on the farm is not ideal, the plot per family approach should be utilised.
- The floppy or centre pivot irrigation systems are not suitable for smallholder irrigation farmers in the Limpopo Province.

### RECOMMENDATIONS

The following are the recommendations:

- That a “plot per family” model should be implemented in the revitalisation of the vandalised smallholder irrigation schemes which were under the strategic partnership programme in Limpopo Province.
- The drip or sprinkler irrigation method is the most suitable irrigation method for smallholder irrigation schemes as it allows irrigation of individual plots within the schemes.

### POSSIBLE FUTURE STUDIES

This study hereby proposes the following possible interventions for the improvement of the performance of smallholder irrigation schemes in Limpopo Province and South Africa in general.

- A study on the performance of smallholder irrigation schemes using “plot per family” model to develop a comprehensive model.
- A study that identifies and quantifies the needs of each irrigation scheme to be operational.
- A study on the irrigation water needs of the smallholder irrigation schemes and socio-economic benefits

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| | |
|---|---|
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| Ms Taryn Ralph | (Water Research Commission) |





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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| CASP | Comprehensive Agricultural Support Programme |
| CPA | Communal Property Associations |
| DAFF | Department of Agriculture, Forestry and Fisheries |
| DRDLR | Department of Rural Development and Land Reform |
| FAO | Food and Agricultural Organisation |
| GPS | Geographic Positioning System |
| Ha | Hectare |
| IFAD | International Fund for Agricultural Development |
| kVA | Kilovolt-ampere |
| LDA | Limpopo Department of Agriculture |
| LDARD | Limpopo Department of Agriculture and Rural Development |
| NDP | National Development Plan |
| NGO | Non-government organisation |
| PTO | Permit to Occupy |
| RESIS | Revitalisation of Smallholder Irrigation Schemes |
| SPP | Strategic Partnership Programme |
| TOR | Terms of Reference |
| UNEP | United Nations Environment Programme |
| WRC | Water Research Commission |

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# 1 INTRODUCTION

## 1.1 Appointment

AgriEng Consulting was appointed by Water Research Commission (WRC) in 01 April 2020 to conduct a study titled *"Investigation into the performance of strategic partnership programme for small holder irrigation schemes in Limpopo province and opportunities for revitalisation of affected schemes".*

A total of thirteen (13) smallholder irrigation schemes were studied across Vhembe (2), Sekhukhune (7), Capricorn (2), Waterberg (1) and Mopani (1) districts in Limpopo Province.

This document constitutes a report of the findings of this study on the performance of the smallholder irrigation schemes that were under the strategic partnership programme in Limpopo Province.

## 1.2 Objectives of the study

### 1.2.1 Objectives

The main objective of this study was to investigate the performance of the strategic partnership programme implemented in smallholder irrigation schemes in Limpopo province.

The main specific objectives are outlined below:

a) To carry out physical assessment of the status and document key success factors on the performance of strategic partnership approach of the existing smallholder irrigation scheme.
b) To develop possible strategies for the revitalisation of the failed smallholder irrigation schemes.
c) To develop innovative approaches which will make the strategic partnership work to produce desired results.

As indicated previously, this document constitutes a report of the findings of the study on the performance of the smallholder irrigation schemes that were under the strategic partnership programme in Limpopo Province.

## 2 BACKGROUND

The Government of South Africa supports smallholder irrigation as a means to create jobs, alleviate poverty and boost pro-poor sustainable agricultural and economic growth (DAFF, 2015). To this effect, the Limpopo Department of Agriculture (LDA) (now called Limpopo Department of Agriculture and Rural Development (LDARD)) identified potential farming areas to be developed into commercial irrigation schemes through the Revitalisation of Smallholder Irrigation Schemes (RESIS) programme (Mothapo *et al.*, 2011). The RESIS programme was meant to address the problems on the smallholder irrigation schemes with the following specific objectives; (i) to improve agricultural productivity on the schemes; (ii) to enable the schemes to play a role in local economic development through improved incomes for beneficiaries and their households, and (iii) to improve food security and thus generally improve the livelihoods of the rural communities where the schemes are situated (Maepa, 2011). As a result, a number of smallholder irrigation schemes benefitted from the programme through the installation of modern irrigation infrastructure such as floppy, centre pivots and drip irrigation systems in the Limpopo Province (Maepa, 2011).

Mothapo et al. (2011), noted that after the installation of the irrigation infrastructure, there were no farming activities taking place within the irrigation schemes due to farmers not having the necessary inputs and machinery as well as skills such as marketing to operate on a commercial scale, let alone to operate the schemes. According to LDA (2005), a model which would require less support from the government was preferred as a more sustainable development alternative to operationalise the schemes. The LDA then introduced the strategic partnership programme to operationalise the smallholder irrigation schemes with the objective of commercialisation. This was to be achieved through providing smallholder farmers with assistance in farm production, skills development or empowerment, access to markets, and ensure that quality, supply and certification requirements of markets are met, while simultaneously recognising the interests of agribusiness to secure and even expand their operations (Maepa, 2014).

The model further indicates that the incentives for the strategic partner appointed were to be in the form of profits from farming. At the same time, for the emerging farmers, it was a combination of factors. These factors included the strategic partner financing the inputs and machinery, providing farming skills, management and expertise, transfer of skills and mentoring, providing access to markets and bearing all the risk.

Despite the significant opportunities and benefits that strategic partnership programme was likely to bring, the experience on the ground showed a mixed picture. Some

smallholder irrigation schemes have shown significant positive results, while others have not achieved the intended outcome and have performed poorly. For sustainable food security, poverty alleviation and livelihoods enhancement in general, it is critical that the factors causing the underperformance of the existing strategic partnership programme are systematically investigated/reviewed to propose possible targeted interventions and recommendation to remedy the situation. During the Water Research Commission (WRC) study (TT787/19) conducted during 2018 on the factors affecting underperformance of small irrigation scheme (Jabulani and Simalenga, 2019), the issue of strategic partnership was cited several times as the leading cause of the failure of some of the smallholder irrigation schemes assessed. However, this warranted further investigation.

It is against this background that a study was commissioned by WRC to investigate the performance of the existing strategic partner programme.

## 2.1 The strategic partnership model used in the Limpopo Province

The strategic partnership model was identified as a potential solution to the shortcomings of other models which were used for smallholder irrigation schemes that were revitalised under the RESIS programme in Limpopo Province. It involved identifying an experienced private sector partner/farmer that would enter into a joint venture with the smallholder irrigation farmers. The intention was to empower smallholder irrigation farmers through shareholding while the farming business run successfully through the experience and financial capability of the strategic partner (Nowata, 2014). The idea behind the model was that the strategic partner will bring all the elements that are lacking within the project such as capital, management skills, market access and agricultural machinery. The adoption of this model on RESIS projects, therefore, has been viewed as having the potential to halt the decline in productivity on many of the smallholder irrigation schemes (Bourblanc et al., 2017).

### 2.1.1 Legal structure of the strategic partnership model entity

The following principles explain the strategic partnership model as given in Figure 1. The model was based on a tripartite alliance between the farmers on each scheme (or cluster of schemes) referred to as the '**producers'**, the LDA referred to as the '**facilitator'** and a strategic private sector partner the **'investor or strategic partner'** (Mothapo et al., 2012, Nowata, 2014), as briefly described below;

- **Registration of a legal entity:** The farmers at the smallholder irrigation scheme should form a legal entity (cooperative, private company, trust, etc.).

- **The government department:** LDA in collaboration with other government departments handle the policy and principles, operating rules, provision of infrastructure (irrigation system, water, roads, electricity, etc.)
- **The legal entity entering into partnership with a Strategic Partner:** The farmers' legal entity (cooperative, private company, trust, etc.) then forms a joint venture with a private entrepreneur (Strategic Partner) who has the capacity to provide and attract operational capital and entrepreneurial expertise. The entrepreneur or the strategic partner invests working capital and provide farm management skills during the joint venture/partnership period (Nowata, 2014).

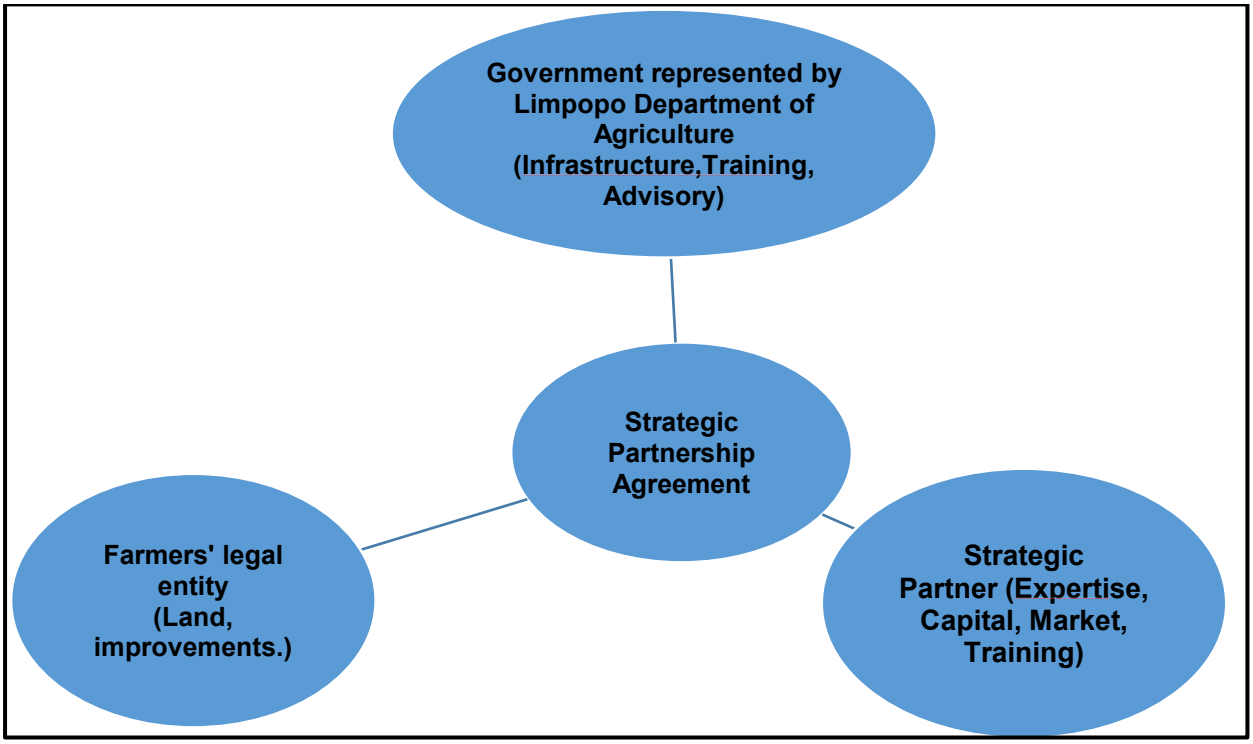


**Figure 2-1**. Strategic Partnership Model for smallholder irrigation schemes in Limpopo Province (Nowata, 2014).

### 2.1.2 The roles of the tripartite relationship

The roles of each of the members of the tripartite agreement were as outlined below (Nowata, 2014).

#### 2.1.2.1 The government represented by LDA

The role of government as represented by the LDA was as follows:

- Institutional structure building for the sustainable management of all aspects of the schemes (infrastructure, water management, crop production, marketing and services).
- Capacity building and training in the above responsibilities.
- Providing on-going support services in the form of extension, training and research,
- Providing support infrastructure such as roads and electricity,
- The funding of scheme infrastructure rehabilitation as a once-off grant,
- Providing a well-structured and well-resourced aftercare programme,
- A framework within which private sector partners can operate (this includes appropriate policy and operating principles and guidelines),
- The provision of access and communication infrastructure.

#### 2.1.2.2 The role of the strategic partner

The role of private sector strategic partners was to as follows:

- Provide a secure market for a selected crop, or set of crops, at prices that make production viable for producers.
- Assist farmers acquire production loans and loans for in-field irrigation equipment from the Land Bank.
- Provide technical advice, training and mentorship.

#### 2.1.2.3 The role of farmers as equal partners

The role of farmers, as equal partners, was as follows:

- Supply of quality crops for marketing or processing,
- Management of their own farming operations,
- Scheme management (including water management),
- Management of service providers with respect to input supplies, mechanisation services, production loans and markets.

## 2.2 The smallholder irrigation schemes involved in the strategic partnership programme

In 2002, the LDA took a decision to revitalize about 126 smallholder irrigation schemes in Limpopo Province. This formed part of the strategy of the department to boost agricultural production through investment into the new or existing smallholder

irrigation schemes with a potential for sustainable economic production (Bourblanc et al., 2017).

Before the RESIS intervention, most of the smallholder irrigation farmers were using flood irrigation with the field subdivided into plots. LDA negotiated with farmers as a resulted the plots of individual farmers were consolidated into larger and more economic units and irrigation systems were installed (Van Koppen et al., 2018). The strategic partnership model was implemented in all revitalized smallholder irrigation schemes. The model was chosen because of several challenges. These included the fact that farmers were not skilled to operate the system, they did not have farming implements, and they also did not have capital to meet the production costs. Hence the government needed a model that would require lower levels of support from them (Nowata, 2014).

Several smallholder irrigation schemes that were identified for revitalization and modern irrigation systems such as floppy irrigation, centre pivots and drip irrigation were installed. The strategic partnership model was introduced to capacitate, train and mentor farmers towards commercialization of the schemes.

### 2.2.1 The objectives of the strategic partnership model in Limpopo Province

The objectives of the strategic partnership model implemented in the smallholder irrigation schemes are summarised as follows (Bourblanc et al., 2017; Mothapo et al., 2012; Nowata, 2012, Tapela, 2012):

a) To operate the irrigation schemes as part of the project of the LDA to its optimum potential capacity, on a profitable commercial basis,
b) To train the farmers and transfer the required skills to empower them to be able to operate the irrigation scheme themselves, in the long term, which includes training in the areas of finance, quality control, marketing, management, operational, technical and business administration;
c) To stimulate the production of potatoes and other cash crops;
d) To create for farmers a carefully managed sales outlet for potatoes and other cash crops, thereby optimizing profits for both potatoes and cash crop sales and for processing and sales of value added products;
e) To utilize the experience and expertise of an established role player in the farming industry, to the benefit of farmers;
f) To ensure that a profit sharing formula arrangement is implemented among the two parties namely, Strategic Partner and the Farmers during the three-year period under the agreement; and

g) To comply with the implementation of the empowerment framework of LDA..

Further, the strategic partnership model stipulated that the incentives for the appointed strategic partner would be the profits sharing where 51% of the audited net profit or loss is due to the farmers and 49% of the audited net profit or loss is due to the strategic partner. The smallholder farmers benefitted from a combination of other factors which included the strategic partner financing the inputs and machinery, providing farming skills, management and expertise, transfer of skills and mentoring, providing access to markets and bearing all the risks.

### 2.2.2 The list of smallholder irrigation schemes involved in the strategic partnership in Limpopo Province

The list of smallholder irrigation schemes that were involved in the strategic partnership programme is provided in Appendix A. It shows that a total of thirteen (13) smallholder irrigation schemes were under the strategic partnership in Limpopo Province.

The status of the smallholder irrigation schemes is detailed in the sections below.

### 2.2.3 The status of smallholder irrigation schemes involved in the strategic partnership in Limpopo Province

From the list obtained from LDA (2018), it shows that about 62% of the smallholder irrigation schemes that were involved in the strategic partnership in Limpopo Province were no longer functional.

The following can be observed:

- Mapela irrigation scheme is being used not by the smallholder farmers but is under an investor appointed by Anglo-American. It is not under strategic partnership programme.
- Tshiombo-Mbahela is reported as operational. However, Jiyane and Simalenga (2019) noted that the scheme is operational using the traditional furrow irrigation system not the floppy irrigation system that was installed by LDA under the RESIS programme. The farmers are not using the floppy sprinkler irrigation system that was installed under RESIS programme, but they have reverted back to the old furrow irrigation method.
- Most of the smallholder irrigation schemes have collapsed and some have been vandalised completely.

- A total of R170 million was spent on smallholder irrigation schemes which have not been successful.

This large-scale failure of the smallholder irrigation schemes under strategic partnership necessitates the review of the model and the whole programme. A detailed investigation and assessment of each smallholder irrigation scheme is required.

This study, therefore, attempts to find out the opinion of farmers as to why most of the revitalized irrigation schemes have failed and also document the best practices for the operationalisation of the smallholder irrigation scheme that were under the strategic partnership programme.

## 2.3 Project success and performance evaluation

A project can be viewed as an input-output model. A project is started to fulfil a need or requirement. Some form of input is transformed into output, under a set of constraints and utilizing a set of mechanisms to make the project happen (Koelmans, 2004).

### 2.3.1 Measurement of project success

Project success should be interpreted based on the perspectives of the different stakeholders (owner, contractor, project manager, client, user, community), as a result a project could be regarded a success for some parties and a failure for others respectively. Belassi and Tukel (1996) claim that the determination of project success or failure is a complex process surrounded by intense ambiguity due to the inability of clear interpretation and assessment of project success on behalf of the different stakeholders and the diversity of evaluation methods and tools inside the literature. Generally, project success is considered “as the achievement of some predetermined project goals, which commonly include multiple parameters” (Lim and Mohamed, 1999).

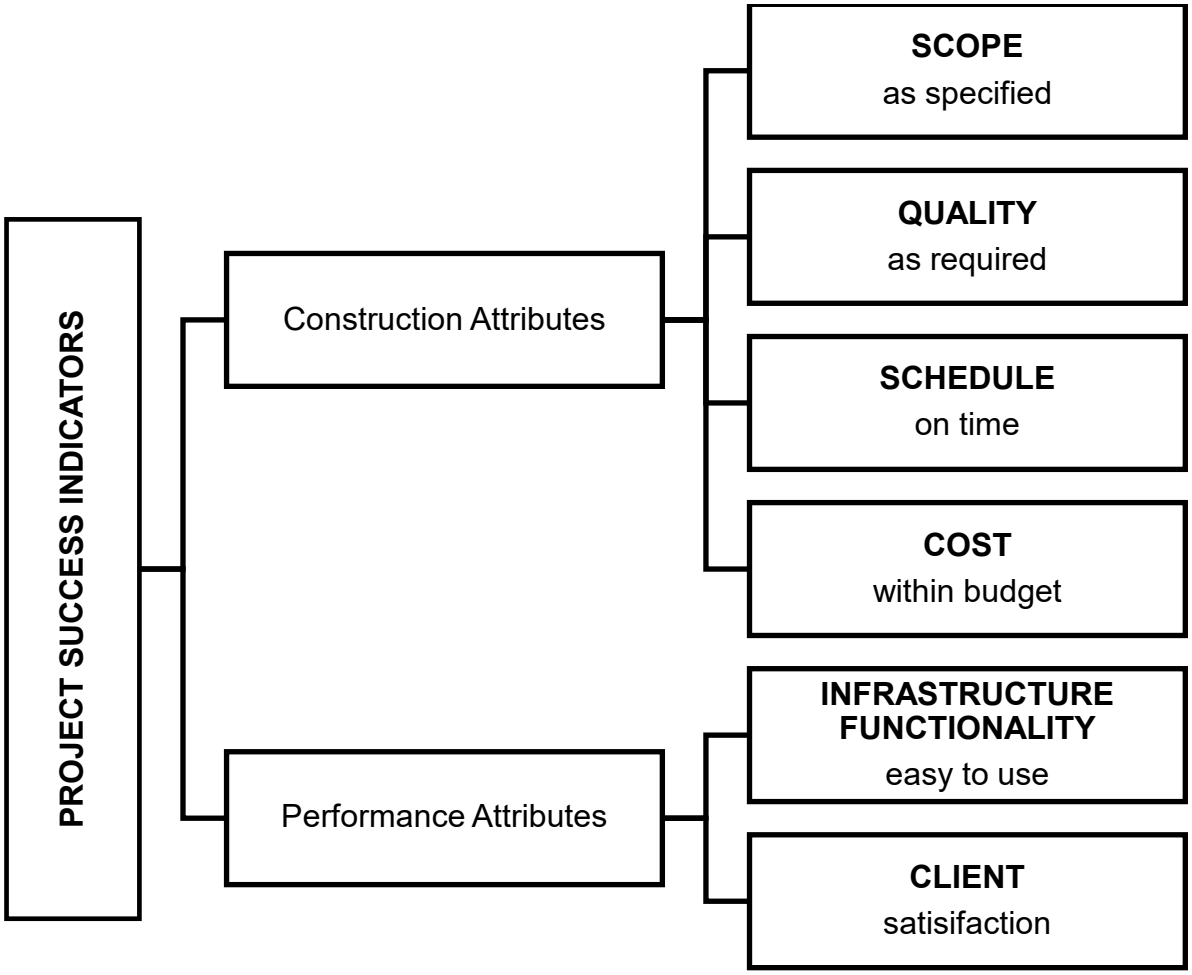


**Figure 2-2. Project success indicators**: Client view (Adapted from Koelmans, 2004)

According to Baccarini (1999) project success consists of two separate components, namely project management success and project product success. He distinguishes between them as follows:

- **Project management success.** This focuses on the project management process and in particular on the successful accomplishment of the project with regards to cost, time and quality. These three dimensions indicate the degree of the '*efficiency of project execution'*.
- **Project product success.** This focuses on the effects of the project's end-product. Although project product success is distinguishable from project management success, the successful outcomes both of them are inseparably linked.

Thus, following Baccarini (1999), in simplistic terms project success can be summarised as:

**Project success = project management success + project product success**

However, De Wit (1988) cites one definition of project success, as derived from the previous research of Baker et al. (1983), “the project is considered an overall success if the project meets the technical performance specification and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people or beneficiaries”.

The measurement of success of the strategic will be determined on the basis of the fulfilment of the original objectives of the programme.

# 3 METHODOLOGY FOR THE ASSESSMENT OF SMALLHOLDER IRRIGATION SCHEMES

## 3.1 Area of study

Limpopo Province is South Africa's northernmost province which shares borders with Mozambique, Zimbabwe and Botswana, making it the ideal entrance to Africa.

Limpopo's population grew by 400 000 from 5,4 million people in 2011 to 5,8 million in 2016, making it the fifth largest province in the country in terms of population size. It trails behind Gauteng (13,4 million), KwaZulu-Natal (11,1 million), Eastern Cape (7 million), and Western Cape (6,3 million). The number of households in the province has also increased to 1,6 million in 2016, from 1,4 million in 2011. The district municipality with the largest share of households in the province is Vhembe (382 346), followed by Capricorn (378 272), Mopani (338 385), Greater Sekhukhune (290 489), and Waterberg (211 452) (Stats SA, 2016).

Limpopo has the highest proportion of households living in formal dwellings (88,9% or 1,4 million) and the lowest number of informal dwellings (4,8% or 77 371) in the country. About 5,1% (81 747) of households in the province are living in traditional dwellings. Limpopo also has the highest proportion of "owned and fully paid-off" homes in the country with 65,4%. About 7,5% of households in the province own their main dwellings, however they are still paying back their home loans. More than a tenth (11,4%) of the of the households stay rent-free in homes they do not own, whereas 9,8% rent their main homes (Stats SA, 2016).

The poverty headcount in Limpopo has increased from 10,1% in 2011 to 11,5% in 2016. Increases in the poverty headcount were observed in all district municipalities between 2011 and 2016, except in Vhembe – decreasing from 13% in 2011 to 12,8% in 2016. The lowest poverty headcounts, albeit having increased in comparison with 2011, were recorded in Capricorn (8,5%) and Waterberg (9%) (Stats SA, 2016).

## 3.2 Sampling method

All the thirteen (13) smallholder irrigation schemes located across the five (5) district municipalities in Limpopo Province were selected for this study. Table 1 shows the distribution of the smallholder irrigation schemes in the districts.

**Table 3-1**. Distribution of the smallholder irrigation schemes studied in Limpopo Province

| Name of district municipality | Number of smallholder irrigation schemes studied |
|---|---|
| Sekhukhune | 7 |
| Capricorn | 2 |
| Waterberg | 1 |
| Mopani | 1 |
| Vhembe | 2 |
| Total | 13 |

## 3.3 Data collection methods

Three (3) comprehensive data collection tools were designed for the use in the assessments of the smallholder irrigation schemes that were or are under the strategic partnership programme, see Appendix A, B and C. A similar approach was used by Haileslassie et al. (2016) and Van Averbeke (2012) to assess smallholder irrigation schemes. Semi structured interviews were conducted with farmers or their representative and government officers. Following the completion of the interviews, transect walks of the schemes were carried out where selected features and components of the scheme were assessed and pictures taken. Such components included: the soils, general crop appearance, irrigation infrastructure, pump station and power supply.

The following procedure was followed to carry out the study.

### 3.3.1 Physical assessment of the status of the smallholder irrigation schemes that were or are under the strategic partnership programme.

#### 3.3.1.1 The list of smallholder irrigation schemes for the study

The AgriEng Consulting team engaged with the LDARD to identify all the thirteen (13) smallholder irrigation schemes that were or are still under the strategic partnership programme in Limpopo Province.

Table 2 shows a list of the smallholder irrigation schemes which were or are still under the strategic partnership programme in Limpopo Province that formed part of this study.

**Table 3-1**. List of smallholder irrigation schemes studied

| No | Name of smallholder irrigation scheme | Area (Ha) | No of Farmers | Cost of rehabilitation (ZAR) | Local Municipality | District Municipality | Water Source | Type of Irrigation |
|---|---|---|---|---|---|---|---|---|
| 1 | Phetwane (Hindustan) | 52 | 48 | 4 956 107 | Ephraim Mogale | Sekhukhune | Flag Boshielo dam through a canal | Floppy irrigation system |
| 2 | Mogalatjane (Coetzeesdraai) | 133 | 99 | 11 430 197 | Ephraim Mogale | Sekhukhune | Flag Boshielo dam through a canal | Floppy irrigation system |
| 3 | Krokodilheuwel (Kolokotela) | 243 | 188 | 20 267 465 | Makhuduthamaga | Sekhukhune | Flag Boshielo dam through a canal | Floppy irrigation system |
| 4 | Setlaboswane (Vogelstruiskoppie) | 119 | 96 | 12 185 629 | Makhuduthamaga | Sekhukhune | Flag Boshielo dam through a canal | Floppy irrigation system |
| 5 | Elandskraal | 130 | 28 | 22 064 272 | Ephraim Mogale | Sekhukhune | Flag Boshielo dam through a canal | Centre pivots irrigation |
| 6 | Strydkraal (Ga-Masha) | 380 | 329 | 1 996 111 | Fetakgomo | Sekhukhune | Flag Boshielo dam through a canal | 300 ha centre pivots, 25 ha floppy irrigation |
| 7 | Tswelopele (Praktiseer) | 440 | 83 | 22 503 809 | Greater Tubatse | Sekhukhune | Weir through canal | Floppy irrigation system |

| No | Name of smallholder irrigation scheme | Area (Ha) | No of Farmers | Cost of rehabilitation (ZAR) | Local Municipality | District Municipality | Water Source | Type of Irrigation |
|---|---|---|---|---|---|---|---|---|
| 8 | Badfontein (Sepitsi) | 70 | 31 | 13 410 555 | Lepelle-Nkumpi | Capricorn | Weir | 60 ha centre pivot, 10 ha drip irrigation system |
| 9 | Grootfontein | 103 | 58 | 4 289 566 | Lepelle-Nkumpi | Capicorn | Olifant River catchment | Centre pivots, floppy irrigation system |
| 10 | Mapela | 90 | 60 | 12 589 988 | Mogalakwena | Waterberg | Vaalkop Dam | 50 ha floppy irrigation, 40 ha drip |
| 11 | Homu | 165 | 22 | 10 815 924 | Greater Giyani | Mopani | Nsami Dam | Micro-ject irrigation system |
| 12 | Tshiombo-Mbahela | 110 | 86 | 18 717 425 | Thulamela | Vhembe | Tshiombo weir through canal | Floppy irrigation system |
| 13 | Makuleke | 235 | 41 | 15 008 318 | Thulamela | Vhembe | Makuleke dam through canal | Centre pivots irrigation |

#### 3.3.1.2 The status of the smallholder irrigation schemes under Strategic Partnership Programme

The AgriEng Consulting multi-disciplinary of team carried out the farm visits to administer the three (3) questionnaires, namely data collection tool for farmers, government officials and for the strategic partner. Farm visits were carried out from 03 to 24 May 2021. The team was accompanied by agricultural advisors for each smallholder irrigation scheme. Below is the outline of the smallholder irrigation schemes studied. A set of three (3) data collection tools were administered in order to assess the status of the smallholder irrigation schemes, the performance of the schemes and the factors affecting the smallholder irrigation schemes under the strategic partnership programme in Limpopo Province. The use of the data collection tools ensured uniformity of data collected from the selected schemes. The three (3) data collection templates are attached as Appendix A, B and C.

### 3.3.2 The performance of the smallholder irrigation schemes that were or are under the Strategic Partnership Programme in Limpopo Province.

The performance of the smallholder irrigation schemes under strategic partnership programme was measured in terms of meeting the original objectives of the programme (Sudhakar, 2016; Al-Shaaby and Ahmed, 2018; Freeman, MA, 1992).

It can be assumed here that the “Project management success” (implementation of the smallholder irrigation schemes within time, cost and in good quality). This is because all the thirteen (13) irrigation schemes were handed over in good working conditions and there is evidence that the schemes worked for some time.

This project therefore investigated the impact of the “Project product success”: that the ***smallholder irrigation schemes meets the technical performance specification and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people or beneficiaries”.***

For this study, the performance and success of the strategic partnership programme in Limpopo Province was measured by the number of smallholder irrigation schemes that were operational and the satisfaction of the farmers regarding the model.

## 3.4 Data analysis

The Statistical Package for Social Sciences (SPSS) and Excel Computer Program were used for data analysis.

### 3.5 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.

### 3.6 Stakeholder feedback workshop

A stakeholder feedback workshop was held virtually on the 15th of June 2022 where the outcomes of the study were presented to the thirty-five (35) participants who consisted predominantly of government officials from the LDARD.

The participants in attendance were from local municipalities, district municipalities and the provincial officials. The main sections represented in the stakeholder feedback workshop were as follows:

- Management
- Engineering
- Advisory services
- Crop sections
- Livestock
- Horticulture

The workshop was divided into two sections, the first section included opening and introductions, and a presentation. The second solicited feedback from the stakeholders in the form of questions and comments to use their feedback to consolidate the final report.

# 4 RESULTS AND DISCUSSIONS

The purpose of this chapter is to present the research findings, analysis and interpretations of results. The results presented are from the information obtained from semi-structured interviews of farmers and technical officers. Furthermore, physical assessments of the smallholder irrigation schemes were carried out.

## 4.1 The performance of smallholder irrigation schemes under Strategic Partnership programme of Limpopo Province

The performance of the smallholder irrigation schemes under strategic partnership programme was measured in terms of the following:

a) Current functional and operational status of the smallholder irrigation schemes under the Strategic Partnership programme
b) Meeting the original objectives of the Strategic Partnership programme
c) Meeting the needs of the farmers both technically and in satisfaction (Sudhakar, 2016; Al-Shaaby A and Ahmed A (2018), Freeman, MA, 1992).

### 4.1.1 Operational status of the smallholder irrigation schemes under Strategic Partnership Programme

Table 3 shows that the strategic partnership programme failed in all the thirteen (13) smallholder irrigation schemes in Limpopo Province. All the smallholder irrigation schemes were no longer under the strategic partnership programme.

Of the three (3) smallholder irrigation schemes that were operational, two (2) schemes were leased out to private companies by the farmers. The farmers were either working as labourers at the scheme or were paid dividends once per year after harvest. All the work and activities (farm operations; operation, management and maintenance of the irrigation system; decision on the crops to grow; marketing of the crop produce) were being done by the private entity. The smallholder farmers were not involved at all and there were no skills transfer and mentorship taking place. With skills transfer not taking place it meant that the farmers will continue being dependent even though they own the land. At one scheme, the farm has been taken over by the youth where the original members have been displaced. The youth have brought in another entity to operate the farm.

**Table 4-1.** The operational status of the smallholder irrigation schemes under the Strategic Partnership programme of Limpopo Province

| No | Name of smallholder irrigation scheme | Area (Ha) | No of Farmers | Latitude [E] | Longitude [S] | Nearest Town | Local Municipality | District Municipality | Type of Irrigation | Current Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Phetwane (Hindustan | 52 | 48 | 24,7572 | 29,4317 | Marble Hall | Ephraim Mogale | Sekhukhune | Floppy irrigation system | Not operational |
| 2 | Mogalatjane (Coetzeesdraai) | 133 | 99 | 24,7292 | 29,42 | Marble Hall | Ephraim Mogale | Sekhukhune | Floppy irrigation system | Not operational, vandalised |
| 3 | Krokodilheuwel (Kolokotela) | 243 | 188 | 24,6864 | 29,4559 | Marble Hall | Makhuduthamaga | Sekhukhune | Floppy irrigation system | Not operational, vandalised |
| 4 | Setlaboswane (Vogelstruiskoppie) | 119 | 96 | 24,6699 | 29,4671 | Marble Hall | Makhuduthamaga | Sekhukhune | Floppy irrigation system | Not operational, vandalised |
| 5 | Elandskraal | 130 | 28 | 24,73321 | 29,41129 | Marble Hall | Ephraim Mogale | Sekhukhune | Centre pivots irrigation | Not operational. The scheme has collapsed and has been vandalised completely |
| 6 | Strydkraal (Ga-Masha) | 380 | 329 | 24,4676 | 29,7096 | | Fetakgomo | Sekhukhune | 300 ha centre pivots, 25 ha floppy irrigation | Operational but it is not used by original farmers. There are legal battles between the current users and the owners. The |

| No | Name of smallholder irrigation scheme | Area (Ha) | No of Farmers | Latitude [E] | Longitude [S] | Nearest Town | Local Municipality | District Municipality | Type of Irrigation | Current Status |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Strategic Partnership programme failed. |
| 7 | Tswelopele (Praktiseer) | 440 | 83 | 24,5849 | 30,34053 | Burgersfort | Greater Tubatse | Sekhukhune | Floppy irrigation system | Not operational. The scheme has collapsed and vandalised. Part of the farm now has household settlements. |
| 8 | Badfontein (Sepitsi) | 70 | 31 | 24,50188 | 29,55702 | | Lepelle-Nkumpi | Capricorn | 60 ha centre pivot, 10 ha drip irrigation system | Not operational due to conflicts. |
| 9 | Grootfontein | 103 | 58 | 24,21304 | 29,90683 | | Lepelle-Nkumpi | Capricorn | Centre pivots, floppy irrigation system | Operational but on a small scale. The Strategic Partnership programme failed. |
| 10 | Mapela | 90 | 60 | 23,9857 | 28,8826 | Mokopane | Mogalakwena | Waterberg | 50 ha floppy irrigation, 40 ha drip | Operational. Now used by Anglo-American appointed investor. The Strategic Partnership programme failed. |
| 11 | Homu | 165 | 22 | 23,34038 | 30,8128 | | Greater Giyani | Mopani | Micro-ject irrigation system | Vandalised and collapsed |

| No | Name of smallholder irrigation scheme | Area (Ha) | No of Farmers | Latitude [E] | Longitude [S] | Nearest Town | Local Municipality | District Municipality | Type of Irrigation | Current Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 | Tshiombo-Mbahela | 110 | 86 | 22,80412 | 30,45292 | | Thulamela | Vhembe | Floppy irrigation system | The scheme is not operational. The farmers are using the furrow irrigation system on a very small-scale. The floppy irrigation system is not operation, it was vandalised and collapsed. The Strategic Partnership programme failed. |
| 13 | Makuleke | 235 | 41 | 22,85710 | 30,93590 | | Thulamela | Vhembe | Centre pivots irrigation | Operational as a banana project using micro-jets. The farm has been leased out to a private entity. However, the scheme was initially established for potato production. The Strategic Partnership programme failed. |

Figure 3 below shows that 77% of the smallholder irrigation schemes were not operational. Of those that are operational (23%), they are no longer under the original strategic partnership programme. The schemes are either being leased to a private entity or have been taken over by another group of users. Operational under different user means either the smallholder irrigation scheme has been leased out completely, is used by a private entity or is used by other users which are not original farmers.

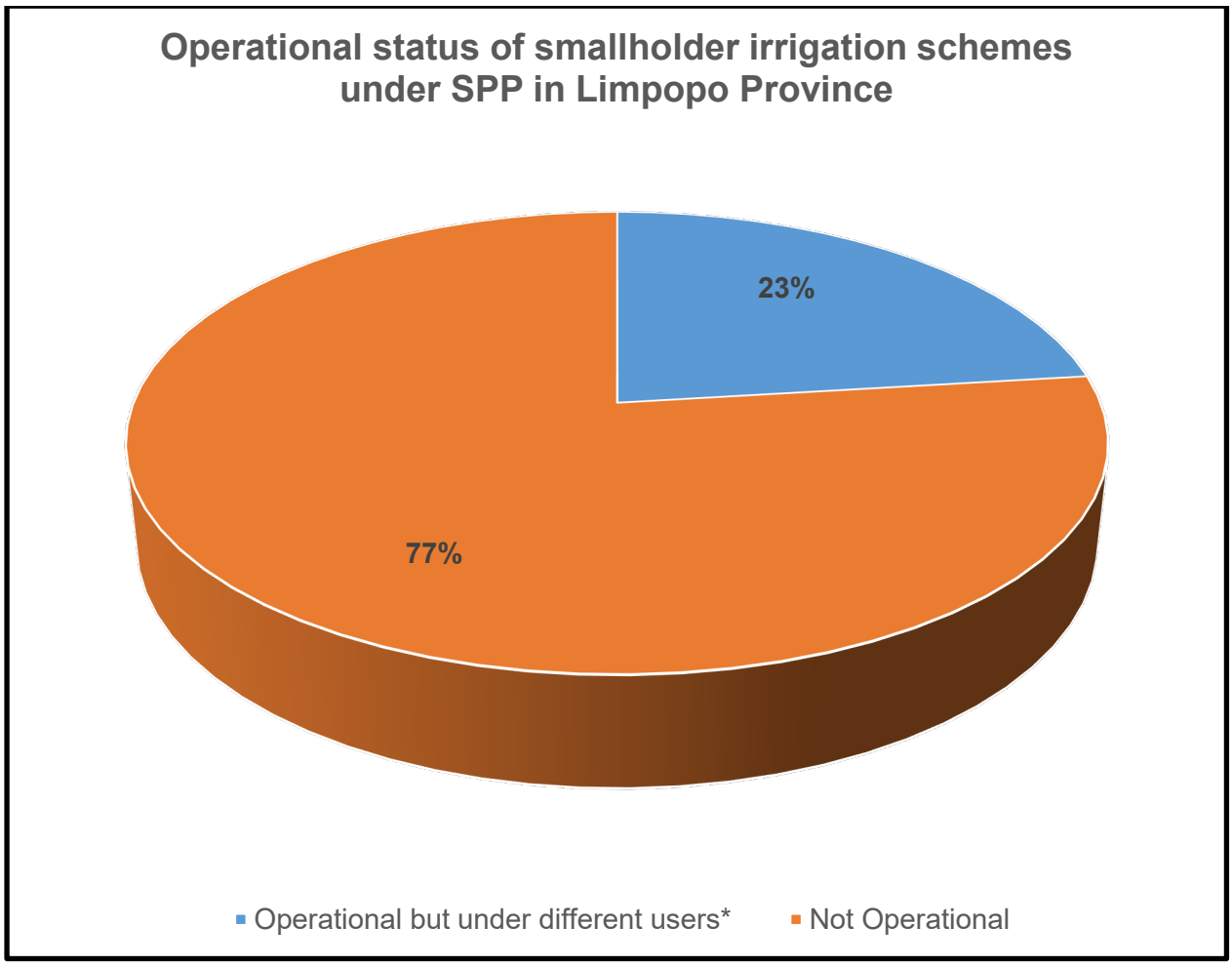


**Figure 4-1**. The operational status of the smallholder irrigation schemes under the Strategic Partnership in Limpopo Province.

### 4.1.2 The performance of the Strategic Partnership programme for smallholder irrigation schemes in Limpopo Province as per original objectives

The summary of the original objectives of the strategic partnership programme for smallholder irrigation schemes in Limpopo Province is as follows:

a) Optimal and commercially profitable schemes operation

b) Farmers training and skills transfer or empowerment
c) Provision of access to markets
d) Financial benefit of both parties through a profit-sharing formula arrangement

The objectives of the strategic partnership programme were tested to assess the performance of the schemes and success of the partnership model in Limpopo Province.

#### 4.1.2.1 Perception of smallholder irrigation farmers on the Strategic Partnership programme of Limpopo Province

All the smallholder irrigation schemes were asked to give an overall perception on whether the strategic partnership was a success or not. Figure 4 below indicates the outcome of the study on the perception of the smallholder irrigation schemes on the performance of the strategic partnership programme. It can be observed that 77% of the farmers considered that the strategic partnership programme was not successful.

The farmers cited several reasons which included but not limited to:

- The strategic partner failed to comply with the contract agreement,
- The strategic partner was dishonest,
- Lack of transparency regarding financial matters, production records and outputs. That ended up dividing the farmers,
- The strategic partner did not link farmers to markets, he was doing it himself without involving them or at least informing them.
- There was no training or skills transfer as per the contract agreement
- They further asserted that they had no direct access to markets and input procurement as the strategic partner carried out those tasks alone without involving them.

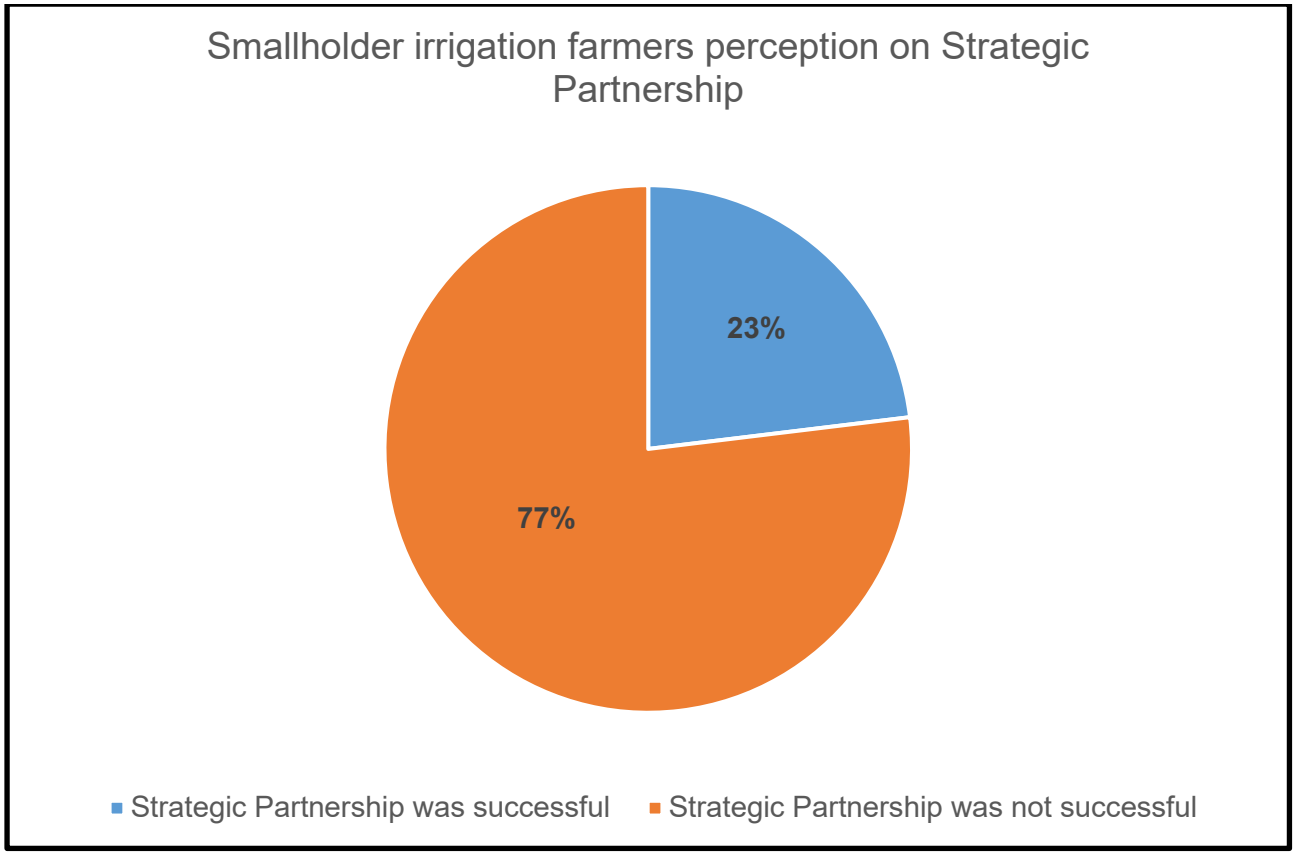


**Figure 4-2**. The perception of smallholder irrigation schemes farmers on the SPP of Limpopo Province

#### 4.1.2.2 The relationship between the farmers and strategic partner

The results of the study revealed that a total of 67% of the smallholder irrigation schemes farmers considered that the relationship between the strategic partner and the farmers was bad citing to the fact that the strategic partner was not transparent, while 33% indicated that the relationship was good (see Figure 5)

The farmers pointed out that the relationship breakdown which created a lack of trust between the farmers and the strategic partner arose mainly around the issue of the produce sales. The farmers felt that the strategic partner was not transparent when it came to costs of production, quantities sold and selling prices obtained.

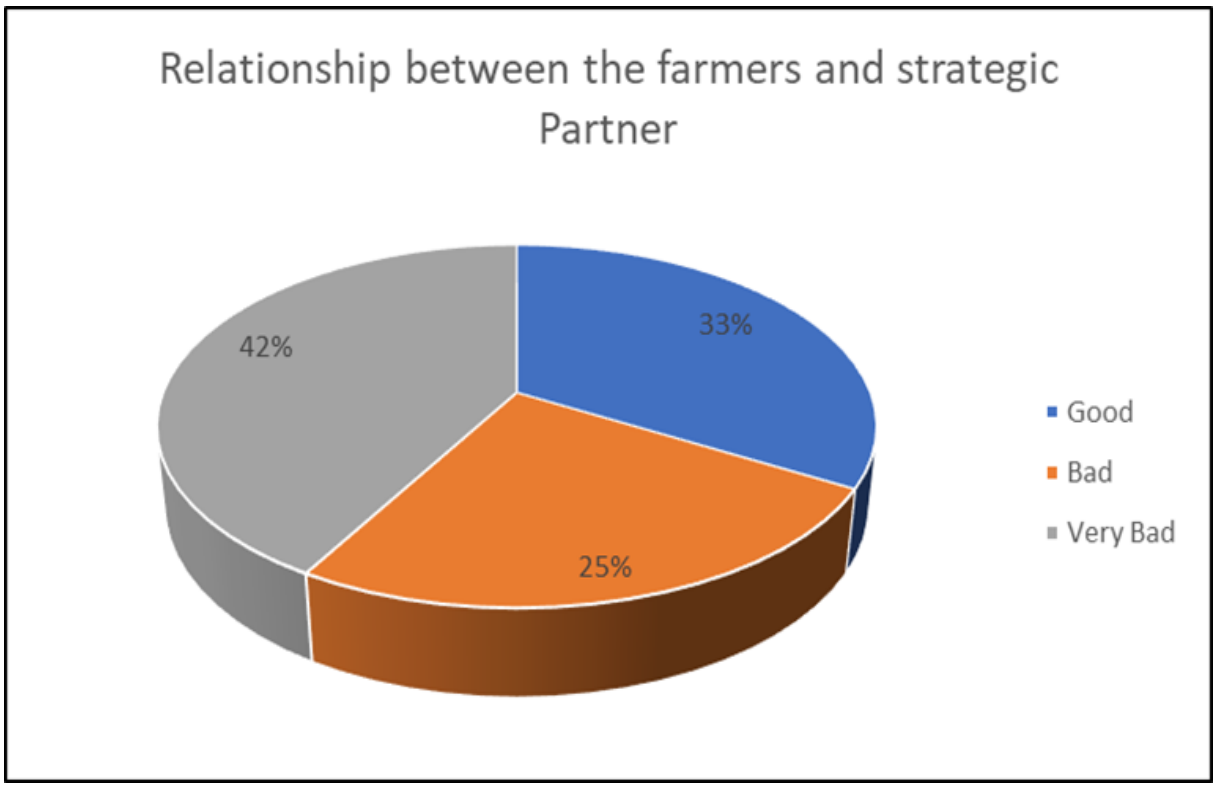


**Figure 4-3**. Relationship between the farmers and the strategic partner.

#### 4.1.2.3 The selection process for the strategic partner

The results of the study indicated that 54% of the farmers were not involved in the identification and selection of the strategic partner. However, they indicated that they knew about the strategic partner but were not involved in the selection process. They indicated that the government officials were the ones who selected the strategic partner. Furthermore, 46% of the farmers indicated that they did not know the strategic partner and neither were they involved in the selection process of the strategic partner as indicated in Figure 6.

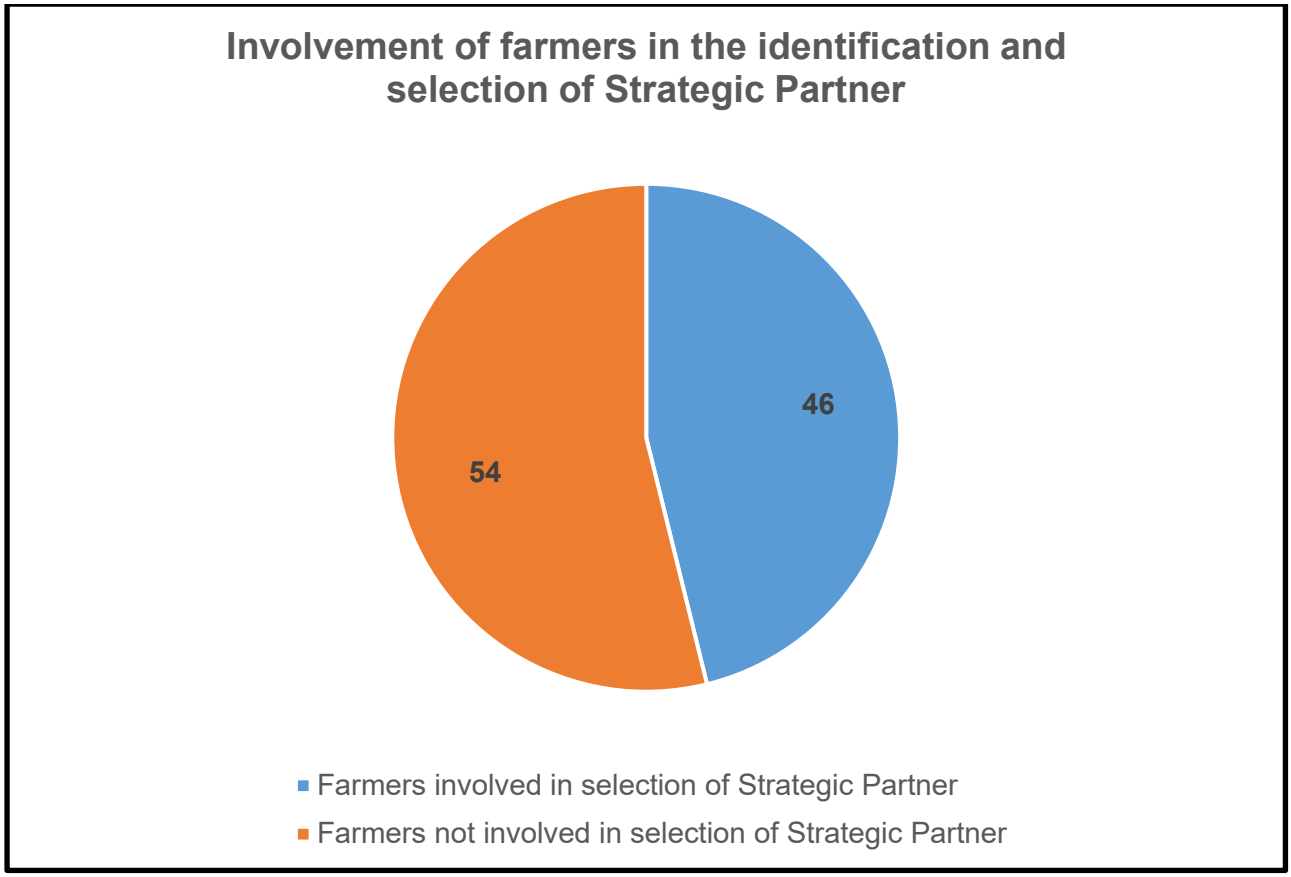


**Figure 4-4.** The involvement of the farmers in the identification and selection of the Strategic Partner.

Of all irrigation schemes visited and investigated, a total of 61% of the farmers were not satisfied with the strategic partner as indicated in Figure 7. The farmers outlined several reasons which included the fact that the strategic partner failed to comply with contract agreement, was dishonest, not transparent with financial statements, did not link farmers to markets.

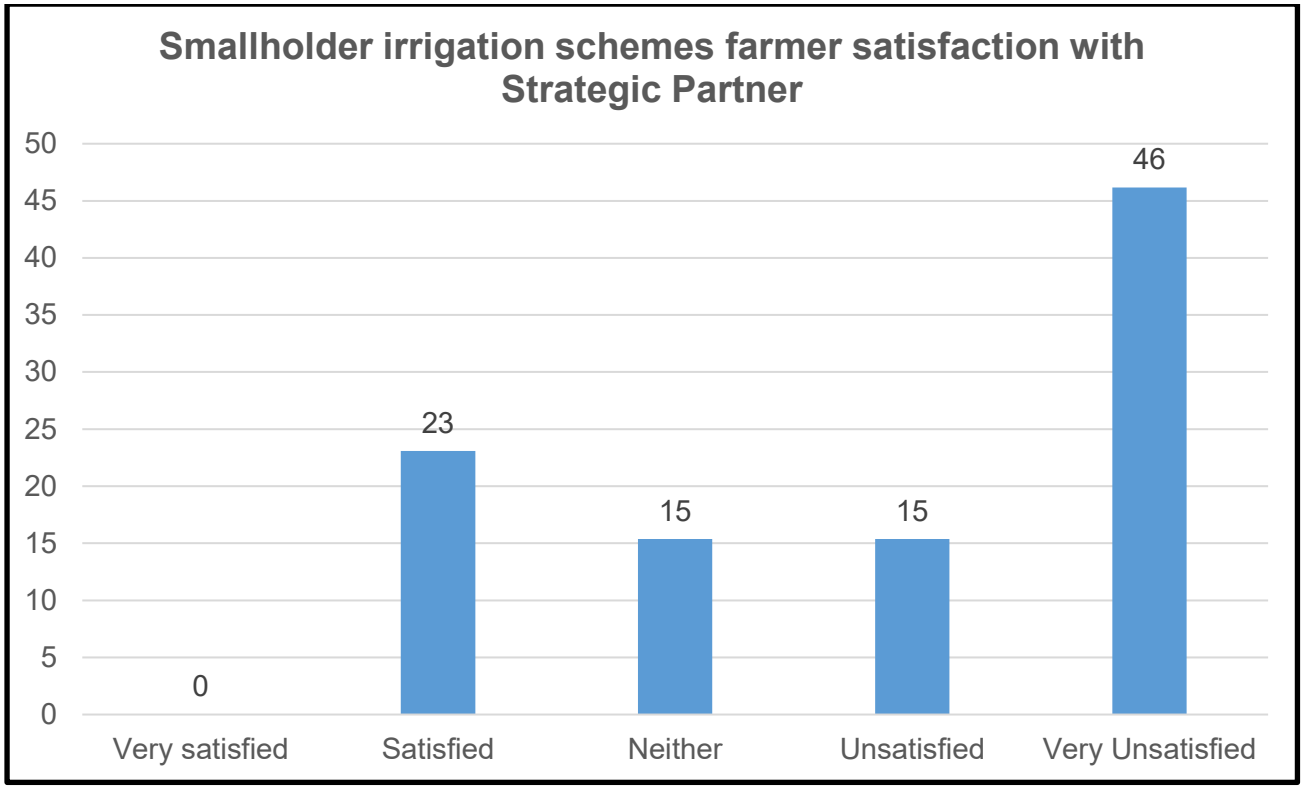


**Figure 4-5**. Smallholder irrigation schemes farmer satisfaction with Strategic partner

#### 4.1.2.4 Governance and socio-economic matters

When asked on whether the farmers had constitution or rules for the governance of the cooperative, 92% of farmers indicated that there was a constitution in place for the cooperative (see Figure 8). However, all farmers indicated that the constitution or rules for the governance matters was drafted by the strategic partner, hence it was favoring the strategic partner in most cases.

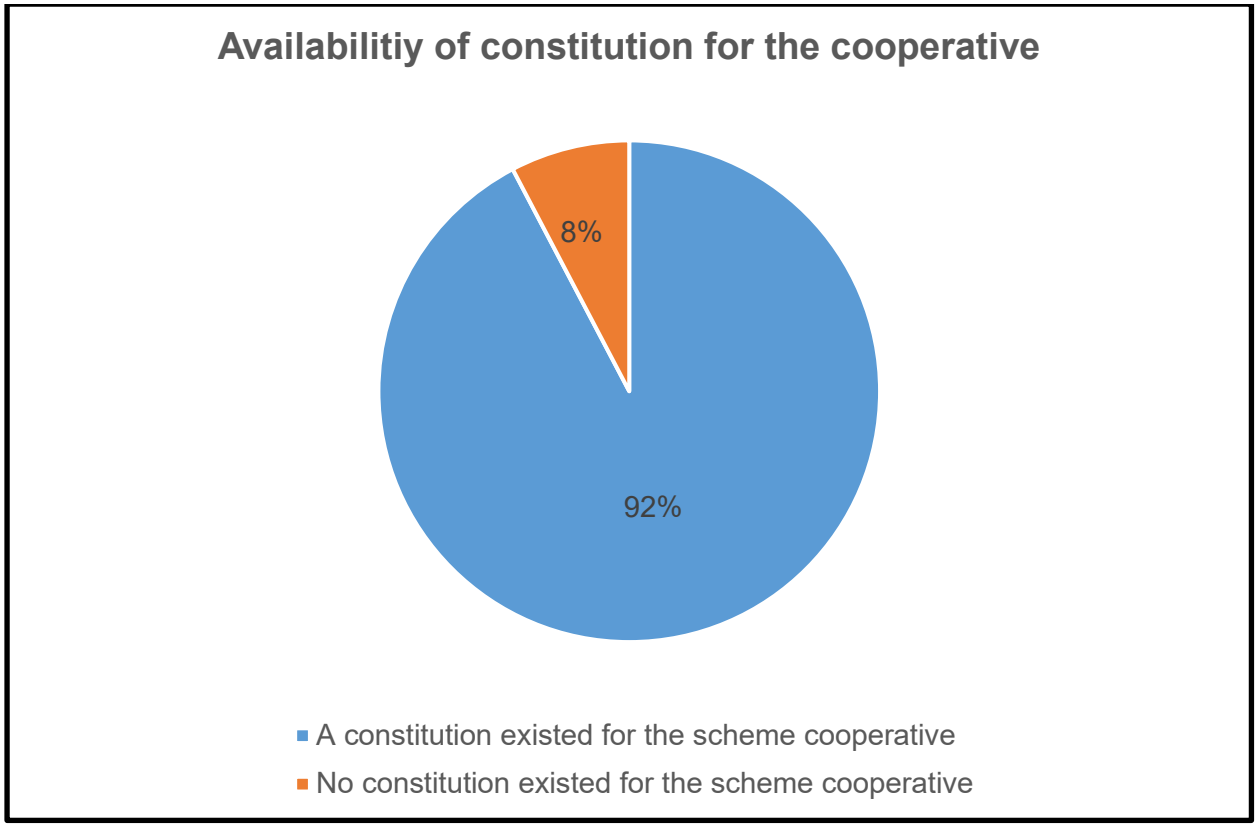


**Figure 4-6**. Availability of the constitution for the farmers' cooperative.

Figure 9 shows that 92% farmers indicated the farmers used to meet with the strategic partner more than 5 times a year. The farmers indicated that their grievances were deliberated on during those meetings, even though there was no implementation. However, most farmers pointed out that, lack of open communication amongst the tripartite alliance partners resulted in unresolved issues building up; such as the issue of mistrust surrounding the sales of produce from the scheme.

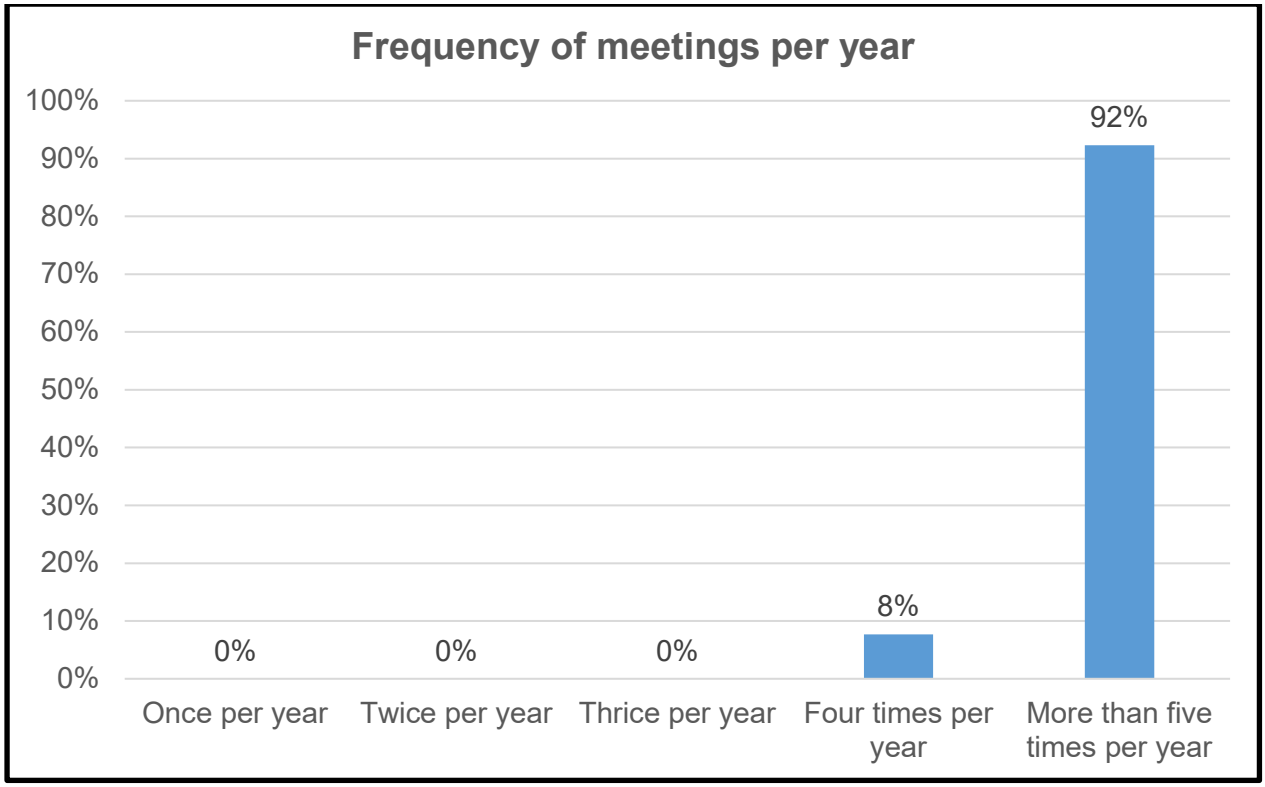


**Figure 4-7**. Frequency of meetings held per year between the farmers and the Strategic Partner

Figure 10 indicate that 77% of the smallholder irrigation schemes farmers received dividends once a year and that depended on the crops grown and the harvest made on that particular year. While 23% of the smallholder irrigation schemes indicated that they did not receive any dividends or proceeds from the cooperation, rather they were always told that there were no profits realized in that particular year.

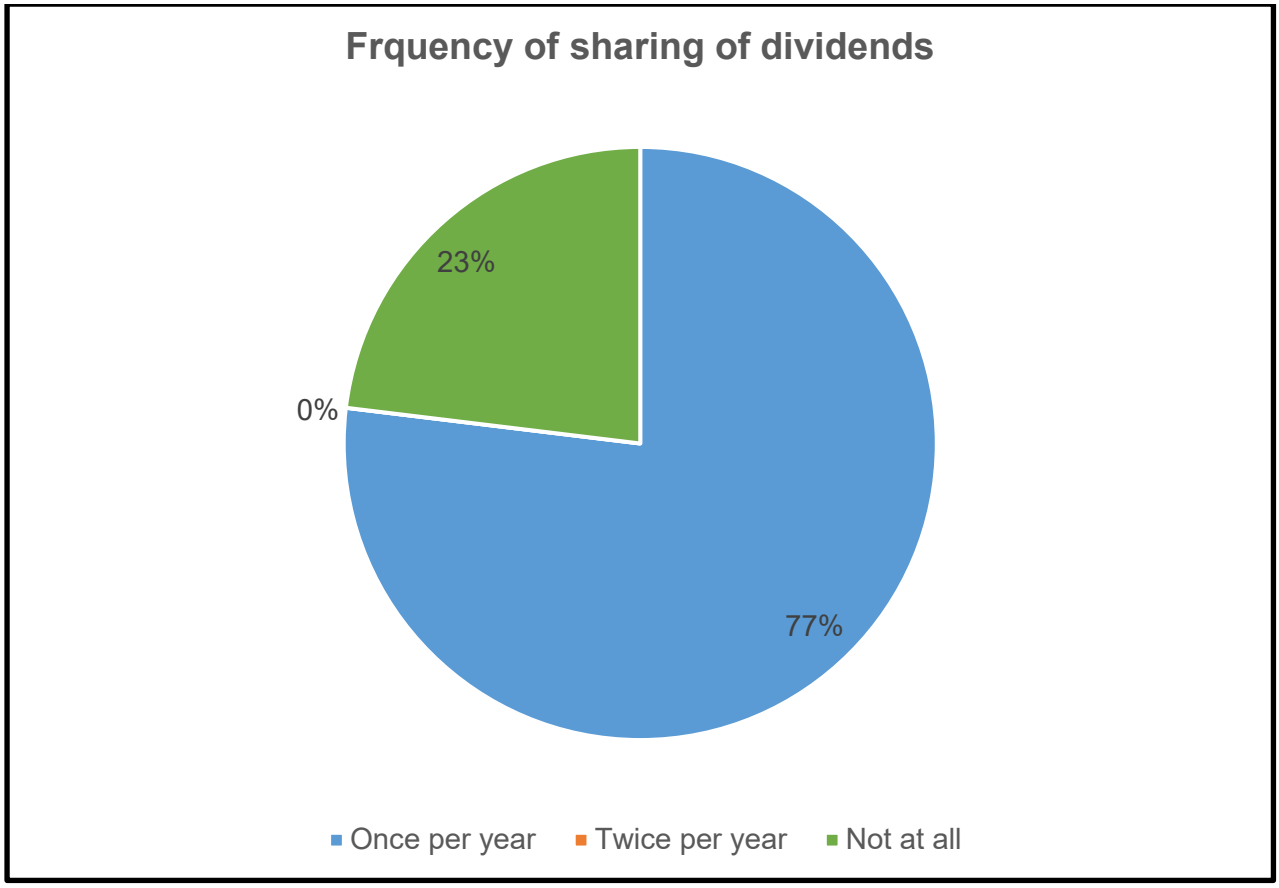


**Figure 4-8.** Frequency of sharing of dividends at the smallholder irrigation schemes

#### 4.1.2.5 Crop selection and management

Figure 11 indicate that farmers in six (6) irrigation schemes indicated that they were 'told' of the types of crops to be grown the following season. Thus, the strategic partner was the one who decided on the crops to be grown in a particular year. While farmers in eight (8) irrigation schemes indicated that they were not even consulted neither or be told on the crops to be grown in particular year.

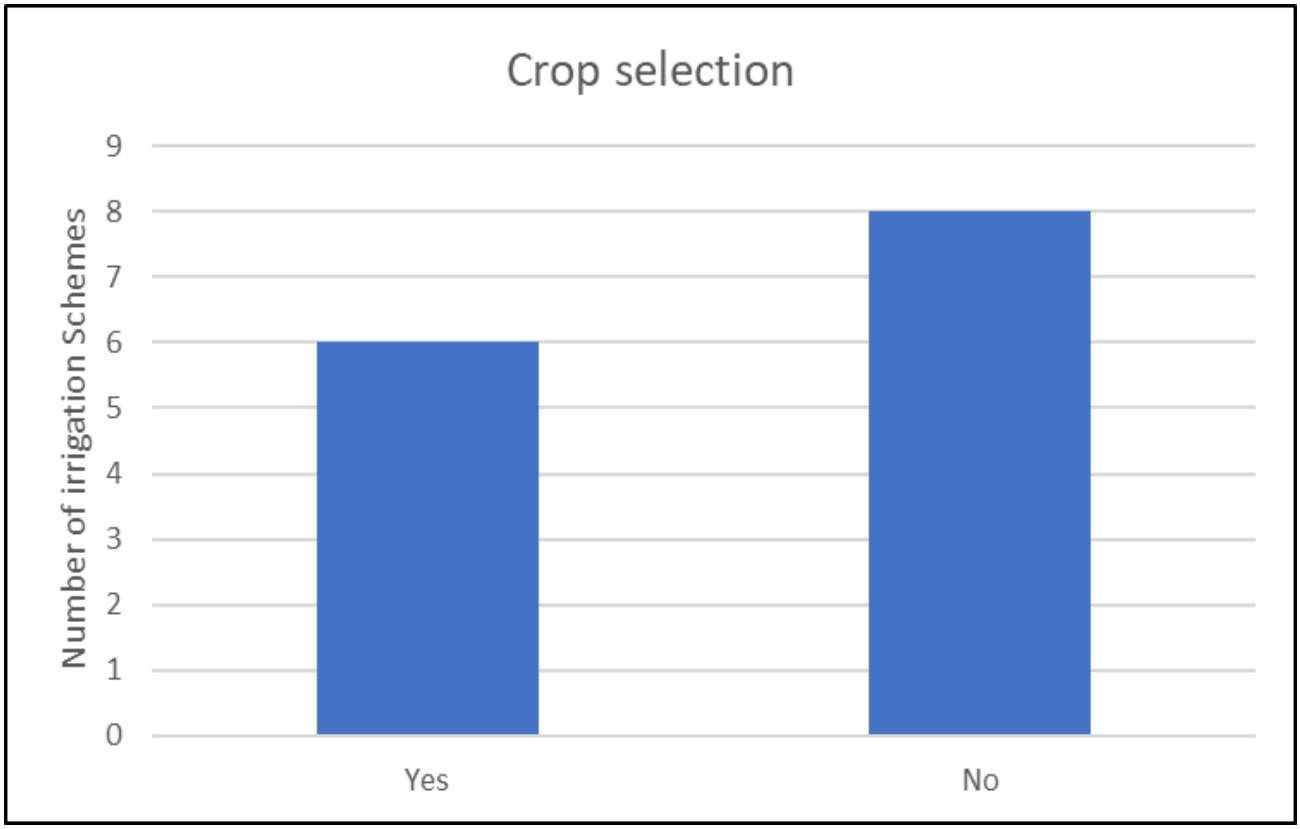


**Figure 4-9**. Involvement of smallholder irrigation farmers in the selection of crops for the farm.

Furthermore, the farmers pointed out that the type of the irrigation system (mainly floppy and center pivots) posed challenges since it limited crop choice and further limited farmers' ability as regards choice of crops. The irrigation system suited crops chosen by the strategic partner because of his initial market contract arrangements. This created dependency as the farmers could not continue on their own because they could not finance production. Specifically, the production costs for potatoes are beyond farmers' means.

#### 4.1.2.6 Farmer training and skills transfer

One of the conditions for the strategic partnership programme is that the farmers 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 farmers is through the interaction with the knowledgeable strategic partner on their daily farming activities. Skills transfer, farmer training and mentorship was one of the main objectives of strategic partnership programme from the onset.

Of all thirteen (13) smallholder irrigation schemes visited and studied, 77% of the farmers indicated that they received training programme (see Figure 12). The farmer training programmes that were received by the farmers were:

- Production of potatoes and maize crops,
- Operation of irrigation systems,
- Pest control,
- Farm management,
- Problem solving skills,
- Maintenance of tractors and irrigation management.

The trainings were done right at the beginning of the programme.

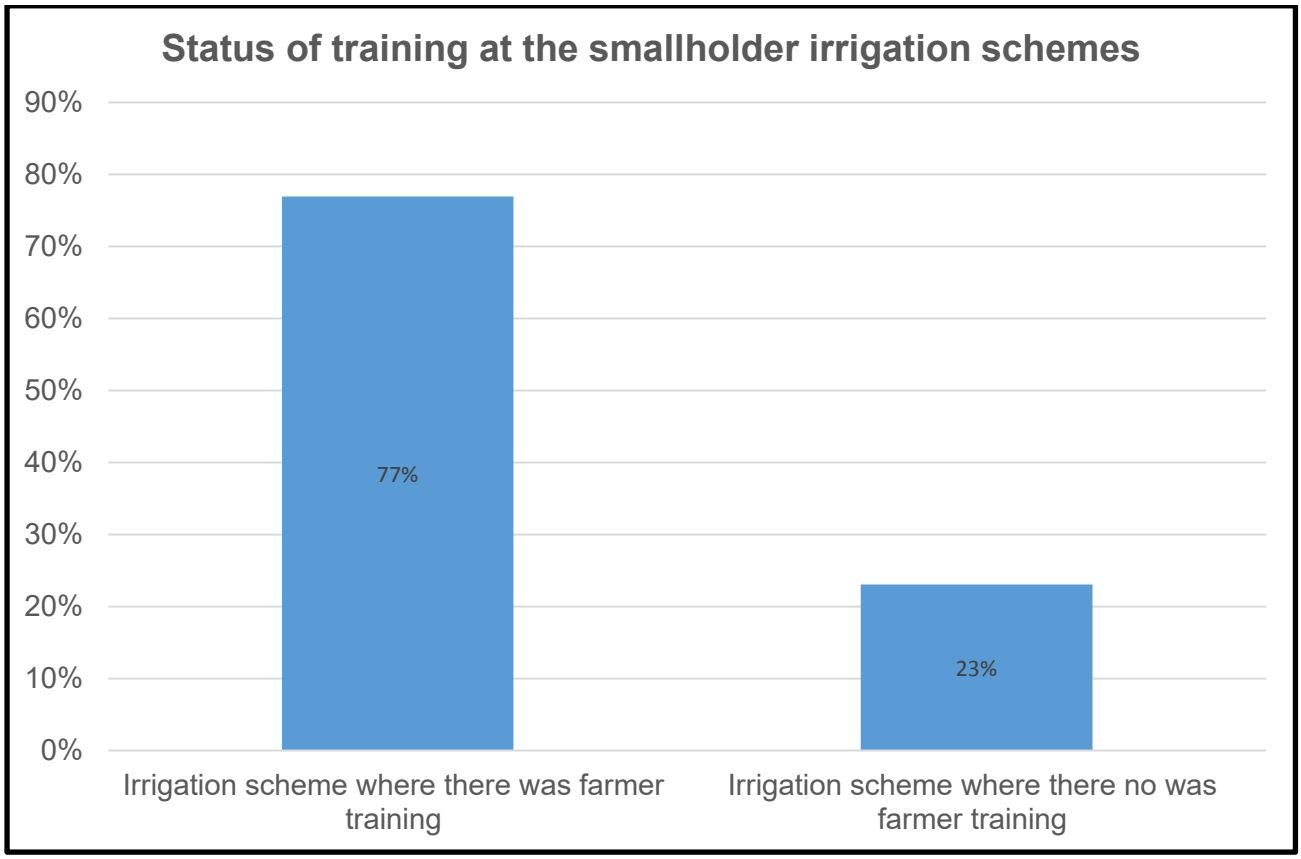


**Figure 4-10.** Status of farmer training and skills transfer at the smallholder irrigation schemes under SPP.

However, there was no skills transfer and mentorship programme that was carried out by the strategic partner at all for all smallholder irrigation schemes farmers. The farmers indicated that the strategic partner did not want them to touch and implement

nor any irrigation equipment. It therefore defeated the whole SPP as planned by the LDA and government of South Africa.

#### 4.1.2.7 Finance matters for the irrigation scheme

The study indicated that 86% of the smallholder irrigation farmers agreed that there was a contractual arrangement on the profit-sharing ratio between the farmers and the strategic partner. Predominantly, the ratio was 51% for Strategic Partnership and 49% for the farmers.

All the farmers indicated that there was a Joint Venture bank account that was used for all financial transactions.

However, 69% of the smallholder irrigation farmers indicated that they had no access to financial records (see Figure 13). That resulted in a serious lack of trust by the farmers in the whole strategic partnership programme.

Furthermore, 31% of the farmers indicated that even though there was a profit-sharing ratio in the contract, that was not followed as per the letter. All these factors worked against the strategic partnership programme as rolled out by the LDA.

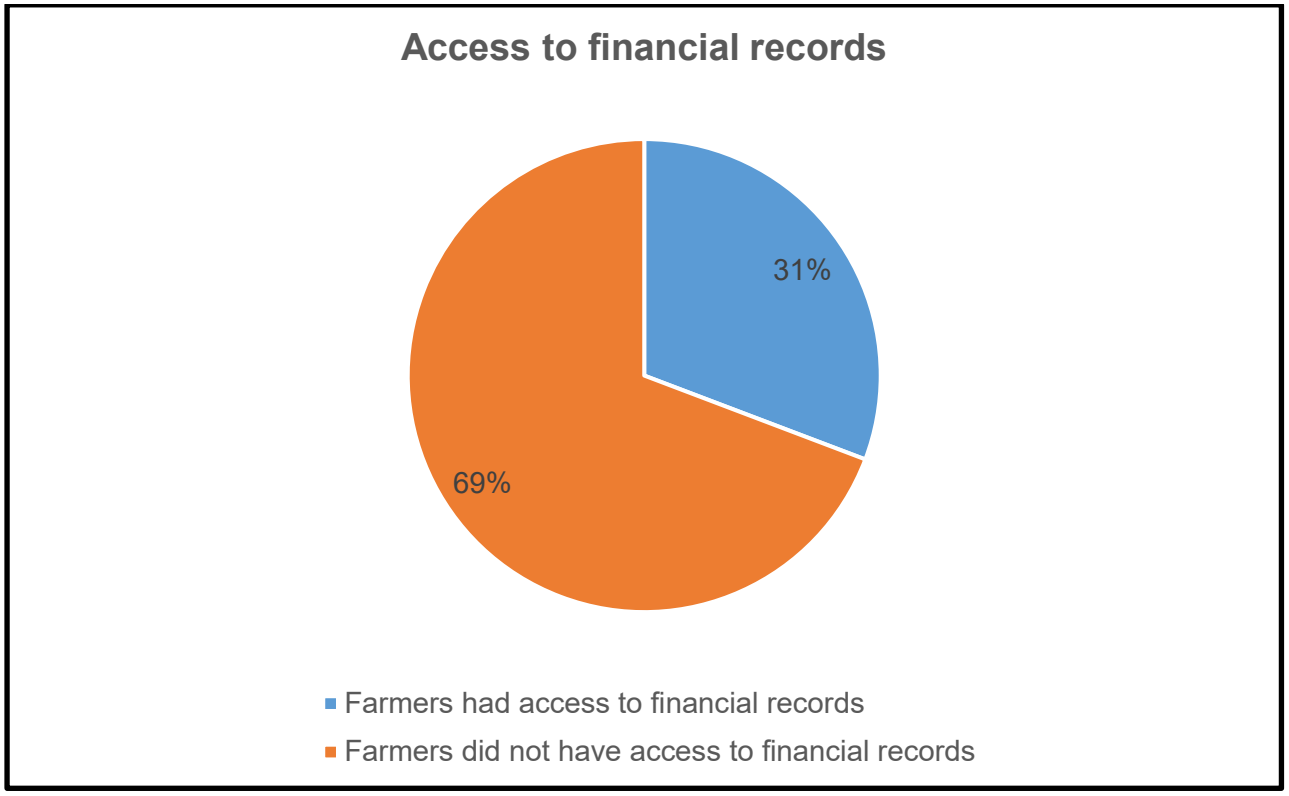


**Figure 4-11**. Status of access to financial records for the SPP at the smallholder irrigation schemes.

About 86% of the farmers revealed that despite all the financial problems that existed in the smallholder irrigation schemes, the LDA could not intervene to try and solve the problem.

#### 4.1.2.8 Markets and accessibility

The results of the study revealed that the marketing of the crops was done exclusively by the strategic partner. The smallholder farmers did not take part in marketing the farm produces at all. That means that the farmers were not involved in the selling price of the farm produces and it is possible that they could not know the selling price of the farm produces. Furthermore, the study revealed that only 23% of the farmers had a role in the marketing of the crops as shown in Figure 14 below.

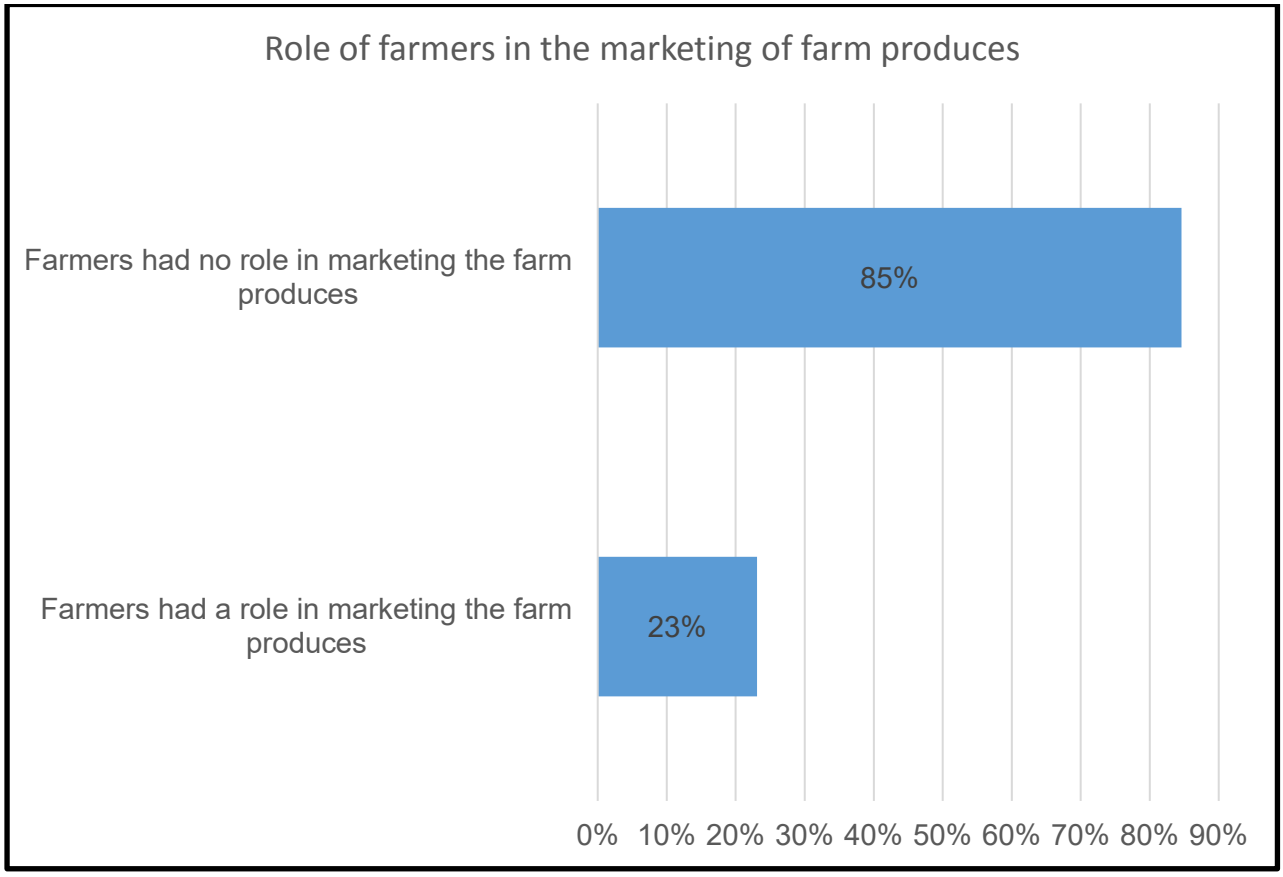


**Figure 4-12.** Role of smallholder irrigation farmers in the marketing of farm produces

All the farm produces from the smallholder irrigation schemes under the strategic partnership programme in Limpopo Province were sold at the formal markets which included Johannesburg Fresh Produce Market, Tshwane Fresh Produce Market, Rand Agri and formal auction floors.

It was the responsibility of the Strategic Partner to transport farm produce and production inputs for the farm.

The study revealed that 71% of the farm access roads were in good condition. In other words, the condition of the farm roads could not be blamed for the failure of the smallholder irrigation schemes that were under the SP programme in Limpopo Province.

#### 4.1.2.9 Communication between the farmer and the Strategic Partner

The study revealed that the only communication channel that existed between the smallholder irrigation schemes farmers and the strategic partner was through formal meetings.

Furthermore, the study showed that 50% of the smallholder irrigation schemes had dispute resolution mechanisms that were put in place.

#### 4.1.2.10 Irrigation system used by smallholder irrigation schemes under SPP

**Type of irrigation system used before RESIS**

Figure 15 below gives an indication of the type irrigation system that was used by the farmers before LDA introduced the RESIS and the strategic partnership programme. It can be observed from Figure 15 below that 43% of the farmers practised furrow or surface irrigation method.

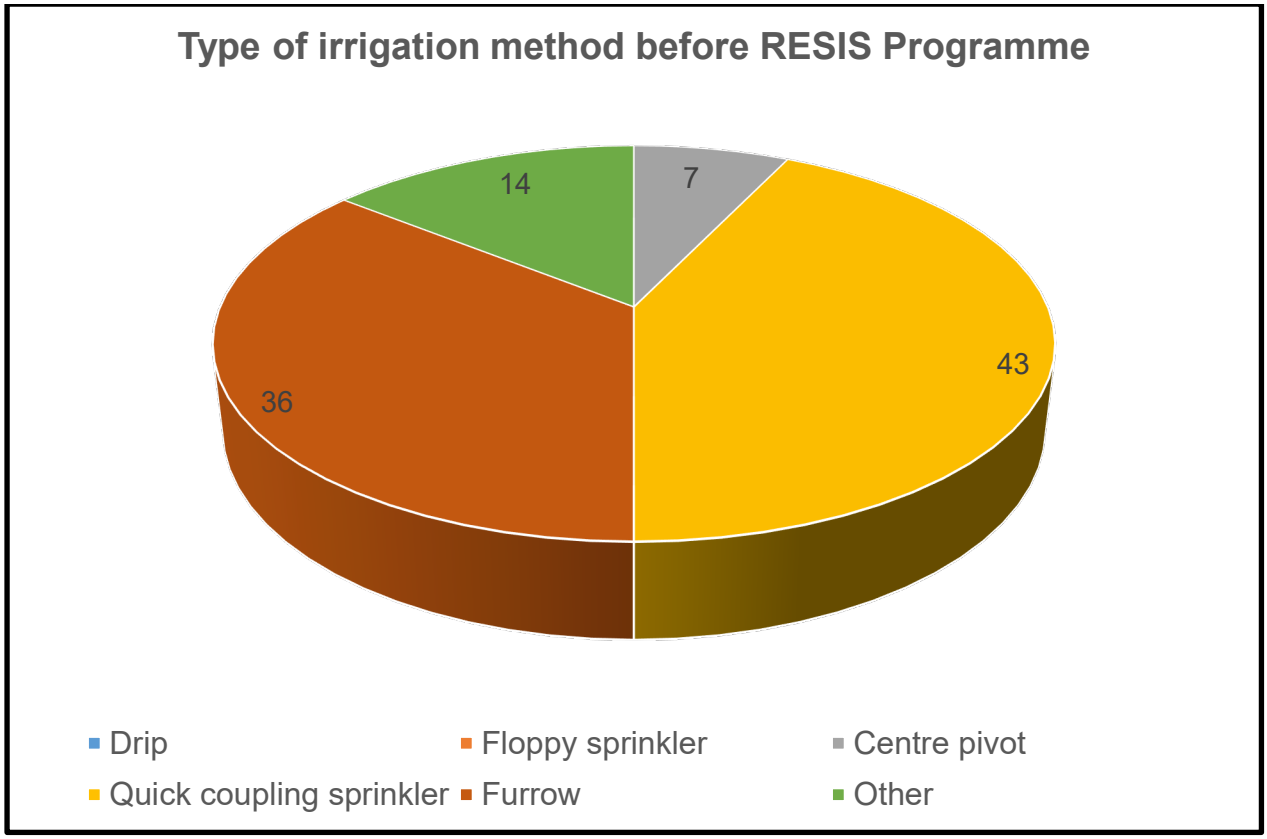


**Figure 4-13.** Type of irrigation system on the smallholder irrigation schemes before the implementation of the RESIS programme

The quick coupling and furrow irrigation systems made a combined total of 79% of the irrigation method practised by the farmers.

The study further revealed that 71% of the farmers were not happy with the type of irrigation system that was used before RESIS programme. The reasons why the smallholder irrigation schemes farmers did not like the irrigation method in the scheme then are as follows:

- Not water efficient
- Labour intensive but worked well
- Labour intensive as pipes had to be carried around

However, 29% of the farmers indicated that they were happy with the irrigation method which was on the farm before RESIS and gave the following reasons:

- It was suitable to divide into individual plots per family,

- The method enabled the farmers to irrigate at their own time
- Some indicated that initially they were satisfied but due to improper irrigation schedule conflicts arose which caused dissatisfaction
- No limitations with crop selection

**Type of irrigation system used after RESIS**

It can be observed in Figure 16 that the type of irrigation method that was installed for the smallholder irrigation scheme farmers was predominantly floppy and centre pivot irrigation systems with a combined total of 93%.

However, 57% of the farmers were happy with the type of irrigation system after RESIS. The main reason the smallholder farmers liked the floppy and centre pivot irrigation system was that they are easy to operate. The study revealed that 43% of the farmers did not like the floppy and centre pivot irrigation systems because they do not permit farmers to have individual plots.

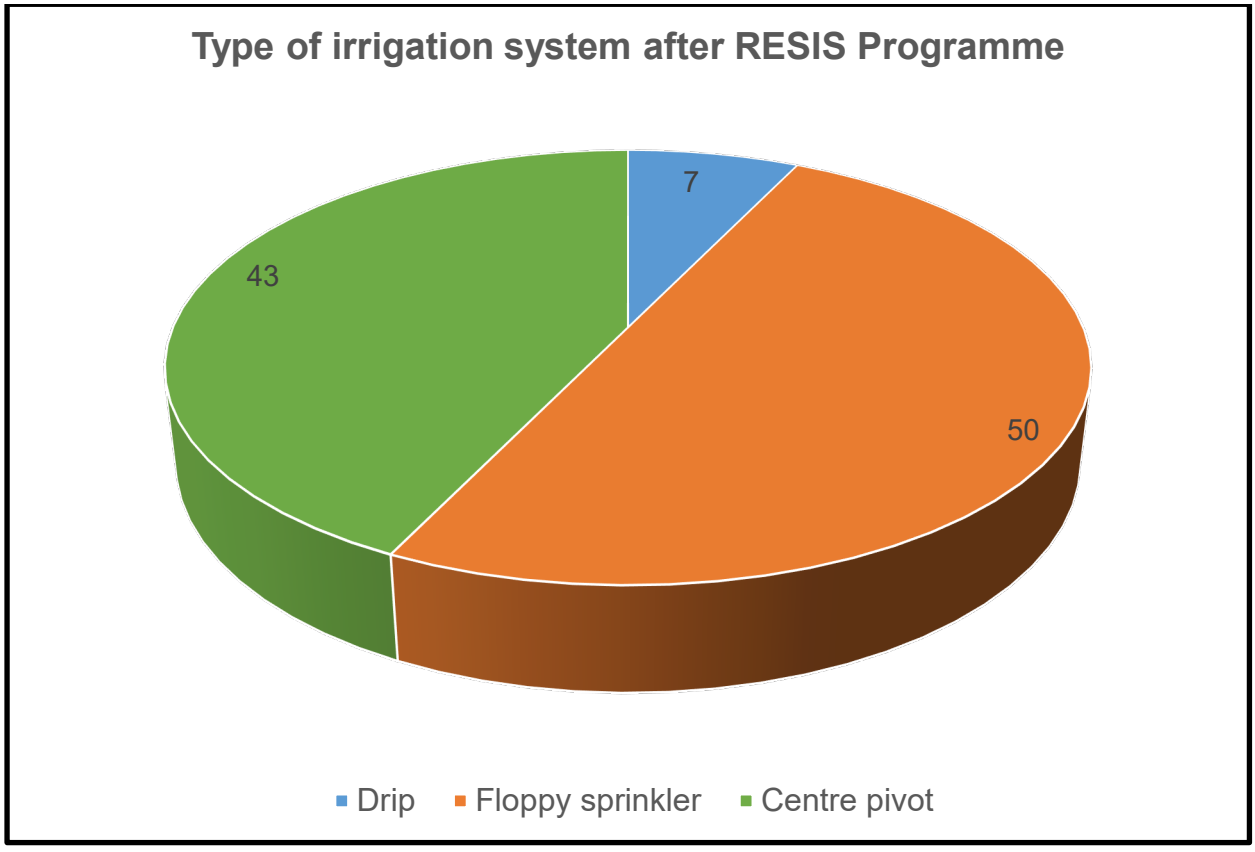


**Figure 4-14**. Type of irrigation system after RESIS programme.

**Preferred type of irrigation system for smallholder irrigation schemes under SP**

The study was not clearly outright in terms of the most preferred type of irrigation system most preferred by the smallholder irrigation farmers in Limpopo Province. Figure 17 show that 36% of the farmers preferred the drip irrigation system as compared to the other type of irrigation systems.

The study further revealed that 71% of the smallholder irrigation schemes farmers were not involved nor were they consulted in the selection of the type of irrigation scheme for their farm.

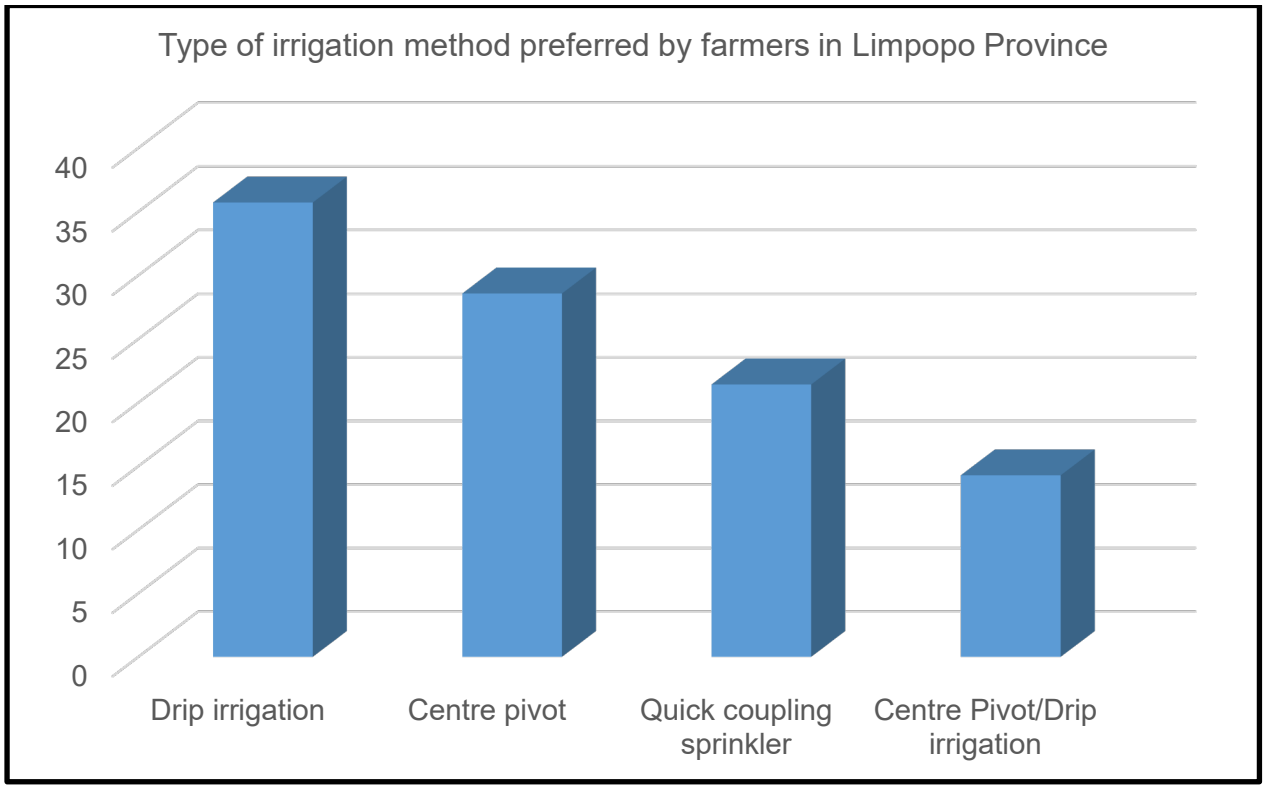


**Figure 4-15**. Type of irrigation system preferred by smallholder irrigation scheme farmers in Limpopo Province

**Role in the management and operation of the irrigation systems**

The study showed that 64% of the smallholder irrigation farmers were not involved in the operation, maintenance and management of the irrigation system on their farms. That was done by the Strategic Partner.

**Servicing and maintenance of irrigation system**

Figure 18 below shows the outcome of the investigation into the maintenance and servicing responsibilities for the irrigation system at the smallholder irrigation schemes under the Strategic Partnership programme of Limpopo Province. The study revealed that at 86% of the schemes, it was the Strategic Partnership who carried out the maintenance and servicing of the irrigation infrastructure at the farms.

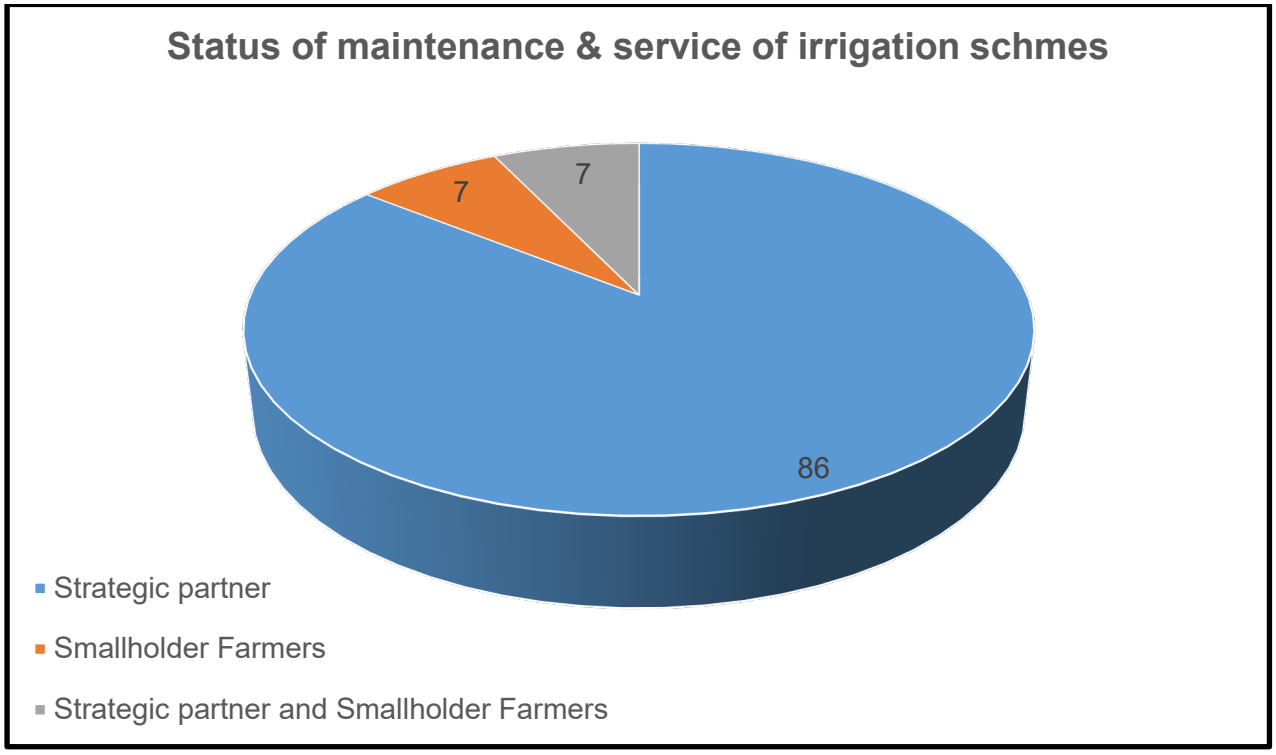


**Figure 4-16**. Status of maintenance and servicing of irrigation schemes at the smallholder irrigation schemes under Strategic Partnership programme in Limpopo Province

### 4.1.3 Factors that caused the failure of the smallholder irrigation schemes under the Strategic Partnership programme.

The study revealed that the following were the main factors which affected the performance of smallholder irrigation schemes under Strategic partnership programme:

- The farmers were not involved in the identification and selection of the Strategic Partner

- The farmers were not involved in key farm decisions such as crop selection, marketing of the farm produce,
- Farmers were not involved in the selection of the irrigation method
- There was no transparency in financial matters and records, production sales records and farm outputs
- The farmers were not involved in the marketing of the farm produces
- The smallholder irrigation farmers were not involved in the farming activities and operation which meant that there were no skills transfer and mentorship
- There were no skills transfer, with farmers reduced to either being workers or being on the side line

All these inevitably led to a lack of trust from the smallholder irrigation scheme farmers, division amongst farmers and consequently conflicts which resulted in some irrigation schemes collapsing and being vandalised.

Furthermore, the study showed that the cooperative approach where all farmers work on the land may not be the most suitable method for smallholder irrigation schemes. The following section seeks to identify the most suitable interventions that can be implemented to improve the performance of smallholder irrigation schemes in Limpopo Province.

### 4.2 Outcome of the feedback from stakeholder workshop

The following constitute the summary of stakeholder workshop feedback workshop:

- The findings of the study as presented were well known by them as they work in the areas where the schemes are located.
- The proposed farmer centered models can work but there is need to understand the current challenges experienced by the farmers and what changes would the farmers need to make so they are able to be assisted and eventually stand on their own.
- The smallholder irrigation schemes are owned by farmers who had no interest in farming in the first place. The current farmers inherited the schemes from their forefathers. In other words, the feedback workshop participants are querying the selection process that was followed in the identifying the benefitting farmers.
- The farmers on the schemes old and do not understand the issues of marketing and other business factors. They indicated that there is a need to profile the farmers before they can invest in the schemes.
- The floppy irrigation infrastructure for Boshielo dam smallholder irrigation schemes have been completely vandalised. These are some of the schemes that proposed models can be piloted.

- The traditional authorities interfere in the irrigation schemes, which causes conflict and discourage the department from investing in the schemes.
- The Limpopo Department of Agriculture accepts the responsibility in terms of lack of consultation with the farmers as the top-down approach was used during the schemes development. The stakeholders indicated that where the participatory extension approach was used and where the farmers were involved, these smallholder irrigation schemes have continued to operate well.

### 4.3 Possible interventions and proposed models

Based on the findings of the study and the engagements with farmers and government officials through the stakeholder feedback workshop allowed for the identification of the most preferred methods that can be used in the revitalization of the smallholder irrigation schemes that were under the strategic partnership in Limpopo Province. The preferred methods as crystallized from the stakeholders are as follows.

The preferred methods as proposed by the stakeholders are as follows;

- Sub-division of the smallholder irrigation schemes into individual plots within the schemes managed by a family unit or an individual.
- Using an irrigation system (drip or sprinkler irrigation systems) that is collectively owned and managed by the farmers which enables irrigating of individual plots within the scheme. Each farmer in the scheme will irrigate as and when they want to do so.
- Leasing the farm to private entity where smallholder farmers are not involved in the farming operations and collect rent for use of the land.
- Farmers managing the scheme under the assistance and guidance of the agricultural advisors from LDA linked to the AgriPark Concept.
- Farmers to employ a Farm Manager to manage and operationalize the scheme linked to the AgriPark Concept.
- Strategic partnership that is closely managed by LDA.

The sections to follow deals in detail with each of the above proposed methods as models that can be used in the revitalization of the smallholder irrigation schemes that were under the strategic partnership in Limpopo.

### 4.3.1 MODEL 1: Sub-division of farms into plots

#### 4.3.1.1 Smallholder farming and plot sizes: worldwide review

Agricultural economists and other development specialists generally agree that investing in agriculture is an effective strategy for reducing poverty, inequality and hunger, especially in countries where the sector employs a large share of the population (Lowder et al., (2016). There is considerable debate regarding what type or scale of agriculture should be promoted in order to achieve these goals most effectively (Larson, 2014, FAO, 2012). Many advocates emphasize the importance of ‘‘smallholder farming” or ‘‘family farming”, with claims often made that smallholder or family farms are responsible for a large share of the world’s food production or that a large share of the food consumed in Africa and Asia is produced by smallholders in those regions (IFAD & UNEP, 2013). The terms smallholder and family farm are often used interchangeably or in combination without clear definitions. Lack of clarity regarding terminology as well as the basic composition and diversity of the agricultural sector is a serious barrier to effective policy dialog.

Lowder et al. (2016) showed that there are more than 570 million farms worldwide, most of which are small and family-operated. It shows that small farms (less than 2 ha) operate about 12% and family farms about 75% of the world’s agricultural land. Rapsomanikis (2015) indicated that in China, nearly 98 percent of farmers cultivate farms smaller than 2 ha – the country alone accounts for almost half the world’s small farms. In India about 80 percent of farmers are small. In Ethiopia and Egypt, farms smaller than 2 ha constitute nearly 90 percent of the total number of farms. In Mexico, 50 percent of the farmers are small; in Brazil smallholders make up for 20 percent of the total number of farmers. In Tanzania, a country where agriculture contributes towards 28 percent of the GDP and 73 percent of the population lives in the rural areas, there are about 3.7 million smallholdings (those smaller than the middle-size farm threshold of 2.2 hectares), which make up for 80 percent of total farms (Figure 1.2). Furthermore, Rapsomanikis (2015) smallholder families live in farms which in many countries are significantly smaller than 2 ha. The average size of a smallholder farm in Bangladesh and Viet Nam is 0.24 and 0.32 hectares respectively. In Africa, smallholder farms can be relatively larger, but only marginally. Kenyan smallholders farm 0.47 hectares and in Ethiopia the average small farm size is 0.9 hectares. In Latin American countries, smallholder farms often tend to be over 2 hectares, as in Nicaragua where the average small farm size is 5 hectares. But this is not always the case. In the Plurinational State of Bolivia, small farmers cultivate on average, 0.89 hectares.

The average farm sizes hide significant productivity differences across countries. These differences arise due to soil quality, technologies used at the time, type of

farming enterprise (livestock farming, maize or wheat farming, vegetable farming, etc.) and productive assets, such as irrigation.

#### 4.3.1.2 Sub-division of farms into family managed plots

South African agriculture has the appearance of being sophisticated and highly successful. A closer look at the present structure and performance of South Africa's agricultural sector, however, reveals that despite the appearance of efficiency, the sector has followed a pattern of growth that is far from normal (Van Zyl et al., 1999). Although agriculture is generally characterized by constant returns to scale and an inverse relation between farm size and productivity, the sector is dominated by relatively large farms that are owned and operated by a comparatively small number of individuals. International evidence indicates that a large-scale mechanized farm sector generally is inefficient, especially when compared to small-scale family type farm models. Although there may exist very real economies of scale, they are mostly 'false' because they are usually the result of policies which favour larger farms over small farms (Van Zyl et al., 1999).

Obi and Ayodeji (2020) concluded that while farm size was a key determinant of economic efficiency in maize production, its effect on technical efficiency was still contested. Their findings suggested that farmer support should be prioritized, and the government’s efforts to make farmers more productive should emphasize gender equity and optimal use of land.

#### 4.3.1.3 Imperativeness of skilled and experienced agricultural extension workers.

Since time immemorial, agriculture has been and continues to be the mainstay of rural economies in sub-Saharan Africa and throughout the developing world. Agriculture in South Africa is one of the priority sectors, and is considered a key engine for economic growth, sustainable development and self-sufficiency (DAFF, 2005). Its aim is to increase food security and reduce poverty by supporting the effort of smallholder farmers at household level in rural areas where the economy is largely agro based. Smallholder farmers are important drivers of the agriculture sector in these areas as they grow most of the food. These farmers, who are endowed with limited resources, have become the mainstay of food supply for millions of people in South Africa, and this situation is likely to progress for several years. The long-term goals of the agricultural sector in South Africa are to improve food security and reduce poverty by supporting the efforts of smallholders to increase agricultural productivity (DAFF, 2011). Despite all the government’s efforts and well-intended policies, there is ample

evidence that there has been very little progression and productivity of subsistence farmers in South Africa.

According to Abdu-Raheem and Worth (2011), one avenue towards realising this is through smallholder agriculture, which can be fostered through appropriate agricultural extension, education and training (Raidimi and Kabiti, 2019). The findings of the study carried out by Raidimi and Kabiti (2019) revealed that agricultural extension can contribute to sustainable food security through knowledge dissemination to farmers, for informed decision making. However, for the extension personnel to be better equipped for knowledge dissemination and to realise the goal of sustainable food security, sustained agricultural extension human resource development through investment in education is a prerequisite.

In a study carried out in Ghana, Danso-Abbeam et al. (2018), reaffirmed the critical role of extension programmes in enhancing farm productivity and household income. It is, therefore, recommended that agricultural extension service delivery should be boosted through timely recruitment, periodic training of agents and provision of adequate logistics.

Agricultural extension (also known as agricultural advisory services) plays a crucial role which may include some of the following (Živković, D et al., 2009; Zwane, 2012):

- ✓ Boosting agricultural productivity particularly for smallholder farmers,
- ✓ Increasing food security,
- ✓ Improving rural livelihoods, and
- ✓ Promoting agriculture as an engine of pro-poor economic growth.
- ✓ Promote and facilitate innovation and adoption of best farming practices
- ✓ Strengthen the business and technical skills of smallholder farmers to increase the quality and Quantity of their farm products,
- ✓ Facilitates adoption and use of best technologies in agriculture,
- ✓ Increase farmers and agro-dealers awareness of market opportunities, helping to link them to existing market channels

Extension provides a critical support service for rural producers meeting the new challenges confronting agriculture: transformation in the global food and agricultural system, including the rise of supermarkets and the growing importance of standards, labels, and food safety; growth in nonfarm rural employment and agribusiness; constraints imposed by HIV/AIDS and other health challenges that affect rural livelihoods; and the deterioration of the natural resource base and climate change.

It therefore shows that with the adequate help from the Agricultural Advisory Services, smallholder irrigation farmers can improve their productivity.

#### 4.3.1.4 Schemes managed by farmers using individual plots

The model requires the scheme to be divided into individual plots within the scheme owned and managed by individual farmers or families. The individual farmer or family will decide on the crops to grow, marketing, and other farming operations in their plots without disturbing the farming operations of other farmers in the scheme. To ensure the organisation of the farmers in the scheme, the farmers will form and register a cooperative or an entity. A representative management committee consisting of farmers will be formed to run the affairs of the scheme with clear terms. The management committee will run the farm or other business on the land on behalf of all the farmers and deal with conflict between farmers in the scheme. The committee will also consist of the agricultural advisor who will advise on various activities on the scheme. The agricultural advisor will be allowed to advise individual plot farmers based on the invitation of the committee and schedule. The roles of the management committee, farmer and agricultural advisor is outlined below.

**The role of the management committee**:

- The elected management committee should at least have knowledge or experience with project management.
- The management committee elected will manage issues that are of common interest such as irrigation scheduling, payment of electricity bills and other services.
- The management committee can also facilitate common marketing, transporting of production inputs and farm produce. This will take advantage of the economies of scale.
- The management committee will keep record of all meetings and farm records
- The management committee will resolve all disagreements between members.

**The role of the farmers**

- The farmers farm and operate their own individual plots independently.
- The individual farmers will be responsible for the risk management of his/her own plot not excluding the whole irrigation scheme
- The farmers will make their own decisions in terms of the crop to grow.
- The farmers will be responsible for the marketing of their crops and transporting the produces.

- The farmers will be responsible for managing the irrigation infrastructure in their plots.
- The farmers will make contributions for the payment of the water and electricity bills.

**The role of LDA**

- The LDA through its district officials will play an oversight role in the formation and registration of the cooperative, creation of the specific project constitution and supervise the implementation
- The LDA will support to revitalise the schemes once more where the infrastructure will be revived.
- The LDA will advise in the selection of preferred irrigation system to be used by farmers to cater for the individual plots
- The LDA will provide experienced Agricultural Advisory Officers who will be assigned to each scheme to offer immediate assistance and guidance.
- LDA will be available to assist with marketing and transporting
- LDA will offer regular courses in marketing, farm and financial management

### 4.3.2 MODEL 2: The use of general farm manager

The irrigation scheme will establish an operating entity which will be wholly owned by famers. The farmers will be responsible for all operational and capital expenditure on the farm. The general farm manager or Mentor will be responsible for all the management and operations of the farm. Furthermore, the general farm manager will earn a percentage of the farm profits as commission. The general farm manager will sign a management/mentorship contract with the operating company which will serve as a service level agreement. The contract should outline the service that the general farm manager is supposed to render to the operating company.

In all the cases, skills transfer to the farmers should be priority in order to prepare the landowners to take over operations at an appropriate time. This is the reason why there should be a mentee or shadow managers during the term of the general farm manager. The farmers are encouraged to embrace corporate governance principles in managing their farm business. The operating entity will then establish a Board of Directors. The general farm manager will report to the board on a regular basis. The general farm manager, with the approval of the board will appoint sectional managers, supervisors/foremen and general workers. To ensure proper governance and accountability, the board may establish sub-committees such as HR, Audit and Remuneration committees. Whilst the employment of a general farm manager can overcome the challenges of joint decision-making and address the lack of experience

found in collectives, they also do not guarantee success owing to insufficient capital to operate, maintain and expand the business; the inability of the general farm manager to raise the funds needed for investment and operating capital. Without the required capital, farmers become disappointed owing to the absence of results and suspicious of the management agent/general manager/mentor.

**Advantages of this model**

1. Farmers own 100% of the company and all the dividends accrue to the farmers
2. Farmers, through representation in the board will influence the affairs of the company
3. The general farm manager will bring and transfer technical/production management skills into the farm operations.
4. The general farm manager brings and transfer financial management skills into the farm operations.
5. The general farm manager brings and transfer personnel management skills into the farm operations.
6. The general farm manager brings and transfer marketing and marketing management skills into the farm operations.
7. The opportunity to obtain third party financing due to well managed farming operations.
8. The fact that the manager earns a percentage of the farm turnover as commission will be an incentive for the manager knowing that if there is no farm income, then his total package will be affected.
9. The general farm manager may use his own asset base to secure third-party finance (loans/overdrafts) on behalf of the operating company. The loans/overdrafts will be repaid by the operating company. An incentive of this risk-sharing regime is that the manager/management agent/mentor will work hard for the farm to make profit in order for the loan to be repaid because his/her name is at stake with the financier.

**Disadvantages**

1. Farmers tend to depend on government funding programmes for their farm business operations. Government funding may not be available as and when required
2. Farmers may not have sufficient asset base to attract external funding/overdraft
3. The temptations by farmers to interfere with good plans of the farm manager/management agent/mentor

**The role of the general farm manager**

- The day to day running of the farm operations
- The preparation of detailed annual budgets and draft five-year Business Plans for approval by the Board for the first financial year as well as before the start of the second financial year as outlined
- Submission of quarterly progress reports for Board meetings;
- Submission of monthly management reports
- The supervision and maintenance of adequate records and books of account by the company;
- The provision to the shareholders of the audited annual financial statements for the Company;
- The reconciliation of the Company's debtors and creditors.
- The administration of personnel including, but not limited to, appointments, promotions and training;
- The arranging of meetings of office bearers and committees of the Company and the keeping of minutes at such meetings;
- The mediation and resolution of labour disputes;
- The training of employees and particularly the training and education of beneficiaries of the CPA in order that the said beneficiaries will be able to take role in the management of the Company in future.
- Development of strategic plans for submission to the Board, including new expansions.
- Implementation of strategic plans as approved by the Board.
- Negotiations of contracts with major clients;
- Negotiation and establishment of marketing opportunities;
- The development of new marketing materials, forms and stationery.
- Detailed planning and implementation of the Project;
- Advice and assistance in implementing the best practices in the agricultural industry.

### 4.3.3 MODEL 3: Leasing out the farm

This is where the farmers engage a private entity where the farm is leased out. The farmers will have given up trying to run the farm or the business on their own and sees the farm degrading. The lease agreement is an attempt to stop the non-operation and degradation of the farms, retain jobs and get an income. This option is, therefore, applicable where farmers decide to rent out land to get rental income when they have been unable to produce other forms of incomes from the land. Other reasons may be that farmers are still sorting themselves out financially as well as setting up appropriate management structures for the farm business operation.

This option entitles farmers to benefit from their land only through lease and in some cases through employment where the lease contract should specify this condition. Straight lease option can be negotiated to include issues such as skills transfer, a percentage of turnover/profit that should accrue to farmers. But normally straight lease is just as its name say. The lessee gives out the farm from the private entity for a specified period under agreed terms and conditions, during which the owner vacate the land and the lessee farming for his/her own account.

Although lease agreements present important opportunities for smallholder irrigation farmers in Limpopo Province, the following challenges should be managed:

- Leasing the farm does not on its own produce new investment required to develop land belonging to farmers;
- It will be difficult for farmers to determine whether the lease fee is too low or the lease period too long. As a result, farmers may become suspicious as to whether a fair arrangement has been struck;
- A simple lessor/lessee arrangement does not improve the capacity of farmers to manage its property over time;
- If the business does not prosper, the lessee may struggle to pay the rent owed to farmers (alternatively, if the business does prosper, farmers may feel that they are not getting a fair share of the benefits.

There may be cases where farmers would want to lease part of their farms and utilise the other part for their own purposes. The purpose of this arrangement is for farmers to get rental on part of the leased land and use the money so obtained to fund activities on their own operations. The lease arrangement may, for instance, stipulated that 70% of the land is leased and 30% is used by farmers. In this case, the condition in the lease may reflect that the lessee on the 70% of land should play a mentorship role to farmers to prepare them for a gradual takeover of the other land leased. The following can be used as an example:

Suggested lease arrangement for smallholder irrigation scheme farmers in Limpopo Province.

**Table 4-2**. Suggested lease agreements for smallholder irrigation schemes

| **Period** | **Portion of the farm leased out** | |
|---|---|---|
| | **Farmers** | **Lessor** |
| **Year 1** | 30% | 70% |
| **Year 2** | 40% | 60% |
| **Year 3** | 50% | 50% |
| **Year 4** | 70% | 30% |
| **Year 5** | 100% | 0% |

The lease contract should stipulate that throughout the gradual take over by the farmers, the lessee should continue to provide mentorship to farmers on additional land shifted to the farmers. There might, however, be a point during the takeover, where the lessee may be compensated for management provided depending on the amount of efforts put into the business of farmers, say when 50%-50% point has been reached.

**Advantages**

1. Farmers are certain of monthly income in the form of rent (risk-free or low risk income stream)
2. Farmers are not 100% exposed to the risk associated with farming.
3. Farmers will have an opportunity to acquire the necessary equipment and machinery which they will require once the farm comes back to them.
4. No external support by government will be required.
5. If carried out correctly, there will be enough skills transfer to enable the farmers to successfully run the farm after takeover.

**Disadvantages**

1. Farmers may not fully enjoy the benefit of receiving financial returns associated with farming turn-over. However, this may be addressed by a percentage of turn-over that should be incorporated in the lease agreement.
2. Farmers may not be involved in day-to-day management of farming operations on the farm and thereby delaying the process of skills acquisition. This may be addressed by an element of skills transfer that should be incorporated in the lease agreement.

### 4.3.4 Summary

This government supported smallholder irrigation schemes have common characteristics, and furthermore, they experience the same challenges which included amongst others the following:

- Lack of running capital by the members or beneficiaries,
- Conflicts among themselves,
- Most likely that the resource poor farmers are not yet ready to manage the irrigation schemes on their own,
- Consolidation of the farm units become a challenge instead of an opportunity due to their inability to manage institutional arrangement and good governance,

- Few /little or no interested strategic partners or investors,
- No trust between the parties due to lack of trust and transparency in dealing with operational issues,
- Where there is a strategic partner there is no skills transfer due to profit-oriented farming by most of these strategic partners, and that there is also no risk-sharing.

## 4.4 Opportunities for revitalisation of affected smallholder irrigation schemes

After the engagement with relevant stakeholders in the Stakeholders Feedback workshop where the outcomes of the study were presented, the following three (3) possible interventions or models and opportunities for the revitalisation of the smallholder irrigation schemes have been crystalised as presented in the table below.

**Table 4-3**. Proposed models for the revitalisation of the smallholder irrigation schemes.

| PROPOSED MODEL | MODEL DESCRIPTION | PLAN |
|---|---|---|
| **MODEL 1** | Farmer managed schemes using individual plots and assisted by Extension Officers | • Divide the schemes into individual plots, at least 2 ha in size<br>• Revitalisation of the irrigation infrastructure using either drip or sprinkler irrigation (quick coupling) installing individual control valves and flow meter for each plot<br>• Formation of cooperative or entity<br>• Formation of the management committee<br>• Assign experienced and dedicated Agricultural Advisors to each scheme to offer day-to-day assistance on crop production, scheme governance, marketing, sourcing of production inputs, conservation measures<br>• LDA district office to play an overall supervision and administrative role |
| **MODEL 2** | Lease Agreement | • Revitalisation of the irrigation infrastructure using suitable irrigation method for the selected crop<br>• Formation of cooperative or entity<br>• Formation of the management committee<br>• Identification and appointment of lessor in collaboration with the benefitting farmers<br>• The LDA to develop a lease agreement in consultation with the farmers<br>• The lease agreement must not be more than five (5) years and must provide clear terms of skills transfer with percentage cessation programme from the lessor to the farmers |

| PROPOSED MODEL | MODEL DESCRIPTION | PLAN |
|---|---|---|
| **MODEL 3** | Farmer managed schemes with assistance of Farm Manager | • Revitalisation of the irrigation infrastructure using suitable irrigation method for the selected crop<br>• Formation of cooperative or entity or operating company<br>• Formation of the management committee<br>• Appointment of general farm manager or Mentor<br>• The general farm manager will sign a contract with the operating company which will serve as a service level agreement.<br>• The general farm manager or mentor will be responsible for all the management and operations of the farm for a salary. Furthermore, the General Farm Manager will earn a percentage of the farm profits. The contract should outline the service that the general farm manager is supposed to render to the operating company. |

# 5 CONCLUSIONS

The following conclusions were made from this study:

- The Strategic Partnership programme for smallholder irrigation schemes in Limpopo Province was unsuccessful,
- All the smallholder irrigation schemes that were involved in the Strategic Partnership programme are not functional.
- The Limpopo Provincial government invested a lot of funds into these projects and there is need that a new strategy is developed that will make the irrigation schemes operational,
- The cooperative approach where all farmers must work together on the farm is not ideal, the plot per family approach must be utilised.
- The floppy or centre pivot irrigation system are not suitable for smallholder irrigation farmers of Limpopo Province
- The smallholder irrigation schemes that were involved in the strategic partnership programme have failed and can be revitalised
- Three (3) models were identified which can be used for the revitalisation of the smallholder irrigation schemes namely, subdivision of schemes into smaller units, lease agreements and through mentor
- The cooperative approach where all farmers must work together on the farm is not ideal, the plot per family approach is the most preferred by farmers.
- The floppy or centre pivot irrigation system are not suitable for smallholder irrigation farmers in Limpopo Province.

# 6 RECOMMENDATIONS

The following are the recommendations:

- That a “plot per family” model be used for the revitalisation of the vandalised smallholder irrigation schemes which were under the Strategic Partnership Programme of Limpopo Province.
- The drip or sprinkler irrigation method is the most suitable irrigation method for smallholder

## POSSIBLE FUTURE STUDIES

This study hereby proposes the following possible interventions for the improvement of performance of smallholder irrigation schemes in Limpopo Province and South Africa in general.

- A study on the performance of smallholder irrigation schemes using “plot per family” model to develop a comprehensive model.
- A study that identifies and quantifies the needs of each irrigation scheme to be operational.
- A study on the irrigation water needs of the smallholder irrigation schemes and socio-economic benefits.

# 7 REFERENCES


**AL-SHAABY A, AHMED A** (2018) How Do We Measure Project Success? A Survey. J Inform Tech Softw Eng 8: 229. doi: 10.4172/2175-7866.1000229.

**BABBIE, E & MOUTON, J**. 2001. The practice of social research. Cape Town:

Oxford University Press.

**DAFF**. 2015. Irrigation Strategy for South Africa. Pretoria, South Africa.

**BEMBRIDGE, TJ**. 2000. Guidelines for rehabilitation of small-scale irrigation schemes in South Africa. Water Research Commission, Pretoria, South Africa Report No. 891/1/00.

**COPELAND, MC (Ed.).** 1993. A Manual for irrigation planning in developing areas. Water Research Commission, Pretoria, South Africa.

**DEPARTMENT OF TRADE AND INDUSTRY**. 2012. Integrated Strategy on the Development and Promotion of Co-operatives: Promoting an Integrated Co-operative Sector in South Africa 2012-2022.

**DUBE, HN**. 2016. Vulnerabilities of rural agricultural co-operatives in Kwazulu-Natal: A case study of Amajuba district, South Africa. MCom thesis, Graduate School of Business & Leadership, UKZN.
https://researchspace.ukzn.ac.za/bitstream/handle/10413/14243/Dube_Hlengiwe_Ntongolozi_2016.pdf?sequence=1&isAllowed=y Accessed on 03 January 2019

**GORANTIWAR, S.D. and SMOUT, I.K**. 2005. Performance assessment of irrigation water management of heterogeneous irrigation schemes: 1. A framework for evaluation. Irrigation and Drainage Systems, 19(1), pp 1-36.

**HAILESLASSIE, A; AGIDE, Z; TEKLU, E; HOEKSTRA, D; SCHMITTER, P AND LANGAN, S**. 2016. On-farm smallholder irrigation performance in Ethiopia: From water use efficiency to equity and sustainability. Lives Paper No 19. International Livestock Research Institute (ILRI). Editorial and Publishing Services, Addis Ababa, Ethiopia.

**INFRASTRUCTURE DEVELOPMENT ACT**. 2014. Government Gazette, Act No. 23 of 2014

**JIYANE J**. 2011. Assessing experience, outcomes and lessons learned from existing small-scale irrigation schemes in South Africa. Technical Report. IMWI, South Africa.

**KOELMANS, R.G**. 2004. Project success and performance evaluation. International Platinum Conference 'Platinum Adding Value', The South African Institute of Mining and Metallurgy.

**LDARD**. 2005. Scoping report for Thabina Irrigation scheme: Revitalisation of smallholder irrigation schemes. Project No PP456. Polokwane, South Africa

**LDARD**. 2011. Status quo report: Tours irrigation scheme. Project No ACDP 04/57. Polokwane, South Africa.

**LDARD**. 2007. Irrigation Infrastructure Master Plan and Design Reports: Hindustan Irrigation Scheme. Polokwane, South Africa.

**NATIONAL DEVELOPMENT PLAN.** 2011. Vision 2030

**MARK ALISTAIR FREEMAN, MA** (1992) Measuring Project Success. Article in Project Management Journal https://www.researchgate.net/publication/259716203 (Accessed on 09 July 2021)

**NATIONAL ENVIRONMENT MANAGEMENT ACT.** 1998. Government Gazette. https://www.environment.gov.za/sites/default/files/legislations/nema_amendment_act59.pdf Accessed on 07 March 2017.

**PERRET, M. LAVIGNE, N. STIRER, S. YOKWE & K. S. DIKGALE**. 2003. The Thabina irrigation scheme in a context of rehabilitation and management transfer: Prospective analysis and local empowerment Project number: 2003-068 Assessing the economic viability of smallholder irrigation schemes in South Africa: Prospective analysis and local empowerment. A report submitted to Department of Water Affairs and Forestry

**SUDHAKAR, G.P**. (2016). Understanding the Meaning of "Project Success". Binus Business Review, 7(2), 163-169. http://dx.doi.org/10.21512/bbr.v7i2.1586.

**VAN AVERBEKE W.** 2008. Best Management Practices for Sustainable Subsistence Farming on Selected Irrigation Schemes and Surrounding Areas through Participatory Adaptive Research in Limpopo Province. WRC Report No. TT 344/08. Water Research Commission, Pretoria, South Africa. 318 pp.

**VAN AVERBEKE W, DENISON J AND MNKENI PNS**. 2011. Smallholder irrigation schemes in South Africa: A review of knowledge generated by the Water Research Commission. This paper was originally presented at the Water Research Commission 40-Year Celebration Conference, Kempton Park, 31 August-1 September 2011.

**VAN AVERBEKE W.** 2012. Performance of smallholder irrigation schemes in the Vhembe District of South Africa. Problems, Perspectives and Challenges of Agricultural Water Management, Intech.

**VAN KOPPEN, B.; NHAMO, L.; CAI, X.; GABRIEL, M. J.; SEKGALA, M.; SHIKWAMBANA, S.; TSHIKOLOMO, K.; NEVHUTANDA, S.; MATLALA, B.; MANYAMA, D**. 2017. Smallholder irrigation schemes in the Limpopo Province, South Africa. Colombo, Sri Lanka: International Water Management Institute (IWMI).36p. (IWMI Working Paper 174).

**WATER ACT**. 1998. Government Gazette. Act No 36 of 1998.

# 8 APPENDIX A: DATA COLLECTION TOOL FOR FARMERS

# WATER RESEARCH COMMISSION

# DATA COLLECTION TOOLS FOR FARMERS

**FOR THE**

**INVESTIGATION INTO THE PERFORMANCE OF STRATEGIC PARTNERSHIP PROGRAMME FOR SMALL HOLDER IRRIGATION SCHEMES IN LIMPOPO PROVINCE AND OPPORTUNITIES FOR REVITALISATION OF AFFECTED SCHEMES**

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**30 OCTOBER 2020**

| **RESEARCHER DECLARATION** | | |
|---|---|---|
| I certify that this interview took place in full with the recorded respondent and that the information contained in this questionnaire is an accurate reflection of his/her views. The interview was carried out as instructed by AgriEng Consulting and no pressure was placed on the respondent to participate. | | |
| …… **Name of Researcher** | …… **Signature** | …… **Date** |

| **INTERVIEWEE CONSENT** | |
|---|---|
| My name is ..... I am a Research Assistant working for AgriEng Consulting on a research project for Water Research Commission. We are conducting a study "Investigation into the performance of strategic partnership programme for small holder irrigation schemes in Limpopo Province and opportunities for revitalisation of affected schemes". Your irrigation scheme has been selected for participation in this study. We ask permission to interview you as farmer/ representative member (***delete the inapplicable***) of the smallholder irrigation scheme. The information obtained from all participants and findings will be compiled into a composite report and submitted to Water Research Commission. No name will be referred to in the report. Your responses will be kept strictly confidential. | |
| …… **Signature of Interviewee** | …… **Date** |

## 1. DETAILS OF FARMER / INTERVIEWEE

| NO | ITEM | RESPONSES |
|---|---|---|
| 1.1 | Name of Interviewee (if willing) | |
| 1.2 | Cell phone No (if willing) | |
| 1.3 | Gender | |
| 1.4 | Age (years) | |
| 1.5 | What is/was your level of education? | |
| 1.6 | What is/was your responsibility in the irrigation scheme?<br>……..<br>……..<br>……..<br>…….. | |
| 1.7 | Did you join the irrigation scheme before RESIS programme? | |
| 1.8 | What was your farming experience before joining the scheme? | |
| 1.9 | Are/were you fully dependent on the scheme as source of income? | |
| 2.9.1 | If no, what is/was your alternative source of income? | |
| | | |

**ANSWER KEY**

**1.3 Gender**: 1=Male, 2=Female

**1.4 Age (years):** 1 = < 30, 2 = 30-40, 3 = 41-50, 4 = 51-60, 5 = > 60

**1.5 What is/was your level of education?** : 1=no formal schooling; 2= primary school; 3=completed secondary school; 4=certificate level; 5=diploma level; 6= university level; 7=Professional College/trade certificate

**1.6 What is/was your responsibility in the irrigation scheme?** : 1=ordinary member, 2=Committee member, 3=Strategic Partner, 4=Labourer, 5=Other

**1.7 Did you join the irrigation scheme before RESIS programme? :** 1=Yes, 2=No

**1.8 What was your farming experience before joining the scheme?** 1=Farming Background 2= No Farming Background

**1.9 Are/were you fully dependent on the scheme as source of income?** : 1=yes, 2=No

**1.9.1 What is/was your alternative source of income?** 1=salary, 2=business, 3=government grant

## 2. FARM DETAILS

| NO | ITEM | RESPONSES |
|---|---|---|
| 2.1 | Date of Farm visit | |
| 2.2 | Farm Name | |
| 2.3 | Location area | |
| 2.4 | Local Municipality | |
| 2.5 | District | |
| 2.6 | GPS Coordinates | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.7 | Total Farm Size (Ha) | | | Area under production (Ha) | | | | | |
| 2.8 | Farm status | Operational | | Sub-optimally operational | | Not operational | | | |
| 2.9 | What are the factors that informed your selectin in **2.8**?<br>……..<br>……..<br>……..<br>…….. | | | | | | | | |
| 2.10 | No of Beneficiaries | **Total** | **Male** | **Female** | **Youth** | **Disabled** | | | |
| | | | | | | | | | |
| 2.11 | No of Labourers | **Total** | **Male** | **Female** | **Youth** | **Disabled** | | | |
| | | | | | | | | | |
| 2.12 | What power is/was available at the scheme? | | | | | | | | |
| 2.13 | What size of transformer is/was at the scheme? | | | | | | | | |
| 2.14 | What size of electric motors are/were used for the irrigation scheme? | | | | | | | | |
| 2.15 | How much is/was monthly electricity cost? | | | | | | | | |

**2.13 What size of transformer is/was at the scheme?** : 1= ≤25kVA, 2= 25kVA-50kVA, 3= ≥100kVA
**2.14 Size of electric motor**: 1= 15kW, 2=15kW – 22kW, 3= 22kW – 37kW, 4= 37kW – 55kW, 5= 55kW – 75kW, 6= > 75kW
**2.15 How much is/was monthly electricity cost?** 1= < R1000, 2= R1000 – R2000, 3= R2100 – R5000, 4= RR5000 – R10 000, 5= >R10000

## 3. AVAILABLE NATURAL RESOURCES

| NO | ITEM | RESPONSES |
|---|---|---|
| 3.1 | Prevalent soil types? | |
| 3.2 | What is the water source? | |
| 3.3 | Do/did you have water rights? | |

**ANSWER KEY**
**3.1 Prevalent soil types? :** 1 = sandy, 2 = clay, 3 = loamy
**3.2 What is the water source?** : 1=borehole(s), 2=river, 3=dam 4 = Other
**3.3 Do/did you have water rights**: 1=Yes, 2=No

## 4. THE SELECTION PROCESS FOR THE STRATEGIC PARTNER

| NO | ITEM | RESPONSES |
|---|---|---|
| 4.1 | Did you know the Strategic Partner before appointment? | |
| 4.2 | Were you involved in the identification and selection of the Strategic Partner? | |
| 4.3 | What is the name of the Strategic Partner? | |

| | | |
|---|---|---|
| 4.4 | Is the Cooperative still in partnership with the Strategic Partner? | |
| 4.5 | Are/were you satisfied with the experience of the Strategic Partner? | |
| 4.6 | What are the factors that inform your response in **4.5**?<br><br>……..<br>……..<br>……..<br>…….. | |

**ANSWER KEY**

**4.1 Did you know the Strategic Partner before appointment?** 1 = Yes, 2 = No

**4.2 Were you involved in the identification and selection of the Strategic Partner?** 1=Yes, 2=No

**4.4 Is the Cooperative still in partnership with the Strategic Partner?** 1 = Yes, 2 = No

**4.5 Are/Were you satisfied with the experience of the Strategic Partner?**: 1 = Not at all satisfied 2= Slightly satisfied 3= Moderately satisfied 4 = Very satisfied 5 = Completely satisfied

## 5. GOVERNANCE & SOCIO-ECONOMIC MATTERS

| NO | ITEM | RESPONSES |
|---|---|---|
| 5.1 | Are/were the farmers in a cooperative management system? | |
| 5.2 | What kind of agreement exist/existed between farmers and Strategic Partner? | |
| 5.3 | Are/were you happy with the cooperative management system? **If "Yes", proceed to 5.4:** | |
| 5.3.1 | What is it that you did not like with the cooperative management system?<br>……..<br>……..<br>……..<br>…….. | |
| 5.4 | Are/were the members full-time on the irrigation scheme? | |
| 5.4.1 | If no, what are/were the reasons for not being full-time?<br>……..<br>……..<br>……..<br>…….. | |
| 5.5 | Are/were you involved in other income generation activities outside of the irrigation scheme? **If "No", proceed to 5.6.** | |

| | | |
|---|---|---|
| 5.5.1 | The reasons for resorting to other income generation activities<br>……..<br>……..<br>……..<br>…….. | |
| 5.5.2 | Can you list the other income generations activities?<br>……..<br>……..<br>……..<br>…….. | |
| 5.6. | Do/did the members have a constitution or rules for the governance of the cooperative? | |
| 5.7 | How often do/did the members meet per year? | |
| 5.8 | Do/did the members keep minutes of meetings? | |
| 5.9 | How often do/did the members share dividends? | |
| 5.10 | Are/were farmers receiving a salary? **If "NO", proceed to 5.11:** | |
| 5.10.1 | Provide an estimation of much salary do/did you receive? | |
| 5.11 | Do/did the farmers receive farm produces for free? | |
| | | |

**ANSWER KEY**

**5.1 Are/were the farmers in a cooperative management system?** 1= Yes, 2 = No

**5.3 Are/were you happy with the cooperative management system?** 1= Very happy 2= happy 3 = fairly happy 4= unhappy 5 =Very unhappy

**5.4 Are/were the members full time on the irrigation scheme?** : 1=Yes, 2=No

**5.5 Are/were you involved in other income generation activities outside of the irrigation scheme?** 1=Yes, 2=No

**5.6 Do/did the members have a constitution or rules?**: 1=Yes, 2= No

**5.7 How often do/did the members meet per year?** 1=once, 2=twice, 3=thrice, 4=four times, 5=more than 5 times

**5.8 Do/did you keep minutes of meetings?** : 1=Yes, 2=No

**5.9 How often do/did the members share dividends?** : 1=once per season, 2=twice per season, 3=not at all.

**5.10 Are/were farmers receiving a salary?** 1=Yes, 2=No

**5.10.1 How much salary do/did you receive per month?** 1= <R3000, 2= R3000 – R5000, 3= >R5000

**5.11 Do/did the farmers receive farm produces for free?** 1=Yes, 2=No

## 6. CROP SELECTION AND MANAGEMENT

| NO | ITEM | RESPONSES |
|---|---|---|
| 6.1 | What are/were the main crops grown? | |
| 6.2 | Do/did you participate in the selection of the crops grown per season? | |
| 6.3 | Where do/did you sell the crops? | |
| 6.4 | Who pays/paid for inputs (seeds, fertiliser, chemicals)? | |
| | | |

**ANSWER KEY**

**6.1 What are/were the main crops grown? :** 1 = vegetables, 2 = potatoes, 3 = cotton, 4=maize, 5=citrus trees, 6= sugarcane 7= Any Other

**6.2 Do/did you participate in the selection of the crops grown per season?** : 1=Yes, 2=No

**6.3 Where do/did you sell the crops?** : 1=formal market, 2=auction, 3=informal market

**6.4 Who pays/paid for inputs (seeds, fertiliser, chemicals)? :**1= Strategic Partner, 2= Farmers, 3=Government 4 = Joint Venture

## 7. FINANCES MATTERS FOR THE IRRIGATION SCHEME

| NO | ITEM | RESPONSES |
|---|---|---|
| 7.1 | Is/were there any contractual arrangements on the profit-sharing ratio? **If "NO", proceed to 7.2:** | |
| 7.1.1 | What are/were the arrangements? ……..<br>……..<br>……..<br>…….. | |
| 7.2 | Whose bank account is/was used for the farm income/ proceeds? | |
| 7.3 | Do/did you have access to the financial records of the irrigation scheme? | |
| 7.4 | Is/was the profit shared as per the contract agreement? | |
| 7.5 | Is/was LDA involved in the financial management of the irrigation scheme? | |
| | | |

**ANSWER KEY**

**7.1 Is/were there any contractual arrangements on the profit-sharing ratio?** 1 = Yes, 2 = No

**7.2 Whose bank account is/was used for the farm income?** 1=Joint Venture account, 2=Strategic Partner account, 3=Farmers account

**7.3 Do/did you have access to the finance records of the irrigation scheme? :** 1 = Yes, 2 = No

**7.4 Is/was the profit shared as per the contract agreement?** 1=Yes, 2=No

**7.5 Is/was LDA involved in the financial management of the irrigation scheme?** : 1=Yes, 2=No

## 8. MARKETS AND ACCESSIBILITY

| NO | ITEM | RESPONSES |
|---|---|---|
| 8.1 | Who markets/marketed the crops? | |
| 8.2 | Do/did the farmers play a role in the marketing of the crops? | |
| 8.3 | Where is/was the farm produce sold? | |
| 8.4 | Whose transport was used to transport farm produce to the market? | |
| 8.5 | How is/was the road infrastructure from the farm to the market? | |

**ANSWER KEY**

**8.1 Who markets/marketed the crops?** 1= farmers, 2= Strategic Partner, 3=Government 4= Joint Venture

**8.2 Do/did the farmers play a role in the marketing of the crops?** 1=Yes, 2=No

**8.3 Where do/did you sell the scheme produces?** 1=formal markets, 2=informal markets

**8.4 Whose transport was used to transport farm produce to the market?** 1= Joint Venture 2= Farmer 3= Strategic Partner 4= Government 5= Other

**8.5 How is/was the road infrastructure to the farm in good condition?** 1=Yes, 2=No

## 9. COMMUNICATION BETWEEN FARMERS AND STRATEGIC PARTNER

| NO | ITEM | RESPONSES |
|---|---|---|
| 9.1 | What are/ were the channels of communication? | |
| 9.2 | Are/was there any dispute resolution mechanisms put in place? **If "NO", proceed to 9.3.** | |
| 9.2.1 | If Yes, outline dispute resolution processes or mechanisms which were put in place?<br><br>……..<br>……..<br>……..<br>…….. | |
| 9.3 | Can you suggest any improvement which can be made with regard to the strategic Partner approach?<br>……..<br>……..<br>……..<br>…….. | |

**ANSWER KEY**

**9.1 What are/ were the channels of communication** 1=meetings, 2=word of mouth, 3=written document,

**9. 2 Are/was there any dispute resolution mechanisms put in place** 1 = Yes 2 = No

## 10. IRRIGATION SYSTEM

| NO | ITEM | RESPONSES |
|---|---|---|
| 10.1 | What type(s) of irrigation systems is/was used in the irrigation scheme before the Strategic Partnership Programme? | |
| 10.2 | Are/were you satisfied with the previous irrigation system? **If "No", proceed to 10.3.** | |
| 10.2.1 | Give reasons why you do/did not like the previous irrigation system<br><br>……..<br>……..<br>……..<br>…….. | |
| 10.3 | What type of irrigation system was installed by government when you were joined by the strategic partnership | |
| 10.3.1 | Are/were you satisfied with the irrigation system? **If "No", proceed as below.** | |
| | Give reasons why you do/did not like the irrigation system.<br><br>……..<br>……..<br>……..<br>…….. | |
| 10.3.2 | Which irrigation system would you prefer? | |
| 10.4 | Do/did you have a role in the operation of irrigation system? | |
| 10.4.1 | If yes, what is/was your role? | |
| 10.5 | Do/did you have a role in the management of irrigation scheme? | |
| 10.5.1 | If yes, what is/was your role?<br><br>……..<br>……..<br>……..<br>…….. | |
| 10.6 | What power is/was available at the scheme? | |
| 10.7 | Who does/did the service/maintenance of the irrigation scheme? | |
| | | |
| **ANSWER KEY** | | |

| NO | ITEM | RESPONSES |
|---|---|---|
| **10.1 What type(s) of irrigation systems is/was used in the irrigation scheme before the Strategic Partnership Programme?** : 1 = drip, 2 = floppy sprinkler, 3 = centre pivot, 4=quick coupling sprinkler<br>**10.2 Are/were you satisfied with the previous irrigation system? 1= Yes 2 = No**<br>**10.3 Are you satisfied with the current irrigation system**: 1= Yes, 2= No<br>**10.3.2 Which irrigation system would you prefer**1 = drip, 2 = floppy sprinkler, 3 = centre pivot, 4=quick coupling sprinkler<br>**10.4 Do/did you have a role in the operation of irrigation scheme?** 1= Yes, 2= No<br>**10.5 Do/did you have a role in the management of irrigation scheme?** 1= Yes, 2= No<br>**10.6 What power is/was available at the scheme?** : 1=electricity, 2=solar, 3=generator<br>**10.7 Who does/did the service/maintenance of the irrigation scheme?** 1=Farmers, 2=Strategic Partner | | |

## 11. PERCEPTION ON THE STRATEGIC PARTNERSHIP PROGRAMME

| NO | ITEM | RESPONSES |
|---|---|---|
| 11.1 | How is/was the relationship between the farmers and Strategic Partner | |
| 11.2 | Did the members get a chance to read the contract before it was signed? | |
| 11.3 | Is/was the Strategic Partner abiding by contractual obligations? **If "Yes", proceed to 11.4.** | |
| 11.3.1 | List the areas where the Strategic Partner is/did not abide by the contract regulations?<br><br>……..<br>……..<br>……..<br>…….. | |
| 11.4 | Can you suggest any other approach which LDA could have used apart from Strategic Partner Model?<br><br>……..<br>……..<br>……..<br>…….. | |
| 11.5 | Do you think the Strategic Partnership Programme was a success? | |
| **ANSWER KEY**<br>**11.1 Relationship between the farmers and Strategic Partner**: 1= Good, 2= bad, 3= Very bad<br>**11.2 Did you read the contract before it was signed?** 1= Yes, 2= No<br>**11.3 Is/was the Strategic Partner abiding by contractual obligations?** 1= Yes, 2= No<br>**11.5 Do you think the Strategic Partnership Programme was a success?** 1= Yes, 2= No | | |

## 12. FARMER TRAINING AND MENTORSHIP

| NO | ITEM | RESPONSES |
|---|---|---|
| 12.1 | Have you received any farmer training ever since you joined the irrigation scheme? **If "Yes", proceed to 12.1.1:** | |
| 12.1.1 | Can you list the farmer training courses received?<br><br>……..<br>……..<br>……..<br>…….. | |
| **ANSWER KEY**<br>**12.1 Have you received any farmer training ever since you joined the irrigation scheme?** 1= Yes, 2= No | | |

# 9 APPENDIX B: DATA COLLECTION TOOL FOR GOVERNMENT OFFICIALS

# WATER RESEARCH COMMISSION

# DATA COLLECTION TOOLS FOR OFFICIALS

**FOR THE**

**INVESTIGATION INTO THE PERFORMANCE OF STRATEGIC PARTNERSHIP PROGRAMME FOR SMALL HOLDER IRRIGATION SCHEMES IN LIMPOPO PROVINCE AND OPPORTUNITIES FOR REVITALISATION OF AFFECTED SCHEMES**

By

**Field Assessment Work**

**Contact**:

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**30 OCTOBER 2020**

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|---|---|---|
| I certify that this interview took place in full with the recorded respondent and that the information contained in this questionnaire is an accurate reflection of his/her views. The interview was carried out as instructed by AgriEng Consulting and no pressure was placed on the respondent to participate. | | |
| …… **Name of Researcher** | …… **Signature** | …… **Date** |

| INTERVIEWEE CONSENT | |
|---|---|
| My name is ..... I am a Research Assistant working for AgriEng Consulting on a research project for Water Research Commission. We are conducting a study "Investigation into the performance of strategic partnership programme for small holder irrigation schemes in Limpopo Province and opportunities for revitalisation of affected schemes". Your irrigation scheme has been selected for participation in this study. We ask permission to interview you as government official of the smallholder irrigation scheme. The information obtained from all participants and findings will be compiled into a composite report and submitted to Water Research Commission. No name will be referred to in the report. Your responses will be kept strictly confidential. | |
| …… **Signature of Interviewee** | …… **Date** |

## 1. FARM DETAILS

| NO | ITEM | RESPONSES |
|---|---|---|
| 1.1 | Date of Farm visit | |
| 1.2 | Farm Name | |

## 2. DETAILS OF GOVERNMENT OFFICIAL / INTERVIEWEE

| NO | ITEM | RESPONSES |
|---|---|---|
| 2.1 | Name of Interviewee (if willing) | |
| 2.2 | Cell phone No (if willing) | |
| 2.3 | Gender | |

| | | |
|---|---|---|
| 2.4 | Designation | |
| 2.5 | What is/was your responsibility in the scheme | |
| | | |

**ANSWER KEY**

**2.3 Gender**: 1=Male, 2=Female

**2.4 Designation**: 1= Engineer, 2=Agricultural Advisor, 3= Manager 4 = Other

**2.5 Responsibility in the scheme**: 1= Agricultural Advisor, 2=Engineer, 3=Other

## 3. THE SELECTION PROCESS AND MANAGEMENT FOR THE STRATEGIC PARTNER

| NO | ITEM | RESPONSES |
|---|---|---|
| 3.1 | What was the basis of the model? | |
| 3.2 | Was LDA responsible for the identification of the Strategic Partner? | |
| 3.3 | Were farmers involved in the identification and selection of the Strategic Partner? | |
| 3.4 | Were you satisfied with the experience of the Strategic Partner? | |
| 3.4.1 | Explain your answer | |

**ANSWER KEY**

**3.2 Was LDA responsible for the identification of the Strategic Partner?** 1 = Yes, 2 = No

**3.3 Were farmers involved in the identification and selection of the Strategic Partner?** : 1=Yes, 2=No

**3.4 Were you satisfied with the experience of the Strategic Partner?:** 1 = Not at all satisfied 2= Slightly satisfied 3= Moderately satisfied 4 = Very satisfied 5 = Completely satisfied

## 4. MANAGEMENT OF THE IRRIGATION SCHEME

| NO | ITEM | RESPONSES |
|---|---|---|
| 4.1 | Is/was LDA involved in the management of the irrigation scheme? | |
| 4.2 | What kind of support are/were you giving to the scheme? | |
| 4.3 | How frequent are/were your farm visits? | |
| 4.4 | What were/are the key findings or major observations which were found during the field visits? | |

**Answer Key**
**4.1 Is/was LDA involved in the management of the irrigation scheme?** : 1=Yes, 2=No
**4.2 What kind of support are/were you giving to the scheme?** 1= Technical, 2=Advisory, 3=Crops information, 4=Soil information, 5=Management
**4.3 How frequent are/were your farm visits?** 1= < once per month, 2=once in two months, 3=once per quarter

## 5. CROP SELECTION AND MANAGEMENT

| NO | ITEM | RESPONSES |
|---|---|---|
| 5.1 | Does/did LDA assist the joint venture with the crop selection? | |
| 5.2 | Did LDA offer/offered advisory services with regard to crops cultivated by farmers (mention the services offered) | |
| 5.3 | List down the key areas with regard to crop management and marketing support which were offered.? | |
| | | |

**Answer Key**
**5.1 Does LDA assist the joint venture with the crop selection? :** 1 = Yes, 2 = No,
**5.2 Does/was LDA Crop Section offering advisory services to the farmers? :** 1= Yes, 2= No

## 6. MARKETS AND ACCESSIBILITY

| NO | ITEM | RESPONSES |
|---|---|---|
| 6.1 | Does/Did LDA offer marketing services for the farm produce? **If Yes, proceed to 6.1.1:** | |
| 6.1.1 | What marketing services were put in place? | |
| 6.2 | What role did LDA play in ensuring that the produce reached the intended market? | |
| | | |

**ANSWER KEY**
**6.1 Did LDA offer marketing services for the farm produce?** 1=Yes 2=No

## 7. IRRIGATION SYSTEM

| NO | ITEM | RESPONSES |
|---|---|---|
| 7.1 | Are/were you satisfied with the current irrigation system? **If no, proceed as below.** | |
| 7.1.1 | Give reasons why you do/did not like the current irrigation system. | |
| 7.2 | Do/did you think the irrigation system used has/had an impact on the performance of the smallholder irrigation scheme? | |
| 7.3 | Do/did you have a role in the management of irrigation scheme? | |
| 7.4 | Who does/did the service/maintenance of the irrigation scheme? | |

**ANSWER KEY**

**7.1 Are/were you satisfied with the current irrigation system?** : 1 = Yes 2 = No

**7.2 Do/did you think the irrigation system used has/had an impact on the performance of the smallholder irrigation scheme?** 1= Yes, 2=No

**7.3 Do/did you have a role in the management of irrigation scheme?** 1= Yes, 2=No

**7.4 Who does/did the service/maintenance of the irrigation scheme?** 1=Farmers, 2=Strategic Partner, 3=LDA

## 8. PERCEPTION ON THE STRATEGIC PARTNERSHIP PROGRAMME

| NO | ITEM | RESPONSES |
|---|---|---|
| 8.1 | In your opinion, are/were the farmers content with the model? | |
| 8.2 | Do you think the strategic partnership programme achieved/ is achieving its intended purpose? | |
| 8.3 | Are/were you satisfied with the Strategic Partnership programme? | |
| 8.3.1 | List the areas where the Strategic Partner is/did not abide by the contract regulations? | |
| 8.4 | What are the factors contributing to the Dis/functionality of irrigation schemes? | |

| | | |
|---|---|---|
| | | |
| 8.5 | What improvement(s) can you suggest to the current Strategic Planning Model | |
| 8.6 | Can you suggest any alternative method or model which could be used to empower small scale irrigation farmers? | |

**ANSWER KEY**

**8.1 In your opinion, is/was the farmers content with the model?** 1=Yes, 2=No
**8.2 Do you think the strategic partnership programme achieved/ is achieving its intended purpose** 1=Yes 2= No
**8.3 Are/were you satisfied with the Strategic Partnership programme?** 1 = Not at all satisfied 2= Slightly satisfied 3= Moderately satisfied 4 = Very satisfied 5 = Completely satisfied

## 10 APPENDIX C: DATA COLLECTION TOOL FOR STRATEGIC PARTNER

WATER RESEARCH COMMISSION

# DATA COLLECTION TOOLS FOR STRATEGIC PARTNER

**FOR THE**

**INVESTIGATION INTO THE PERFORMANCE OF STRATEGIC PARTNERSHIP PROGRAMME FOR SMALL HOLDER IRRIGATION SCHEMES IN LIMPOPO PROVINCE AND OPPORTUNITIES FOR REVITALISATION OF AFFECTED SCHEMES**

By

**Field Assessment Work**

**Contact**:

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| ……<br>**Name of Researcher** | ……<br>**Signature** | ……<br>**Date** |

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| ……<br>**Signature of Interviewee** | ……<br>**Date** |

## 1. FARM DETAILS & STRATEGIC PARTNER

| NO | ITEM | RESPONSES |
|---|---|---|
| 1.1 | Date of Farm visit | |
| 1.2 | Farm Name | |
| 1.3 | Farm location area | |
| 1.4 | When did you join the irrigation scheme as Strategic Partner? | |

## 2. DETAILS OF FARMER / INTERVIEWEE

| NO | ITEM | RESPONSES |
|---|---|---|
| 2.1 | Name of Interviewee | |
| 2.2 | Cell phone No | |
| 2.3 | Gender | |

| | | |
|---|---|---|
| 2.4 | Level of education (Year) | |
| | | |

**ANSWER KEY**

**2.3 Gender**: 1=Male, 2=Female

**2.4 Level of education**: 1=no formal schooling; 2= primary school; 3=completed secondary school; 4=certificate level; 5=diploma level; 6= university level; 7=Professional College/trade certificate

## 3. CROP SELECTION AND MANAGEMENT

| NO | ITEM | RESPONSES |
|---|---|---|
| 3.1 | What are/were the main crops grown on the scheme? | |
| 3.2 | Do/did you involve the farmers in the selection of the crops grown per season? | |
| 3.3 | Where do/did you sell the crops? | |
| 3.4 | Who paid for inputs (seeds, fertiliser, chemicals)? | |
| | | |

**Answer Key**

**3.1 What are/were the main crops grown on the scheme? :** 1 = vegetables, 2 = potatoes, 3 = cotton, 4=maize, 5=citrus trees, 6= sugarcane

**3.2 Do/did you involve the farmers in the selection of the crops grown per season?** 1=Yes, 2=No

**3.3 Where do/did you sell the crops?** : 1=formal market, 2=auction, 3=informal market

**3.4 Who paid for inputs (seeds, fertiliser, chemicals)? :**1= Strategic Partner, 2= Farmers, 3=Government

## 4. THE SELECTION PROCESS AND ROLES FOR THE STRATEGIC PARTNER

| NO | ITEM | RESPONSES | |
|---|---|---|---|
| 4.1 | Which irrigation schemes have you worked with? | | |
| 4.2 | How long have you been involved/ working with Irrigation Schemes? | | |
| 4.3 | How were you selected and appointed as a strategic partner? | | |
| 4.4 | Were the farmers involved in your selection? | | |
| 4.5 | Were you satisfied with the following | **Yes** | **No** |
| | • Farm size? | | |
| | • Farm location | | |
| | • soils, | | |
| | • water | | |
| | • power/energy source)? | | |
| 4.6 | Were you introduced to the farmers? | | |
| 4.6 | What is/were your roles as a Strategic Partner | | |

| | | |
|---|---|---|
| | | |

**ANSWER KEY**

**4.2 How long have you been involved/ working with Irrigation Schemes? 1 = Less than 2 Years 2 = 2-5 Yrs. 3= More than 5 Yrs.**

**4.3 How were you appointed? :** 1 = Advertisement & interview, 2 = Headhunted by LDA, 3 = Approached and recommended by Farmers

**4.4 Were the farmers involved in your selection?** : 1=Yes, 2=No

**4.5 Were you satisfied with the farm (size, location, soils, water electricity?** 1=Yes, 2=No

**4.6 Were you introduced to the farmers?** 1=Yes, 2=No

## 5. GOVERNANCE & SOCIO-ECONOMIC MATTERS

| NO | ITEM | RESPONSES |
|---|---|---|
| 5.1 | Are/were the farmers in a cooperative management system? | |
| 5.2 | Were the farmers involved in the scheme? | |
| 5.3 | Are/were the members/ farmers full time on the scheme? | |
| 5.4 | Do/did members have constitution or rules? | |
| 5.5 | How often does/did you meet with the members per year/season? | |
| 5.6 | Do/did you keep minutes of the meetings? | |
| 5.7 | Are/were farmers receiving a salary? | |
| 5.8 | Provide an estimation of the salary they receive? | |
| 5.9 | Are/were you happy with your salary? | |
| 5.10 | Do/did the farmers receive farm produces for free? | |
| 5.10.1 | If Yes, how often did they receive produce | |
| 5.11 | How often do/did members share dividends? | |
| | | |

**ANSWER KEY**

**5.1 Are/were the farmers in a cooperative management system?** 1= Yes, 2 = No

**5.2 Were the farmers involved in the scheme?** 1= Yes, 2= No

**5.3 Are/were the members full time on the scheme?** 1=Yes, 2=No

**5.4 Do/did the members have constitution or rules?** 1=Yes, 2= No

**5.5 How often do/did you meet with the farmers?** : 1=once per year, 2=twice per year, 3=3 times per year, 4=over four times per year, 5=not at all,

**5.6 Do/did you keep minutes of meetings?** : 1=Yes, 2=No

**5.7 Are/were farmers receiving a salary?** 1=Yes, 2=No

**5.8 How much salary do/did you receive per month?** 1= <R3000, 2= R3000 – R5000, 3= >R5000

**5.9 Are/were you happy with your salary?** 1 = Not at all satisfied 2= Slightly satisfied 3= Moderately satisfied 4 = Very satisfied 5 = Completely satisfied

**5.10 Do/did the farmers receive farm produces for free?** 1=Yes, 2=No

**5.11 How often do/did members share dividends?** 1=once per season, 2=not at all

## 6. FINANCES MATTERS FOR THE IRRIGATION SCHEME

| NO | ITEM | RESPONSES |
|---|---|---|

| | | |
|---|---|---|
| 6.1 | Is/were there any contractual arrangements on the profit-sharing ratio? | |
| 6.1.1 | If Yes, what are/were the arrangements | |
| 6.2 | Which bank account is/was used for the farm income/proceeds? | |
| 6.3 | Do/did you share the financial records of the irrigation scheme with farmers? | |
| 6.4 | Is/ Was the profit shared as per the contract agreement after every season? | |
| 6.5 | Is/was LDA involved in the financial management of the irrigation scheme? | |

**Answer Key**

**6.1 Is/were there any contractual arrangements on the profit-sharing ratio? 1= Yes 2 = No**

**6.2 Which bank account is/was used for the farm income?** 1=Joint Venture account, 2=Strategic Partner account, 3=Farmers account

**6.3 Do/did you share the finance records with the irrigation scheme farmers? :** 1 = Yes, 2 = No

**6.4 Is/Was the profit shared as per the contract agreement after every season?** 1=Yes, 2=No

**6.5 Is/was LDA involved in the financial management of the irrigation scheme?** : 1=Yes, 2=No

## 7. MARKETS AND ACCESSIBILITY

| NO | ITEM | RESPONSES |
|---|---|---|
| 7.1 | Who markets/marketed the crops? | |
| 7.2 | Where do/did you sell the farm produces? | |
| 7.3 | Whose transport was used to ferry farm produce to the market? | |
| 7.4 | Is/was the road infrastructure to the farm in good condition? | |

**ANSWER KEY**

**7.1 Who markets/marketed the crops?** 1= farmers, 2= Strategic Partner, 3=Government

**7.2 Where do/did you sell the farm produces?** 1=formal markets, 2=informal markets

**7.3 Whose transport was used to ferry farm produce to the market?** 1= Joint Venture 2= Farmer 3= Strategic Partner 4= Government 5= Other

**7.4 Is/was the road infrastructure to the farm in good condition?** 1 – Poor. 2 – Fair. 3 – Good. 4 – Very good. 5 – Excellent

## 8. IRRIGATION SYSTEM

| NO | ITEM | RESPONSES |
|---|---|---|
| 8.1 | What type(s) of irrigation systems is/was used in the irrigation scheme | |
| 8.2 | Are/were you satisfied with the irrigation system? **If no, proceed 9.3.1 and 9.3.3:** | |
| 8.2.1 | Give reasons why you do/did not like the current irrigation system. | |

| NO | ITEM | RESPONSES |
|---|---|---|
| | | |
| 8.2.2 | Which irrigation system would/did you prefer? | |
| 8.3 | Do/did the farmers have a role in the operation of irrigation scheme? | |
| 8.4 | Do/did the farmers have a role in the management of irrigation scheme? | |
| 8.5 | What power is/was available at the scheme? | |
| 8.6 | What size of transformer is/was at the scheme? | |
| 8.7 | What size of electric motors are/were used for the irrigation scheme? | |
| 8.8 | How much is/was the monthly electricity cost? | |
| 8.9 | Who does/did the service/maintenance of the maintenance of irrigation scheme? | |
| | | |

**ANSWER KEY**

**8.1 Type of irrigation system**: 1 = drip, 2 = floppy sprinkler, 3 = centre pivot, 4=quick coupling sprinkler
**8.2 Are/were you satisfied with the current irrigation system**: 1= Yes, 2= No
**8.2.2 Which irrigation system would you prefer**: 1 = drip, 2 = floppy sprinkler, 3 = centre pivot, 4=quick coupling sprinkler
**8.3 Do/did the farmers have a role in the operation of irrigation scheme?** 1= Yes, 2= No
**8.4 Do you have a role in the management of irrigation scheme?** 1= Yes, 2= No
**8.5 What power is/was available at the scheme?** : 1=electricity, 2=solar, 3=generator
**8.6 What size of transformer is/was at the scheme?** : 1= ≤25kVA, 2= 25kVA-50kVA, 3= ≥100kVA
**8.7 What size of electric motors are/were used for the irrigation scheme?** : 1= 15kW, 2=15kW – 22kW, 3= 22kW – 37kW, 4= 37kW – 55kW, 5= 55kW – 75kW, 6= > 75kW
**8.8 How much is/was monthly electricity cost?** 1= < R1000, 2= R1000 – R2000, 3= R2100 – R5000, 4= RR5000 – R10 000, 5= >R10000
**8.9 Who does the service/maintenance of the irrigation scheme?** 1=Farmers, 2=Strategic Partner

## 9. PERCEPTION ON THE STRATEGIC PARTNERSHIP PROGRAMME

| NO | ITEM | RESPONSES |
|---|---|---|
| 9.1 | How is/was the relationship between the farmers and Strategic Partner | |
| 9.2 | Did you read the contract before it was signed? | |
| 9.3 | Are/were the farmers abiding by contractual obligations? **If no, proceed to 10.3.1.** | |
| 9.3.1 | | |

**ANSWER KEY**

**9.1 Relationship between the farmers and Strategic Partner**: 1= Good, 2= Bad, 3= Very bad

| |
|---|
| **9.2 Did you read the contract before it was signed?** 1= Yes, 2= No<br>**9.3 Are/were the farmers abiding by contractual obligations??** 1= Yes, 2= No |

## 10. FARMER TRAINING AND MENTORSHIP

| NO | ITEM | RESPONSES |
|---|---|---|
| 10.1 | Have there been any farmer training courses ever since you joined the irrigation scheme? If Yes, proceed as follows | |
| 10.2 | Can you list down the farmers training courses which were offered? | |
| 10.3 | Is/were there mentorship programmes offered? | |
| 10.4 | Mention and/or explain the elements of mentorship programmes which were offered. | |
| **ANSWER KEY**<br>**10.1 Have you received any farmer training ever since you joined the irrigation scheme?** 1= Yes, 2= No<br>**10.3 Is/were there mentorship programmes offered?** 1=Yes, 2=No | | |