Principles, Approaches and Guidelines for the Participatory Revitalisation of Smallholder Irrigation Schemes

Volume 2 – Concepts and Cases

Jonathan Denison & Siyabu Manona

TT 309/07

Water Research Commission

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Volume 2 of 2

CONCEPTS and CASES

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CONTENTS

APPENDICES to Volume 2

ACRONYMS

ABP	Agri-Business Place
ACAT	Africa Co-operative Action Trust (based in KZN)
ACT	African Conservation Tillage Network
ADM	Amathole District Municipality
AGIS	Agricultural Geographic Information System (of the Department of Agriculture)
AgriBEE	Black Economic Empowerment in the Agricultural Sector
AGRISETA	Agricultural Sector Education Training Authority
AO	Assegai Organics
APPIA	*Amélioration des Performances des Périmètres Irrigués en Afrique (or Improving Irrigation Performance in Africa)* or in English, Improving Irrigation Performance in Africa
ARC	Agricultural Research Council
ARDC	Agricultural and Rural Development Corporation
BDCA	Biodynamic Certification Agency
CAC	Ciskei Agricultural Corporation
CASP	Comprehensive Agricultural Support Programme (Dept of Agriculture)
CBO	Community Based Organisation
CCAW	Coordinating Committee on Agricultural Water Use (Provincial level)
CCSIS	Coordinating Committee for Small Irrigation Schemes (National level)
CHDM	Chris Hani District Municipality (Eastern Cape)
COMBUD	Computerised Budget Program for Crop Enterprises
CPA	Communal Property Association
DALA	Department of Agriculture and Land Affairs
DBSA	Development Bank of South Africa
DEDT	Department of Economic Development
DFID	Department for International Development

DM District Municipality

DWAF Department of Water Affairs and Forestry

E.Cape RPF Eastern Cape Resource Poor Farmers Irrigation Revitalisation Initiative

ECDA Eastern Cape Department of Agriculture (formerly DALA)

ECDC Eastern Cape Development Corporation

EFO Ezemvelo Farmers Organisation

FAO Food and Agriculture Organisation of the United Nations

GEAR Growth Employment and Redistribution

GIS Geographic Information System

GKM Gilli Kibbutzsa South Africa Management (Pty) Ltd.

GPS Global Positioning System

HOD Head of Department

IAC Irrigation Action Committee (renamed in 2004 to CCAW)

IAP Interested and Affected Parties

ICON The Iterative-Consultative Irrigation Feasibility Planning Approach

IDC Industrial Development Corporation

IDP Integrated Development Plan

IERR Internal Economic Rate of Return

IFRR Internal Financial Rate of Return

IIPIA Improving Irrigation Performance in Africa (in French – the APPIA programme)

IIRR International Institute of Rural Reconstruction

IMT Irrigation Management Transfer

IWMI International Water Management Institute

IWRM Integrated Water Resources Management

JV Joint Venture

KZN KwaZulu-Natal

LEISA Low External Input Sustainable Agriculture

LRAD	Land Redistribution for Agricultural Development
LVA	Loxton Venn and Associates
MBA	Masters in Business Administration
MC	Management Committee
MEC	Member of the Executive Council (Provincial Minister)
MIS	Makuleke Irrigation Scheme
MMMPP	Mpumalanga Management and Mentorship Pilot Programme
NDA	National Department of Agriculture
NDT	Noko Development Trust
NGO	Non-government Organisation
NMPLC	Newlands Mashu Permaculture and Learning Centre
NPV	Net Present Value
NSK	Noordelike Sentrale Katoen
PAETA	Primary Agricultural Education and Training Authority
PPM	Project Planning Matrix
PRA	Participatory Rapid Appraisal
PSC	Project Steering Committee
PTO	Permission to Occupy (land tenure for individual plots under Tribal Authority)
RA	Restructuring Authority
RAAKS	Rapid Appraisal of Agricultural Knowledge Systems
RBM	River Basin Management
RBMSIIP	River Basin Management and Smallholder Irrigation Improvement Programme (World Bank and Tanzanian Government)
RESIS	Revitalisation of Smallholder Irrigation Schemes (Limpopo Programme)
RLCC	Regional Land Claims Commission
RSA	Republic of South Africa
RWH	Rainwater Harvesting

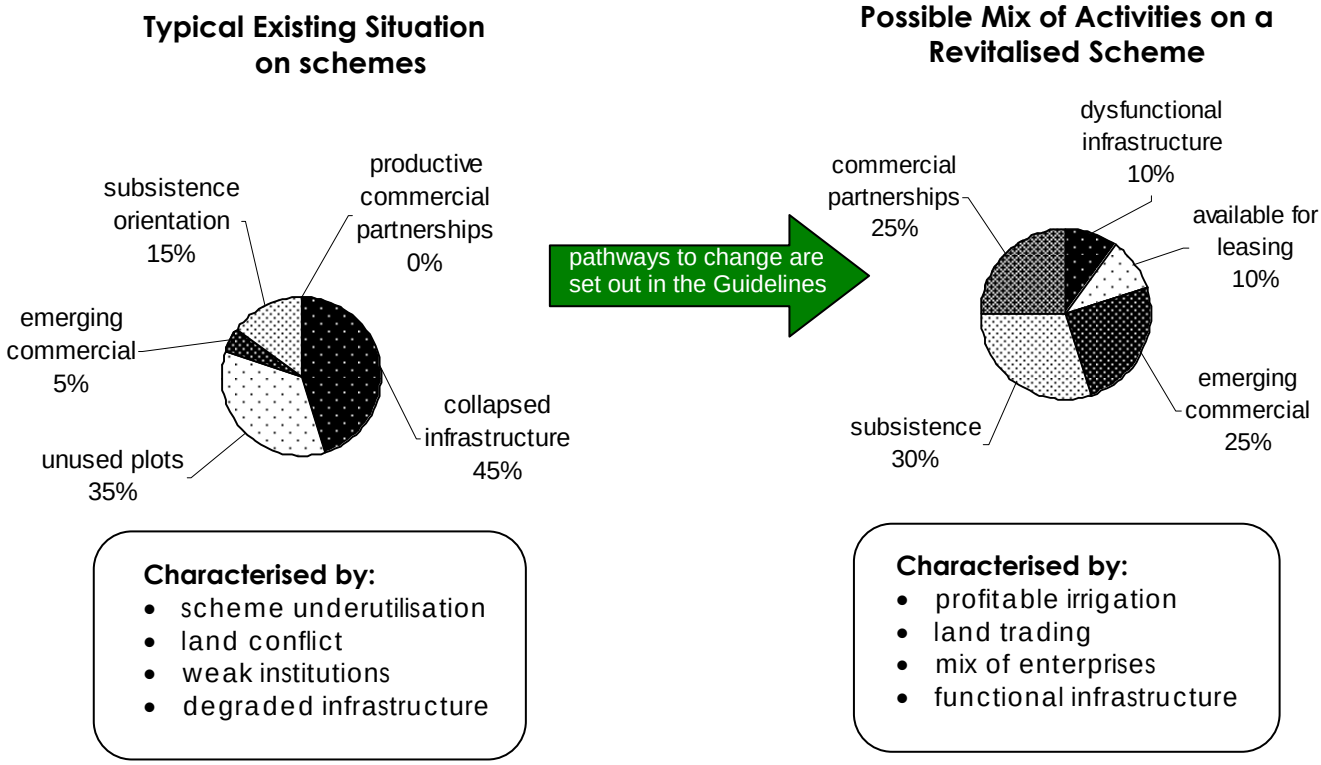
SAFM	South African Farm Management
SANPAD	South African Netherlands Research Programme on Alternatives in Development
SAPWAT	South African Plant Water Requirement Computer Model
SEED	Schools Environmental Education and Development
SIIP	Small Irrigation Improvement Project (of the RBMSIIP)
SLAG	Settlement and Land Acquisition Grant
SMILE	Sustainable Management of Irrigation Lands and the Environment
SMME	Small, Medium and Micro Enterprise
SPSS	Statistical Package for Social Scientists
SSIP	Small Scale Irrigation Project
TRAC-MP	Rural Action Committee – Mpumalanga (formerly Transvaal RAC)
UKZN	University of KwaZulu-Natal
WCP	WaterCare Project
WRC	Water Research Commission
WRM	Water Resources Management
WUA	Water User Association

1 INTRODUCTION

1.1 The Guidebook Objective and Audience

The Guidelines for the revitalisation of smallholder irrigation schemes were developed from a three year Water Research Commission Project based on South African and wider regional experiences. There are approximately 320 irrigation schemes covering some 50,000 ha in the former homelands of South Africa and these are either collapsed or utilised well below their potential. The Irrigation Revitalisation Guidelines have been developed to help planners and implementing agents to address this situation.

People tasked with revitalising collapsed schemes want to know where to start, what to do and how to do it. The fact is nobody really knows, but there are some ideas out there and some of them seem to work. If you are one of the people planning interventions and spending time on the schemes; perhaps a senior departmental official, a municipal agricultural development officer, scheme leadership or an unsuspecting civil engineer who thought you could just go in and do the technical stuff, then the guidelines should equip you to make constructive change.



Schematic: Pathways from existing to improved situation

The Volumes

There are two volumes to the Guidelines:

- **The Rough Guide (Volume 1)** is a quick reference guide for the more action-oriented and is written to allow easy access to the main principles, approaches and methodologies to support and guide implementing teams. Revitalisation activities cover new ground for every case and only one thing is guaranteed - the ride will be rough and you'll have to improvise as you go.

- **Concepts and Cases (Volume 2)** contains the theoretical rationale for the guidelines based on a set of arguments developed through academic review, action research and case study investigation. This includes a review and comparison of South African and international revitalisation approaches as well as case studies on commercial partnerships and other support strategies.

The Rough Guide is not written as an academic document to grace the shelves of learned offices; it hopes to reach the people engaging in the hot and dusty fields who are trying to get it right. If you read nothing else – read and remember the principles in Volume 1. The rest is nothing without them.

Likely Guideline Users

The guidebook audience is expected to include people from diverse educational levels, varying skills and interest in revitalisation. These include:

- **Department of Agriculture, Land Affairs and DWAF officials**
- **District Municipal officials and politicians** tasked with strategic input to setting of objectives, steering development approaches and influencing funding decisions.
- **Irrigation scheme leadership** and participant plotholders and farmers who are engaging with external agencies and government in revitalisation initiatives that are taking place on their land and in their communities.
- **Consultants** – often civil-engineering consultants who often find themselves leading multi-disciplinary professional teams engaging in revitalisation because of the large percentage of costs related to the engineering components.

1.2 Process of Developing the Guidelines

1.2.1 Focus Areas and Content

Five main areas of work over the 3 year period were addressed by the research team:

- **Compilation of a National Database** of smallholder irrigation schemes, mainly located in the former homelands, but also more recently schemes instituted as part of the land reform programme. Collaboration with the National Department of Agriculture has resulted in this being posted and can be downloaded from the AGIS website (www.agis.agric.za).

- **Field research and detailed documentation** of current and recently completed revitalisation programmes in South Africa. These included the WaterCare Programme in Limpopo, the subsequent Revitalisation of Smallholder Irrigation Schemes Programme (RESIS), a number of Eastern Cape initiatives funded by the Department of Water Affairs and Forestry (DWAF) and the Eastern Cape Department of Agriculture (ECDA). This was by direct field research on irrigation schemes and through substantial consultation with departments and consultancies active in those programmes.

- **Action research in participative irrigation planning** leading to the development of a clear, stepwise and time efficient methodology called the ICON (Iterative-Consultative) Approach. This lays out a clear set of principles, tools, field programmes and materials that feasibility planning teams and beneficiaries can use in formulating revitalisation plans. The critical aspect of knowledge integration of sectoral specialists (sociology, agricultural, engineering, economics etc.), with the often ignored but centrally important knowledge of scheme land-holders across the socio-economic, educational, language and cultural divides is addressed through using the ICON approach.

- **Comparative analysis of South African and international approaches** to revitalisation in order to provide perspective on the process and outcomes of the South African experiences. Recent and current programmes in Kenya, Ethiopia, Tanzania as well as broader international reviews were covered leading to a qualitative scoring system and the derivation of success and failure factors.

- Finally, **field research into five case studies of farmer support approaches** in four provinces was undertaken. This was to better understand the processes and timelines involved and the implications for scheme land-holders / beneficiaries. This included the concept of JV's and commercial partnerships which are increasingly relied on to underpin revitalisation strategies. While partnerships do present an opportunity they also come with critical issues around the real financial benefit to farmers, which is often minimal, as well as issues around empowerment and training where farmers are little more than labourers on their own fields. The research aimed to understand the dynamics of partnerships in this context and to expand the common understanding to include relationships with academic institutions and NGO's.

1.2.2 Consultative Workshops

The project findings were presented at two national workshops in March 2004 and March 2005 to gain feedback on ideas as they evolved. People attending comprised a wide range of departmental officials (DWAF and Agriculture) as well as researchers and scheme land-holders / farmers. A series of mini-workshops were also held with researchers and practitioners leading to finalising the content of these guidelines.

1.3 Jargon defined

A summary of useful concepts and definitions is presented in Volume 1, Chapter 1. Some of the key concepts and terms are expanded here.

1.3.1 Rehabilitation and Revitalisation

In South Africa, research seems to justify further investment in existing schemes rather than in the construction of new schemes. On this issue, Backeberg (1994) argues for broad-bases strategies, driven by market, land and management thinking, and states that "…priority must be given to improved utilisation of existing schemes".

The distinction in the terms "Rehabilitation" and "Revitalisation" is directly linked to the investment into existing schemes, and the terms differentiate between an engineering centred approach and a people/systems/market centred approach.

"Rehabilitation" is the more **engineering-centred reconstruction** of dilapidated infrastructure and is focussed primarily on securing the water supply repairing the irrigation distribution system. Rehabilitation interventions tend to have minimal engagement with the organisational dynamics of water apportionment, the agricultural production system, farmer learning processes, financing and market. The guidelines present a strong case based on local and international experiences that these elements cannot be left out of initiatives as they are pivotal to successful scheme operation.

"Revitalisation" of irrigation schemes on the other hand is a global trend that is rooted in a holistic development philosophy that is argued to result in more successful outcomes than simply repairing infrastructure. The concept of revitalisation is broad in its development focus and carries with it the expectation of re-building socially uplifting, **profitable agri-business** on existing schemes and in the communities surrounding schemes. Human capital development both individually and organisationally, empowerment, access to information, marketing and business strategy development are emphasised alongside repair and re-design of existing infrastructure.

1.3.2 A Continuum of Commercial and Subsistence Farmers

A simplistic division between commercial and subsistence farming does not capture the complex mixed systems that are prevalent in communal areas in both rainfed and irrigated contexts. Crop production is usually semi-subsistence with some sale or trade of surplus, mixed with animal production and environmental resource use. All of these contribute to lower risk livelihoods and supplement urban based income streams (remittances, grants, pensions).

Andrew et al. (2003), writing in the context of rainfed agriculture and the land reform programme, contends that characterising South African agriculture with the dualistic stereotypes of commercial farming (on freehold land) and subsistence agriculture (on communal land) is misleading, inappropriate and has two main failings:

- There are many cases where small-scale producers are currently involved in production for the market (along with self provisioning),

- The contribution of subsistence production is usually valued in monetary terms and often excludes significant components such as environmental resource use, trading, animal traction, local transport, medicinal plant use and shelter among others.

It is suggested that a continuum of farming styles would be more appropriate "to accommodate the wide variety of productive uses of land and natural resources amongst residents of communal areas." The somewhat simplistic use of "commercial" and "subsistence" farmers through the study is avoided as far as possible. Where used, the terminology is adopted in full acknowledgement that a continuum of farming styles is in reality present on schemes.

> Reference to commercial and commercially oriented farmers is adopted in the guidelines used in relation to those farming ventures focussed primarily on production for cash sale. Similarly, those farmers engaging in more diverse livelihoods of which farming is a small part and geared towards food production for own consumption (contributing typically 15% to 20%, Lahiff, 1997) are referred to as farmers with a subsistence orientation.

1.3.3 Who is who - Plotholders and Farmers

The reality on many schemes is that many of those who have rights to plots, primary through PTO's (Permission to occupy) or in some cases quitrent or long-term lease are not engaged in farming activities. Estimates are tentative but could be as low as 25% of total scheme area. The general fact remains that a minority of plotholders are interested or able to farm in the current climate on schemes.

These people may leave their plots dormant or in some cases lease them out for production, although this is not widespread and is seemingly less so in Limpopo and Mpumalanga while it is found more commonly in KZN and the Eastern Cape. In general, leasing in formal or informal arrangements is associated with a risk of losing access to the irrigation plot and is seen more in the form of share-cropping arrangements rather than conventional leasing arrangements.

> In any case, **plot-holders** are defined as those people who have legal right to use the land either through entrenched traditional rights (PTO's) and on occasion quitrent or title.

> **Farmers** are, for the purpose of this document considered to be those people who are actively engaged in the farming enterprise through investment or direct labour and make the decisions related to crop production and marketing. Farmer's may therefore either be active on their own land, or on land where someone else has the right to occupy.

This distinction between farmers and plotholders is important for a number of reasons not least in the discussion on participatory irrigation planning, institutional development, farmer training, land consolidation initiatives and commercial partnerships. It is clearly important to define and engage with the correct grouping and there is often confusion as a result of not distinguishing between the two. A second factor to be considered is the role of gender in relation to field-farming activities.

> The **majority of farmers (as defined above) are women** who are central to on-farm decision-making, water allocation, maintenance and related collective activities in irrigation. In the former homelands, woman are responsible for some 65% of farming activity (i.e. are the farmers) (StatsSA, 2000 in Lahiff, 2004) with provincial variations, and it is likely that the situation on irrigation schemes is no different. Yet landholdings in the form of PTO's are generally allocated to men and there is thus an important power dynamic between plotholders and farmers that relates to gender.

It is clear that an explicit strategy must be adopted in both analysis and implementation on schemes in recognition of these categories and the power dynamics between gender, farmers and plotholders.

1.3.4 From Irrigation to Agricultural Water Use

Research work emanating from Africa and reported in international fora like the Stockholm Water Week and World Water Forums in the last five years shows a growing understanding that 'water' and 'agriculture' are not limited to 'irrigation'. 'Agricultural Water Use' has become a broadened field of focus, forging new multi-disciplinary partnerships who are working together to create new thinking and tools that can be applied to agricultural initiatives.

Agricultural water use embraces all forms of human initiative that increase the amount of water available to plants than would be the case under rainfed conditions. Methodologies include age-old indigenous rainwater harvesting systems in a wide range of basins, trenches, swales, shallow dams to stone, grass and green mulches, as well as conventional irrigation in all of its forms. The possibilities for engaging with moisture conservation methods, rainwater harvesting and related cropping methods are some of the innovations that a planning team can use when engaging with existing smallholder irrigation schemes. These relate to both on-scheme situations as well as parallel initiatives that may take place in villages surrounding existing schemes.

1.3.5 Multiple Water Use Systems

The phrase 'Multiple Use Systems' is becoming a household word and means 'the use of multiple water sources for multiple purposes'. It has always been difficult for policy and science to deal neatly with the multiple, integrated and dynamic strategies that farmers and households employ in their daily lives, some domestic, other commercial and/or agricultural. The concept of multiple water use embraces a planning approach where water use is not singled out exclusively for use of one sector (i.e. domestic water or irrigation water) and encourages designers and planners to consider peoples broader water needs. The concept extends to multiple water supplies and in that sense has parallels to broadening agricultural water use interventions where multiple 'sources' can be used to increase production and

returns. In any case, both terms call for a broadening of traditionally narrow areas of engagement.

1.3.6 The 'Smallholder'

The term 'smallholder' is widely used on the assumption that there is a common understanding of what this means.

Lahiff and Cousins (2004) suggest that the colloquial understanding of the term can be described as follows:

"There is no standard definition of a smallholder, but the term is generally used in the South African context for producers who are black and otherwise distinct from the dominant (and white dominated) large-scale commercial sector. No clear distinctions can be drawn between categories such as smallholder, small-scale, subsistence, communal or emergent farmers although the latter generally implies a higher degree of commercialisation and relatively large scale of operation…Most smallholder agriculture is informal …and tends to constitute a minority share of the household livelihoods." (Lahiff et al., 2004).

While this perspective provides useful context, a more specific use of the term is used in this guideline.

The term 'smallholder' recognises a characteristic of small farm size and a partially developed link to the larger economic system. Smallholders are affected by prices, subsidies, markets etc. but the input and output markets are not fully formed and remain localised to some extent. This distinguishes smallholders from commercial enterprises both large scale and family farms, which have access to fully formed external markets (after Ellis, 1998).

2 DATABASE OF SMALLHOLDER SCHEMES IN SOUTH AFRICA

A national database of smallholder irrigation schemes was compiled in the course of the project. A simple numerical analysis is presented in this section. The analysis provides an overview of the current data available in South Africa by summarising information on provincial and other categories of relevance.

The primary data has been verified as far as possible and is posted on the AGIS website, www.agis.agric.za. Users are encouraged to update the database through the website or by direct correspondence with the AGIS team

2.1 Methodology

2.1.1 Definition of a Smallholder Irrigation Scheme for this Study

The definition of schemes initially included in the database was:

- Schemes developed in the former homelands.
- Schemes initiated by previously disadvantaged farmers or development agencies in resource poor areas.
- Schemes which are greater than 5 ha in size.

A cutoff size was selected as 5 ha which is somewhat arbitrary but is considered acceptable when one considers the purpose of the database and the objectives of the study. It is a planning tool to support revitalisation initiatives on collapsed and struggling irrigation schemes. Intervention in support of food gardens, while of fundamental importance to rural development and poverty alleviation, is not the main focus of this work although many of the concepts will apply. A national database of food gardens, or clusters of food gardens is probably not realistic and is understandably not in the scope of the assignment.

Notwithstanding the above, the simple definition was applied with discretion and where schemes less than 5 ha in size were encountered data was collected and entered into the database.

2.1.2 Data Collection Methodology

The intention of the database compilation exercise was to collect available information from existing reports and from Department of Agriculture officials at provincial and district centres. The data collection process was carried out by three field researchers through direct visits to provincial Departments of Agriculture. A presentation was made to the (National) Coordinating Committee on Smallholder Irrigation Schemes (CCSIS), the study was introduced and comments invited. CCSIS members representing the Coordinating Committees for Agricultural Water (CCAW's) were requested to communicate to their respective provinces and encourage them to support the data collection exercise.

Limpopo and Eastern Cape were not represented at the CCSIS meeting in Pretoria. A separate presentation was made to the members of the Eastern Cape CCAW at Dohne Research Institute in September 2003. A similar meeting was held with

officials from Limpopo Province, when the data collection exercise commenced there, to introduce and contextualise the project.

Meetings were held with Dept. of Agriculture officials and District officials as well as extension officers in Limpopo, Eastern Cape, KwaZulu-Natal and Mpumalanga. The remaining provinces, Western Cape, Free State, Northern Cape and North West Province have relatively few schemes. Questionnaires were distributed by fax and followed up with phone calls. Gauteng was not solicited.

2.1.3 Questionnaire Design

A four page questionnaire was prepared to obtain data according to the summary list presented at the July 2003 meeting of the Reference Group and then listed in the subsequent Inception Report as follows:

- Scheme Name
- District
- Province
- Location coordinates
- Area Irrigated (ha)
- Potential Area (ha)
- No. of commercial farmers
- No. of Food Plot Holders
- Year established
- Water source
- Pumped or gravity bulk water supply
- Energy source: diesel / electricity etc.
- Infield irrigation method: flood, overhead sprinkler etc.
- Condition of bulk water supply (Good to poor)
- Condition of infield irrigation equipment (Good to poor)
- Land tenure (where possible broken down into landless, subsistence, semi-commercial, fully commercial)
- Soil rating
- Major crops
- Status of Water User Association
- Major problems (as perceived by local Departmental staff).

Section 1: Basic Scheme Details - included scheme name, district, size (in ha), year of establishment, the number of farmers, scheme active, topography and the co-ordinates of the scheme.

Section 2: Bulk Water Supply - concerned with source of irrigation water, reticulation and conveyance systems, source of energy and water reliability and quality.

Section 3: Infield Irrigation System. Information on the irrigation system type and condition was collected.

Section 4: Land Resources. land tenure system, farming venture, types of crops grown, and soil rating.

Section 5: Institutions and Management – included funding of the scheme, water user association and marketing issues.

The last two questions in Section 5 were open-ended allowing the (Government) respondent to state their subjective assessment or perception on what they see the problems to be and to recommend solutions to the stated problems. The fact that the information on the schemes was obtained from Dept of Agriculture officials, sometimes distant from the schemes themselves and that the nature of the information collected was broad, cautions any definitive analysis those items that are subjective (e.g. major problems). The data obtained does however provide a reasonable overview of the current South African smallholder irrigation schemes, their size, location and technical composition.

2.1.4 Data Processing and Analysis

The completed questionnaires were coded and the data was entered into a statistical package, the Statistical Package for Social Scientists (SPSS). Summary statistical data was extracted and then tabulated in Excel to facilitate further analysis and final presentation in graphical form. Maps showing distribution of schemes are shown in Appendix A.

2.2 Internet Access to the Database

The Geographic Information System (GIS) database was configured in consultation with the National Department of Agriculture (AGIS Section), and is fully compatible with the web-based AGIS data set. The data, particularly location data and district name has been verified and is posted on the AGIS website, www.agis.agric.za. Users are encouraged to update the database through the website or by direct correspondence with the AGIS team.

The current database can be downloaded as an EXCEL file from www.agis.agric.za

2.3 Summary Evaluation of Smallholder Irrigation Database

A simple numerical analysis was carried out and is presented in a series of graphs and tables. The main objective is to give a sense of what is on the ground at this time. The analysis does not attempt to address the more complex issues related to the mix of factors essential for a turnaround in productivity, or the history that has led to scheme collapse.

The basic information on scheme size, distribution and activity is summarised in Table 2.1 and full details can be downloaded from the database.

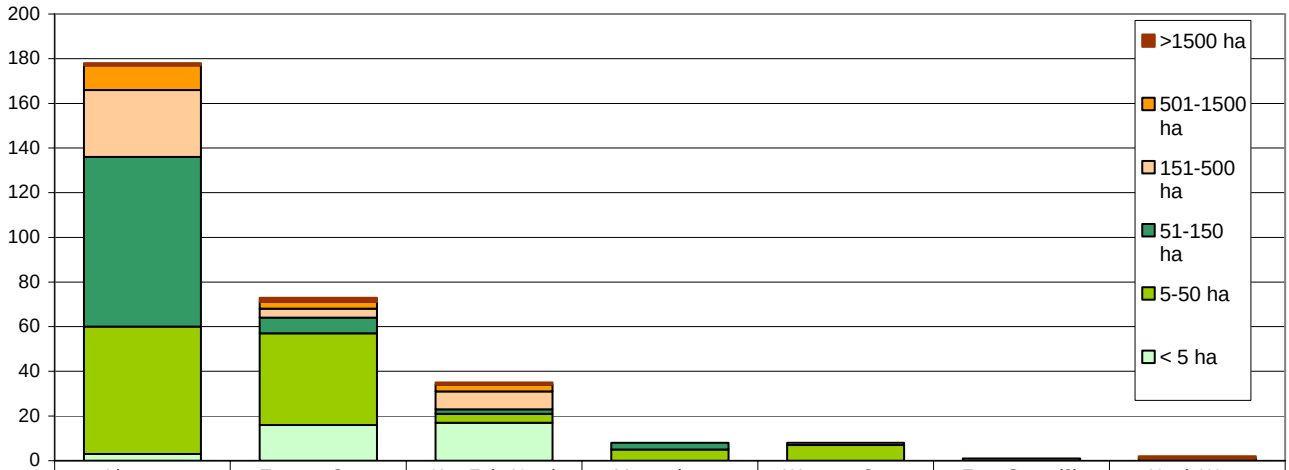
Table 2.1 : Summary Data on Smallholder Irrigation Schemes in South Africa

Province	No. of Schemes	Irrigation command area	No. of farmers	Average plot size (1)	Number of schemes by size category							Scheme Activity (3)				Area under Irrigation Type (ha)				
	Number	Ha	Number		< 5 ha	5-50 ha	51-150 ha	151-500 ha	501-1500 ha	>1500 ha	Missing data	No. Active	No. Active %	Active Area (ha)	Active / Total Area %	Flood	Overhead Sprinklers	Centre Pivot	Drip / Micro	Missing (Ha)
Limpopo	183	28283	17785	2.2	3	57	76	30	11	1	5	105	57%	17452	62%	10834	10214	471	3070	3694
Eastern Cape	75	9641	7871	1.3	16	41	7	4	3	2	2	51	68%	3869	40%	2340	5533	1235	110	423
KwaZulu-Natal	36	6621	6174	1.4	17	4	2	8	3	1	1	35	97%	3097	47%	1730	4891			0
Mpumalanga	8	990	125	9.1	0	5	3	0	0		0	8	100%	556	56%	189	641	160		0
Western Cape	9	425	737	1.0	0	7	0	1	0	0	1	8	89%	386	91%	367	58			0
Free State (2)	3	20	2	10.0	0	1	0	0	0	0	2	0	0%	0	0%	20				0
North West	3	3524	423	5.3	0	1	0	0	0	1	1	2	67%	2816	80%		3524			0
TOTAL RSA	317	49504	33117	1.49	36	116	88	43	17	5		209		28176						

Notes:

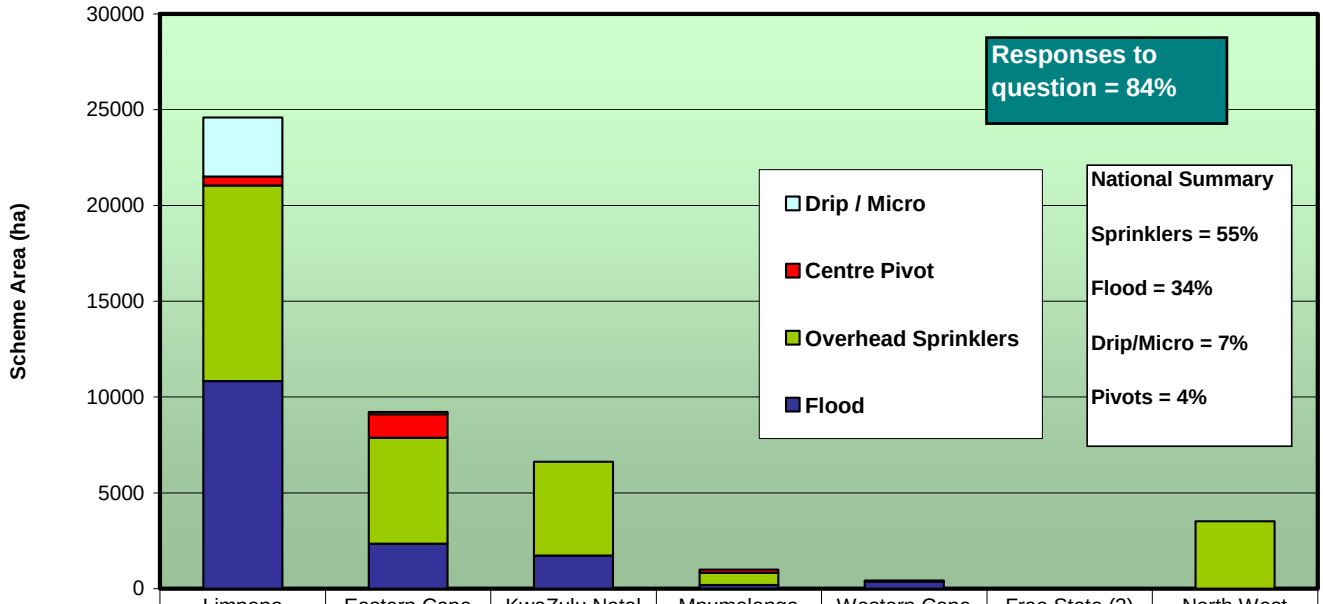
1. Average plot size does not reflect the important distribution of plot sizes on many schemes, particularly the modernised 1970's and 1980's schemes of the former homelands where many schemes comprised a mix of small food plots (0.05ha), subsistence plots (1ha) and commercial farms (4ha) or variations thereof.
2. Free state scheme data is incomplete
3. Scheme activity is defined as the estimated area on any given scheme that is cropped in any one year. The secondary nature of the information sources did not allow for verification and this information is to be treated with appropriate caution.
4. Information obtained from existing Provincial Databases, published information and questionnaire surveys filled out by Department of Agriculture officials in the Provinces

Figure 2.1 : Number of Schemes and Size Distribution by Province



	Limpopo	Eastern Cape	KwaZulu Natal	Mpumalanga	Western Cape	Free State (2)	North West
>1500 ha	1	2	1		0	0	1
501-1500 ha	11	3	3	0	0	0	0
151-500 ha	30	4	8	0	1	0	0
51-150 ha	76	7	2	3	0	0	0
5-50 ha	57	41	4	5	7	1	1
< 5 ha	3	16	17	0	0	0	0

Figure 2.2: Infield Irrigation Technology (by scheme area) on SIS in South Africa



	Limpopo	Eastern Cape	KwaZulu Natal	Mpumalanga	Western Cape	Free State (2)	North West
Drip / Micro	3070	110					
Centre Pivot	471	1235		160			
Overhead Sprinklers	10214	5533	4891	641	58		3524
Flood	10834	2340	1730	189	367	20	

3 COMPARISON OF SOUTH AFRICAN AND INTERNATIONAL REVITALISATION APPROACHES

3.1 Objectives and Scope of Comparative Analysis

A number of irrigation revitalisation initiatives have previously and are currently taking place in South Africa. These range from infrastructure-centred rehabilitation and repair initiatives by DWAF and the Department of Public Works to broad-based initiatives with multi-disciplinary teams tackling the wide-ranging issues linked to smallholder irrigated agricultural production.

The current smallholder irrigation initiatives in South Africa are driven by a diverse range of agencies including the Department of Agriculture, DWAF, Development Corporations (such as the Industrial Development Corporation and the Provincial Development Corporations) and increasingly by District and Local Municipalities and their Development Agencies.

The intervention styles and objectives are widely divergent and while the concept of "revitalisation" is usually embraced in principle, the intervention is in many cases limited to "rehabilitation". This comparative analysis between East African and South African "approaches" attempts to draw conclusions on the relative success and usefulness of a range of approaches leading to success and failure factors. The following programmes were documented and analysed:

- Limpopo WaterCare
- RESIS in Limpopo
- RESIS Recharge in Limpopo and currently underway
- A range of Eastern Cape Initiatives
- The Improvement of Irrigation Performance in Africa Programme (IIPIA) partly funded by IWMI and currently underway
- The World Bank funded River Basin Management and Smallholder Irrigation Improvement Programme in Tanzania

Detailed reviews and a critique of each of these programmes is presented in Appendices B to E of this report. This section presents a concise summary and the comparative analysis of the programmes.

In addition this section comments on:

- Irrigation Management Transfer Experiences in Africa
- Irrigation Revitalisation Costs in South Africa
- Lessons for South Africa

3.2 Project Level rather than Programme Level Analysis

The emphasis of this chapter is on the approaches to irrigation revitalisation at the level of a single scheme, i.e. the project level. There are major programmatic considerations that need to be embraced in a revitalisation programme which addresses a number of schemes and where programme strategy and issues of implementation at a larger scale come into play.

The R1.08 Billion RESIS programme was the largest revitalisation attempt in South Africa to date is a case in point. The issues relating to the programmatic elements; human resource issues, departmental capacity, procurement timelines, outsourcing policy amongst other issues were central to a major change in the implementation strategy at both programme and project levels.

However, these macro-level programme elements have been specifically excluded from the comparative analysis that follows to allow the focus to rest at project level and thereby crystallize the key points of difference and similarity between the international and South African approaches. The macro elements are discussed in Volume 1, particularly with reference to policy, the challenges of procurement and the implications of programme size on project level realities.

3.3 Limpopo WaterCare

3.3.1 Programme content and approach

The Limpopo WaterCare programme implemented by the Limpopo Department of Agriculture started in 1998 and was completed in 2004. It demonstrated a clear strategy from the start that was participatory and broad-based in the multiple aspects of the irrigation production cycle that it tried to address. A detailed evaluation of the WaterCare programme is provided in Appendix B. A brief summary of relevant points is listed below:

- **Community participation** in the planning and implementation stages was stressed through the “Pre-Development Survey” which used a range of PRA approaches to communicate and solicit information. These included mass meetings, semi-structured interviews and direct involvement of community delegates in the detailed planning and implementation.

- **Organisational capacity** was directly addressed through the creation of scheme development committees with technical, crop production, marketing and finance sub-committees. Training in organisational skills, management and finance were included. An attempt was made to vest control of decision-making in the community through the empowerment of these new institutional arrangements. Later, these were found on many, but not all schemes, to have conflicted somewhat with existing organisational structures.

- **Decision-making and technical empowerment** included resource allocation to minor infrastructure repairs carried out using labour-based methods, or by local builders and technicians. The idea was to establish an understanding and

capability around infrastructure functioning and maintenance.

- **Agricultural training** was carried out on-farm using low-literacy methods, focussed on the most important locally prioritised crops (maize largely, but also cotton later). The training programme was a significant success, not least due to the dynamic nature of Johan Adendorff who formulated the content and approach, and in subsequent visits by this project team has been repeatedly noted by participant farmers as one of the major contributions of the WaterCare programme. This is despite the lack of financial feasibility of irrigated maize and cotton crops (using mainstream commercial approaches as opposed to diversified mixed systems – discussed in Chapter 5 of this Volume 2) which were the focus of training at that time.

- **Infrastructure rehabilitation** focussed on the primary needs of the many ageing schemes, and the levels of investment were found on many schemes to be largely short of what was required for adequate re-design and refurbishment to fully operational standards.

- **Water management** was addressed institutionally and to some extent operationally in that attempts were made to formulate rules of apportionment and increased irrigation efficiency through knowledge transfer.

- **Joint ventures and strategic partnerships** were the final piece of the comprehensive initiative to transform these non-productive schemes into operating, locally controlled and financially feasible enterprises.

3.3.2 Evolution of the WaterCare Approach

What is particularly interesting about WaterCare is the change in approach over the last years which are summarised below:

- Project budget was **diverted from physical infrastructure** rehabilitation **to more people oriented investment**. These critically important human capital components included crop production training, farm enterprise training, scheme institutional structures and functioning. Project budget allocations changed from an initial 10% on planning, farmer training and institution building to 50% over the project period, showing an increasing emphasis on these elements for success and the reduced emphasis on capital costs (pumps, pipes and engineering works).

- Substantially **more time has been taken for the process of change**, project timelines for the intervention have extended significantly, from 6 months to 3 years.

- **Decision-making was left more in the hands of the community**, who had to be fully informed and fully understand the implications of their decisions. This meant that considerable programme effort was expended in working through and explaining the implications of various designs, farming systems, profitability, etc.,

- **Substantial effort has been made to establish the agri-business and marketing components**, essential for profitable farming ventures, either individual or communal.

- It was further concluded that one of the key reasons for the substantial improvements in the approach over time was the **attitude of learning** taken by both the Limpopo Provincial Department of Agriculture and the project teams. During, as well as after the various phases, evaluations were held on the effectiveness of the approach, possible reasons for relative successes and possibilities for improvement.

WaterCare seems to have fully embraced community participation and attempted to be led by stakeholders needs and perceptions at planning and implementation stages. It went well beyond the traditional techno-centred “rehabilitation” work typical of many South African interventions on smallholder irrigation schemes at the time. The WaterCare programme seems to have tried to include many of the development principles that were being highlighted from international experience in Irrigation Management Transfer, in terms of participation, ownership, local control, farmer training, building of institutional and productive capacity. Even so, the actual outcomes in terms of farmer success on revitalised schemes were marginal, and in many cases were not successful. The reasons are linked to financial feasibility of the crop mix as well as a range of other factors, but do not detract from the constructive lessons learned in the process.

3.4 Limpopo Revitalisation of Small Irrigation Schemes (RESIS)

The RESIS programme followed short on the heels of WaterCare and was essentially the fourth phase of the programme with a revised strategy. The development thrust of RESIS was largely in line with WaterCare, but included a number of innovations, based on the learnings from WaterCare as well as recent international practice, such as motivated by the International Water Management Institute (IWMI).

In addition to the major increase in programme size (total of 34 increasing to 124) there were important shifts in scope and emphasis which impacted on the scheme level process and on the expected outcomes. These innovations in RESIS related to:

- A **substantially broadened scope of development activities** on and in villages adjacent to the scheme boundaries linked to small livestock development, food production in rainfed fields and intensive home-garden production, water harvesting and included other poverty alleviation initiatives.

- **Linkages with local economic development initiatives** that were planned or active in the area arising out of the district and local municipality Integrated Development Plans (IDP’s) or from Non Government Organisations (NGO’s).

- The **sequence and timing of scheme intervention activities** which was designed so that community awareness and initial consultations precede the regional summer and winter crop planting dates. Thus the subsequent detailed consultations and organisational training coincides with visible and tangible activity on the schemes, initially in the form of crop production training (on-farm) and emergency infrastructure repairs. The detailed planning, organisational development, market development etc. then took place while the (improved) crop is growing and is a visible marker of the ongoing revitalisation effort.

- The **RESIS programme actively engaged with catchment planning** through the Limpopo Coordinating Committee for Agricultural Water Use (including DWAF) and made a clear attempt to rationalise scheme prioritisation and intervention based on larger catchment realities and potential water conflict and availability.

- RESIS embraced the need to **flexibly respond to a wider range of community priorities**, resource diversity and development opportunities. The interventions that resulted from an intensive consultative planning process attempted to meet the diverse needs of plotholders relating to homestead food production, multiple use of water, livestock and scheme interrelationships and dryland crop production.

RESIS was the most ambitious programme in South Africa to date in both the magnitude of the task it attempted (124 schemes in 5 years) and the very broad-based, multi-discipline, and people-centred development philosophy that underpinned it.

A detailed critical review of the programme structure itself and the development philosophy underlying it is provided in Appendix C and the success of the programme was argued then to be unlikely due to the factors summarised below:

- The Department adopted an explicit **strategy to primarily use provincial and local government staff** within the Department of Agriculture across disciplines of agricultural planning, agro-economic evaluation, training, institution building and marketing. This contrasted sharply with the Project Management team's strategy to outsource substantial components to external implementing agents from private sector service providers. This **left a profound shortfall of skills** between the substantial team expertise and resources needed and the very modest number of personnel and skills that were available within Government.

- The **government procurement process** for securing engineering and senior planning team consultancies is both uncertain and lengthy. The subsequent timelines for major engineering interventions on multiple schemes, linked to uncertainties of timelines for the social and agricultural development components, made expenditure targeting risky and therefore politically problematic.

- **Land consolidation was not explicitly addressed** by RESIS as a central part of the intervention which arguably made the strategy unrealistic given small land parcels (1 to 1.5 ha). It is essential to plan for profitability to sustain operational costs. Where these are high, as argued in Section 2, this tends to force a high return, high yield production strategy. There are critical links between high return and high risk commercially oriented farm production approaches and land consolidation which seem necessary to justify economics-based (Government) investment decisions and reasonable net returns per farmer.

- The diversity of schemes and the essential need to exploit marginal local agro-climatic and market advantage could not be accommodated in the practicalities of **a generalised strategy covering 124 schemes**. The agricultural training approach relied mainly on **maize and cotton**. The small margins coupled with relatively small landholdings result in net annual incomes to farmers which are not attractive and seem not to justify the risk of investment in farming.

The direction, strategy and leadership of the RESIS programme, both within the Department and in the Project Management lead team was effectively terminated in May 2005. This was before the RESIS strategy as initiated in the first year of implementation had achieved any scale or impact other than the initial planning stages on approximately half of the schemes.

3.5 RESIS Recharge

New leadership within the Department of Agriculture (the MEC and HOD were appointed in late 2004) and emphasised the need for more rapid delivery and the meeting of key expenditure targets (1.08 Billion Rand over 5 years). The RESIS Recharge programme was initiated to "address the missing gear" (Polokwane Observer, 2005) with an emphasis on infield irrigation investment in preparation for commercial partnerships.

RESIS Recharge embraces the concept of "industrial agriculture", although this is not well defined in available literature or on the RESIS website. What is understood from discussions with individuals involved in the implementation of RESIS Recharge is that there has been an emphasis on developing bulk water and infield infrastructure, mainly through large scale investment in fixed sprinkler systems.

Theoretically, the previous emphasis on investment in human capital (scheme institution building, farmer crop production training, market and financial skills training, etc.) is still considered to be important within the overall strategy and has not been actively removed. Practically, as evidenced by expenditure, field activity and contracts tendered to date, the focus of programme implementation of RESIS Recharge has been limited to investment in bulk water supply and infield irrigation infrastructure and has not formulated or embraced the programmatic elements of human capital development that was previously evident.

The earlier process-oriented approach with major investment in on-scheme planning (using the Pre-development Survey Methodology described in Appendix C), plotholder crop production training and scheme management capability is no longer actively pursued. Two major contracts for infield irrigation equipment for 23 schemes covering 2,800 ha was supplied in the first phase in early 2005. Information on additional areas planned for infield infrastructure were not in the public domain at the time of writing.

Commercial partnerships are envisaged as a key strategy to address the skills and marketing elements leading to the RESIS aims as stated on their website including;

- successful profitable agricultural production,
- job creation,
- poverty alleviation,
- gender empowerment and
- community upliftment.

Given the information available it is apparent that there has been a fundamental shift from a "revitalisation" approach (broad-based integrated strategy) to a "rehabilitation" approach focussing primarily on infrastructure investment, in preparation for yet undefined commercial partnerships.

3.6 The Iterative-Consultative Feasibility Planning Approach (ICON) and the Eastern Cape Resource Poor Farmers Study

The Eastern Cape Resource Poor Farmers Study investigated 10 schemes in the province. Of these six were existing schemes and four were proposed projects. The project developed an approach to planning for scheme design and revitalisation that is called the Iterative-Consultative approach (ICON), which is a flexible combination of familiar methodologies including Participatory Rural Appraisal (PRA), Sustainable Livelihoods, Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) and Farmer Typologies (ICON is detailed in Appendix D).

These are used in an attempt to grasp the very complex and diverse sets of social, political, agricultural and natural resource information that are necessary to enable sensible planning of initiatives, both on existing schemes and on new schemes.

The ICON approach maximises the two-way transfer of expert technical knowledge from the intervention team to the community members, who are considered to be "user experts" to allow jointly formulated scenarios for development. It presumes that the best solutions will be arrived at by allowing the community members (scheme participants / surrounding villagers) to fully understand the implications of a range of choices that they may wish to make and that the role of the "expert team" is to inform their choices.

- **Project boundaries** were not seen as the delineation of the irrigation scheme areas only. This included the usual target group of plotholders as well as the associated community including surrounding villages with social, religious and economic links to, or interests in the scheme.

- Recognition was given to the fact the **communities are rarely homogenous** entities and that conflicting interests and goals are very likely to be present. Diversity of needs of the irrigation plotholders and the surrounding community was embraced.

- A **multi-disciplinary approach to the intervention design** was adopted, covering as many aspects of the irrigation production cycle and surrounding community needs as possible. This typically included detailed plans and budget allocations for infrastructure investment, crop production training, institutional development, land-consolidation and land-market interventions, development of market outlets as well as homestead food production in villages.

- The ICON approach stresses **maximum involvement of stakeholders through cycles of information exchange,** and subsequent ownership of decisions and their implications as the fundamentals of the approach. Knowledge transfer is the critical element.

The consultation process linked with responsibility and power to make the decisions is significantly empowering. Easter (2000) notes that the most successful schemes in IMT are those where the users were more effectively involved in project planning and management and the "key is to give users more control and responsibility for management". The ICON approach is based explicitly on this premise.

3.7 Recent Eastern Cape Infrastructure Centred Interventions

DWAF, Provincial Departments of Agriculture, the Department of Public Works and District Municipalities are the main agencies engaged with infrastructure centred rehabilitation initiatives (i.e. initiatives which do not encompass the whole irrigated farming system, but focus only on infrastructure investment or repair).

The familiar pattern of rehabilitation, degradation and the inability of scheme institutions to maintain recently funded repair initiatives over the last few years is highlighted by experiences at two technically different schemes in the Eastern Cape, Qamata (flood irrigation) and Ncora (gravity pressurised infield sprinklers) (ARCUS GIBB, 2004). In 2001 ECDA (then DALA) and DWAF combined efforts and funded rehabilitation on both schemes, coordinated through a provincial committee comprising the two institutions and their appointed engineering consultants. Five schemes (Tyhefu, Ncora, Qamata, Shiloh, Malenge) were included in the plan. DWAF construction and contractors undertook the work and all of the work was focussed solely on technical elements of irrigation water supply.

The rehabilitation work to canals, pipelines, leidams and valves commenced in 2001. A status report from 2002 states that labour intensive rehabilitation work was underway including desilting, removal of vegetation and construction of gabions for the main water supply and pipeline and valve repair by DWAF construction. Of relevance to this paper is the statement by the consulting engineers on the scheme at the time that "generally the **absolute lack of maintenance is a major concern"** (ATS, 2002). It was reported that recently rehabilitated structures completed the year before were already damaged even before the end of the project construction period. A more recent field survey carried out by the Engineering section of ECDA one year later has pointed towards a long list of additional rehabilitation needs, which includes work that was completed in 2002 and had, one year later, already degraded (D. Wagenaar, ECDA, Oct 2003, pers comms).

Similar experiences are documented at Qamata (ARCUS GIBB, 2004) where four centre pivots were constructed by the Chris Hani District Municipality (CHDM) and Eskom at Section 6 of the scheme. The initiative replaced the flood irrigation with centre pivots and was seen as "rehabilitation". A whole range of critical issues served to undermine these attempts; including serious institutional failure, political conflict and inappropriate agricultural planning. The Eskom funded pivots were never connected to a water supply.

The result was a distinctly unusual image of two brand new electric-drive centre pivots imported from the USA, standing above a dense scrub-forest of acacia which remained uncleared for years with no connection to any bulk water supply.

A further major issue was that no substantive planning or soils suitability was undertaken and the soils are completely unsuitable to irrigation development under pivots (pers comms. Prof M Laker). The complete lack of planning and cooperation is demonstrated when plotholders were required to clear trees under the two pivots that were connected to a source, but on the first day of operation one of the pivots hit a tree that was not removed and incurred R70,000 damage. This was repaired immediately under another grant by the District Municipality

It is acknowledged that these interventions are made with the best of political and departmental intentions and it is often difficult to achieve more when working within the limited sectoral brief of any single department.

Notwithstanding the good intent, the experiences in these recent interventions reinforce the widely acknowledged limitations of rehabilitating scheme infrastructure alone. There have not been coordinated parallel supporting interventions in the key organisational and agri-business elements leading to a functional scheme, underpinned by financial sustainability. The net result as seen at both Ncora and Qamata is **rapid physical degradation of the newly rehabilitated infrastructure** due to the vacuum within which these rehabilitation activities have taken place, and complete dependence on the funding institution for ongoing funding and operational support.

3.8 Success Factors from International Experience

The key success factors in irrigation interventions are summarised from a review of international Irrigation Management Transfer (IMT) experiences and two major recent East African revitalisation programmes (Appendix E). The two regional projects were the River Basin Management and Smallholder Irrigation Improvement Programme (RBMSIIP) in Tanzania and the Improvement of Irrigation Performance in Africa Project in Kenya and Ethiopia (IIPIA), also known under the French acronym APPIA.

International projects reviewed included African and Asian experiences documented by a range of authors, most significantly in IMWI publications. The review has led to a set of success and failure factors for smallholder irrigation development based on these documented regional and international lessons. These factors have been explained in the table below and are then summarised in a column with a success/failure statement. The success/failure factors are carried through to the comparative analysis matrix where international approaches are compared with South African approaches.

Lessons of experience are grouped by the central theme of the success / failure factor to assist cohesion of the ideas presented. The themes overlap and are not intended to be definitive. The success and factors could be scored with different emphasis (points per factor) but this does not change the thrust of the analysis in any way which uses the scores as a numerical tool to emphasise the qualitative evaluation.

The derivation of success factors from international experience is made in detail in Appendix E. Additional factors have been added based on the discussions here.

Table 3.1 : Summary of Key International Revitalisation Experiences

	International Lessons of Experience	Success / Failure factor
1	**Multi-sectoral Interventions**	
1.1	The experience from the international review is explicitly clear that **infrastructure development alone or as a dominant part of the intervention are highly unlikely to succeed**. Farmers in smallholder schemes need support systems that go far beyond just the irrigation system if they are to improve their livelihoods significantly. Irrigation is a highly complex mix of social, agricultural, market and technical parameters, which are in a state of ongoing flux and interconnectedness. Irrigation planners and advisors must, as a critical priority, embrace the multiple sectoral interests and dynamics in planning thinking. Narrow sectorally isolated, engineering and infrastructure driven programmes have substantially increased risk of failure.	**Failure Factor:** Engineering and infrastructure development initiatives alone (bulk water and infield irrigation systems) are destined to failure.
1.2	The interventions which are based on **comprehensive strategies** addressing the **complex of activities** that make up the irrigation enterprise are most likely to succeed. These include markets, finance, inputs, infrastructure, institution-building and crop-production information).	**Success factor:** Comprehensive intervention strategies which address all aspects of the irrigation farming enterprise are more likely to succeed.
1.3	Those projects which have paid **equal attention to the infrastructure** (hard components) as well as the **social and institutional systems** (soft components) of water user organisation and agricultural production are excellent models of intervention with higher success rates (Neeraj et al., 1998).	**Success factor:** The interventions which invested heavily (equally) in human capital / institutional elements and infrastructure have higher success rates.
1.4	Access to reliable water is an essential, though not sufficient condition for sustainable improvement in irrigated agriculture. In a paraphrase of the IWMI hypothesis (Merrey et al., 2003), it is noted that productive use depends on irrigation technology but **will only be successful when market development and information supply to farmers** are made a core priority in the overall intervention design.	**Success Factor:** Market development and information supply are pivotal to success, in addition to irrigation technology.

1.5	**Lift strategy** – In addition to getting the process right, and addressing the complex of activities, there is a need to devise a lift strategy which deals with the whole host of constraints to profitable production. This implies favourable natural resources, knowledge, motivation, management and the critically needed independent agricultural support services (Crosby (2000) in Merrey et al., 2002).	**Success factor:** A "lift strategy" which addresses the multiple constraints to profitable production must be formulated.
1.6	The intervention process and design needs to **engage aggressively with the individuality of on-scheme complexity** so as to identify elusive and marginal advantage by deliberately accentuating inter-disciplinary synergy within the intervention team and between the team and the participant farmers.	**Success factor:** Complexity and marginal advantage of site-specific factors must be maximised. Close interaction between discipline experts and local farmers is therefore critical.
1.7	Insecure **land tenure** and the related issue of **irrigation holding size** need to be addressed. Research shows that most successful irrigation farmers derive a major portion of their income from irrigated farming and this is an incentive to engage in management and operation of the scheme. Farmers who work small plots are forced to pursue a number of income and livelihood behaviours of which irrigation may be a small part and therefore have a negative impact on commitment and interest. Insecure tenure limits incentive to make investments and provides no room for a land-leasing market.	**Success factor:** Land tenure strategies which facilitate a land-leasing market leading to feasible irrigation landholding sizes are important.
2	**Participation and Ownership**	
2.1	The approaches cannot rely on vague or routine use of PRA methodologies but have to ensure meaningful transfer of information rooted in time-consuming and expensive processes, leading to fully informed decision-making on the part of participant farmers. **Ownership is rooted in the information transfer and decision-making process**.	**Failure factor:** Routine, unskilled or vague use of PRA methodologies, without time consuming (and costly) engagement are unlikely to achieve sensible outcomes.
2.2	In general the overall performance of interventions in irrigation systems in a **demand-driven mode, with a high level of farmers' involvement** in irrigation projects has been better than those provided with support in a supply-driven mode with moderate or low levels of farmer participation (Neeraj et al., 1998 in a detailed IMT study of a wide range of intervention approaches on 231 schemes in Nepal).	**Success factor:** Interventions where farmers initiate the process (demand-driven) as opposed to the agency initiating the process (supply driven) have better outcomes.

2.3	As above	**Success factor:** Interventions with a high level of farmer involvement and participation perform better.
2.4	Ensuring **ownership of new and rehabilitated infrastructure** through central involvement of farmers in all aspects of decision-making is critical. One of the key elements of ownership is not simply sweat or cash involvement, but is tied to decision-making power over the very content of the development. Thus projects paid and built for by outsiders readily have ownership entrenched where the planning and decision-making processes fully inform beneficiary farmers of likely implications and ensure that farmers guide the content of the design and implementation.	**Success factor:** Ownership of infrastructure and equipment is centrally important to success and is linked to decision-making on project content.
3	**Planning Considerations and Livelihoods**	
3.1	Planners must **adopt realistic yield projections**, pricing structures based on smallholder realities of production and marketing, so that the resultant financial evaluations on which investment decisions are based are realistic. To this end, teams with the thinking driven by engineers and economists need to raise significant internal caution on the information that informs concept planning and evaluation. The socio-economic and agricultural production realities of isolated sites, difficult communication, relatively poor supporting infrastructure must ground financial planning, rather than idealistic or average commercial sector scenarios.	**Failure factor:** Investment decisions and financial feasibility based on optimistic yield projects will not be reflected in reality and will result in financial failure of the project.
3.2	It is useful and important to learn from and **build on pre-existing institutions** and practices for managing the irrigation systems. New institutions demand additional time and cost to operate and alter or undermine delicate local power balances for decision-making and access to limited resources.	**Success factor:** Important to use existing institutions as far as possible to maximise stability and minimise farmer transaction costs.
3.3	The **economic and financial cost** of sustainable self-management must be an **acceptably small** proportion of improved income and the proposed organisation design must have **low transaction costs** (Shah et al., 2002).	**Success factor:** Farmer's time and financial commitment to running the scheme must be minimised.
3.4	The intervention process in general must hold out the **promise of a significant net improvement in life situations** for a significant proportion of members and the irrigation system must be the central resource to creating an improvement in farmers life situations (Shah et al., 2002).	**Success factor:** To achieve success the irrigation intervention must target significant improvement in most farmers life situations (livelihoods).

3.5	Participation, ownership and appreciation of diversity at scheme level need to be integrated with **livelihoods strategies outside of the irrigated context**. This means taking account of multiple water needs for personal uses, livestock, fishing, laundry, small business (brick-making) and the like in addition to irrigation.	**Success factor:** Irrigation is part of a wider set of livelihood strategies and interventions must consider off-scheme and non-agricultural linkages.
3.6	Irrigation-related interventions need to be made with full appreciation of the **broader river basin requirements and regional water allocation demands**. While fully justifiable and in keeping with the dominant paradigm of IWRM adopted by most agencies, IWRM needs to be a sub-text to inform a livelihoods-centred approach which considers broad social and environmental realities, on and adjacent to the schemes. Participation at local level is likely in most cases to be subdued by the powerful and vested interests linked to water allocation at catchment / basin level (Merrey et al., 2003) and this disempowering reality must be consciously addressed and mitigated against in both the process and the institutional design. The water allocation reform process now underway nationally will hold real significance on this point, in the smallholder irrigation context.	**Success factor:** Integrated Water Resource Management must be the framework within which a livelihoods-based approach to irrigation planning takes place. The basin level power imbalances can only then be addressed.

3.9 Notes on the Comparative Analysis

A comparative matrix has been drawn up in order to explore the responsiveness of the approaches to the range of identified factors that are important for success. The comparison also highlights similarities and differences of the approaches. The matrix, shown in Table 3.1, is based on a list of **success factors** as these emerged from the review of approaches discussed earlier.

3.9.1 Qualitative scoring

A semi-quantitative scoring system was established, that is somewhat arbitrary in that it assumes similar importance for each success factor, with the exception of profitability which is scored higher simply because it is considered to be of critical importance. Failure factors were scored negatively and have the numerical effect of reducing scores.

It is important to note that in both of the tables:

- The scoring system is based on a **qualitative assessment by the team**, given direct involvement with the programmes (RBMSIIP, RESIS, E.Cape Resource Poor Farmers) or close observation and substantial discussion with programme staff and project team members (WaterCare, IIPIA, RESIS Recharge).

- The scores are **not definitive** and points could be scored up or down a notch without substantive change in the underlying reasoning. The purpose of the scoring system is support comparison and to highlight the **extent to which each approach conforms or diverges** from the success and failure factors, or the requirements for sustainability.

3.9.2 Grouping of approaches

The qualitative analyses (represented semi-quantitatively in the matrices) show that the approaches can be placed into two groupings:

- Multi-sectoral interventions (WaterCare, APPIA in Kenya, RESIS, E.Cape RPF)
- Infrastructure centred interventions. (RESIS Recharge, E.Cape Infrastructure programmes, RBMSIIP in Tanzania)

Table 3.1: Comparative Scorecard of East African and South African Irrigation Revitalisation Approaches

Note: The derivation of success factors from international experience is made in detail in Appendix E)

		Max score	RBMSIIP	APPIA	WaterCare	RESIS	E.Cape RPF	RESIS Recharge	E.Cape Infrastructure
1	**Multi-sectoral Interventions sub-total**	**18**	9	16	14	14	13	2	0
1.1	**Success factor:** Comprehensive intervention strategies which address all aspects of the irrigation farming enterprise are more likely to succeed.	**3**	1	3	3	3	3	1	0
1.2	**Success factor: The interventions which invested heavily (almost equally)** in human capital / institutional elements and infrastructure have higher success rates.	**3**	1	2	3	2	1	0	0
1.3	**Success Factor:** Market development and information supply are pivotal to success, in addition to irrigation technology.	**3**	2	3	2	2	1	0	0
1.4	**Success factor:** A “lift strategy” which addresses the multiple constraints to profitable production must be formulated.	**3**	1	2	2	2	2	1	0

		Max score	RBMSIIP	APPIA	WaterCare	RESIS	E.Cape RPF	RESIS Recharge	E.Cape Infrastructure
1.5	**Success factor:** Complexity and marginal advantage of site-specific factors must be maximised. Close interaction between discipline experts and local farmers is therefore critical.	**3**	1	3	3	3	3	0	0
1.6	**Success factor:** Land consolidation initiatives in support of individual farmer expansion or group consolidation for partnership in Joint Ventures with agri-business	**3**	3	3	1	0	3	0	0
2	**Participation and Ownership sub-total**	**12**	5	11	9	9	12	0	0
2.1	**Success factor:** Routine, unskilled or vague use of PRA methodologies, without time consuming (and costly) engagement is unlikely to achieve sensible outcomes. Meaningful and participatory methods are more likely to achieve success.	**3**	1	3	3	3	3	0	0
2.2	**Success factor:** Interventions where farmers initiate the process (demand-driven) as opposed to the agency initiating the process (supply driven) have better outcomes.	**3**	0	2	2	2	3	0	0
2.3	**Success factor:** Interventions with a high level of farmer involvement and participation perform better.	**3**	2	3	3	3	3	0	0

		Max score	RBMSIIP	IPIA	WaterCare	RESIS	E.Cape RPF	RESIS Recharge	E.Cape Infrastructure
2.4	**Success factor:** Ownership of infrastructure and equipment is centrally important to success and is linked to decision-making on project content.	**3**	2	3	3	3	3	0	0
3	**Planning Considerations and Livelihoods sub-total**	**20**	10	12	5	13	15	3	0
3.1	**Success factor:** Investment decisions and financial feasibility evaluations based on realistic yield projects (not theoretical) are more likely to result in success.	**3**	0	2	1	1	3	0	0
3.2	**Success factor:** Project irrigation water supply must be based on broader catchment planning as well as legal authorisations.	**2**	1	0	0	2	1	0	0
3.3	**Success factor:** Important to use existing institutions as far as possible to maximise stability and minimise farmer transaction costs.	**3**	1	3	1	1	3	0	0
3.4	**Success factor:** Farmer's time and financial commitment to running the scheme must be minimised.	**3**	3	3	1	1	1	1	0

		Max score	RBMSIIP	APPIA	WaterCare	RESIS	E.Cape RPF	RESIS Recharge	E.Cape Infrastructure
3.5	**Success factor:** To achieve success the irrigation intervention must target significant improvement in most farmers' life situations (livelihoods, financial feasibility and profitability).	**3**	3	3	1	2	3	1	0
3.6	**Success factor:** Irrigation is part of a wider set of livelihood strategies and interventions must consider off-scheme and non-agricultural linkages.	**3**	0	0	0	3	3	0	0
3.7	**Success factor:** Integrated Water Resource Management must be the framework within which a livelihoods-based approach to irrigation planning takes place. The basin level power imbalances can only then be addressed.	**3**	2	1	1	3	1	1	0
	TOTAL Score	**50**	**24**	**39**	**28**	**36**	**40**	**5**	**0**
		Max score	**RBMSIIP**	**APPIA**	**WaterCare**	**RESIS**	**E.Cape RPF**	**RESIS Recharge**	**E.Cape Infrastructure**

3.10 Group 1 - Multi-sectoral Approaches

The following irrigation revitalisation approaches are grouped due to their close similarity of the principles and approaches on which they are implemented.

- APPIA
- WaterCare
- RESIS
- E.Cape RPF

These approaches have all attempted to address the multiple elements of irrigated production, from infrastructure through to farm production training, institutional development, marketing and financing. They have all adopted farmer-centred consultative planning processes and have emphasised the fundamentally important role of farmer-led decision-making. The effort and expenditure on the soft (people and institutional components) have made up a significant portion of the total project costs. In the words of Rohrbach (in Lahiff, 2005) there is substantial potential in "the complementary impact of a combined set of agricultural interventions".

Three of these approaches (RESIS, E.Cape RPF and APPIA) have incorporated international irrigation and development experiences and their similarities are not surprising for that reason. APPIA is a project under the IMWI umbrella. RESIS and E.Cape RPF were guided local and international recommendations on agricultural water use.

What is interesting is that the formulation of the APPIA strategy in East Africa, which has strong similarities to the E.Cape RPF and RESIS, has taken place by a completely different, unconnected team based in Ethiopia, without any direct knowledge of the other South African revitalisation activities which were taking place. These approaches are very similar in process and emphasis.

The key similarities and shortfalls of the approaches against the success factors are highlighted below.

3.10.1 APPIA (Kenya and Ethiopia)

The APPIA project is strong on consultation and farmer involvement, as well as appropriate technical design, but does not emphasise land consolidation, livelihoods issues, nor does it allocate a high priority to the **marketing element**.

Marketing is addressed in a broad-brush way by a team with relatively modest skills in this dynamic and challenging area, but at the same time is listed in most of the ten case study schemes as a significant constraint. However there seems to be limited experience and innovation in the teams engaging with the farmers to identify and develop new opportunities, either in the form of markets or post-processing and value adding initiatives.

APPIA also does not explicitly **integrate the livelihoods and production realities** on the irrigation schemes to the broader livelihoods strategies (livestock and dryland agriculture in particular) adjacent to the schemes. Furthermore, APPIA, while considering hydrological aspects and water supply to a specific scheme is not planned within a basin management framework and deals with project specific hydrology issues which are more localised.

3.10.2 Limpopo WaterCare

Limpopo WaterCare was a progressive and even ground-breaking development approach in irrigation revitalisation in South Africa. Much of the WaterCare strategy is in parallel with international experiences and success factors, particularly in the emphasis on:

- participative planning processes,
- agricultural production training,
- "empowerment training" and its attempt to redress the legacy of dependency
- institution building and
- the strategy that addressed the multiple aspects of the agri-enterprise.

WaterCare acknowledged the need for land consolidation, but did not succeed in implementing any strategies linked to this.

As in the case of APPIA, WaterCare focussed on development within the scheme boundary and did not actively engage in off-scheme activities with livelihood links to the scheme (food production in gardens and support to low-risk production approaches in surrounding dryland fields).

One of the key elements where WaterCare failed, as shown by current events on some of the schemes, is that it did not succeed with profitability even though the strategy attempted to build on the strength of commercial partnerships. The cotton partnerships on which many of the WaterCare projects were based have collapsed with the global drop in cotton value in 2004. However, even prior to this price collapse, the dependence on extensive low-value crops (cotton, maize) with small margins combined with the small irrigated landholdings per farmer means that the expected returns per farmer at the planning stage were very small.

Given the limited choice of crops due to agro-climatic and marketing limitations and following the argument in the previous section for larger landholdings to underpin financial returns, it is clear that land consolidation should have been a central parallel strategy, determined by profitability considerations. This argument is expanded in Chapter 5.

The real limitations to crop selection options and marketing channels, and the absence of a land-consolidation initiative seem to have been the key elements which have limited the positive impact of WaterCare, given the adoption of a commercialised crop-production model.

WaterCare was characterised by a broad-based intervention strategy and with an explicitly participatory focus. Even so, over the years of working with different schemes, these initial attempts still fell short of what was needed to gain momentum and sustainability in all of the elements linked to success. Greater investment in people development was found to be essential in the technical, agricultural and institutional spheres.

3.10.3 RESIS - Limpopo

The RESIS programme followed directly on the heels of WaterCare (and was in fact Phase IV). RESIS emphasised plotholder and community participation and advanced the use of the “Pre-development Survey” established during WaterCare.

RESIS strategy formation had close links to IWMI and was directly informed by global Irrigation Management Transfer (IMT) experiences. It is not surprising then that the RESIS strategy has met many of the success factors and avoided the failure factors that this review of international experience highlights as important. The RESIS strategy at scheme level further broadened the approach of WaterCare by:

- engaging with catchment planning and Integrated Water Resource Management

- responding to the wider range of community priorities in a livelihoods framework by considering off-scheme possibilities such as homestead food production, multiple use of water, livestock inter-relationships and improvement of dryland crop production.

RESIS did however fail to address the same two key success factors of WaterCare listed in the comment on WaterCare above, namely land consolidation and profitability. There seems to have been a belief that an invigorated semi-subsistence mode of production on the one hand and commercial partnerships with commodity crops (cotton) on the other would provide a profitable basis for production.

While low returns with an emphasis on food production for local consumption may be acceptable on schemes with low financial operating costs (but with high transaction and labour costs i.e. flood irrigation schemes), this tends to become financially unfeasible where pumping is required. The same argument holds true for commodity crops with marginal returns (expanded in Chapter 5).

More significantly for RESIS however, it was the large scale programmatic element (124 schemes), the major expenditure targets (R1.08 billion over 5 years) and the serious political and administrative issues which prevented it ever developing beyond a semi-theoretical approach.

3.10.4 Eastern Cape Resource Poor Farmers Initiative and the ICON Approach

The ICON approach (Appendix D) was used to develop revitalisation plans on 6 existing schemes (as well as 4 new schemes) in the Eastern Cape. The ICON Approach is a highly interactive consultation and planning process and was developed and used on the Eastern Cape Resource Poor Farmers initiative (E.Cape RPF).

As in the case of RESIS, the strategy that emerged was formulated based on full awareness of international and local experiences and tends to address most of the success and failure factors that are listed here. The author's direct role in formulating the ICON approach and resultant implementation strategy on the RPF makes the scoring unavoidably biased, but objectivity has been applied insofar as this concept exists in reality and is intellectually achievable in this case. The E.Cape RPF scores well generally in that the strategy had the benefit of building on both WaterCare, RESIS and East African experiences, but it scores poorly in three areas:

- **Market linkages** – the schemes which were part of the programme were located largely within the former homeland areas and had a comparative advantage over produce which had to be transported from more distant locations (200 to 300km). A generic strategy seemed appropriate based on green maize and mixed vegetable production for local small town and regional supply. Market linkages were not actively developed, although budget was allocated for future work on this key component. Project development has been stalled as the projects have failed to attract the necessary government support, even though formal approval was granted for 3 by the Eastern Cape CCAW.

- The overall **investment in the soft components (planning, training and institutional development)** was relatively low and did not achieve the necessary levels of investment that characterised WaterCare (30% to 50% of total budget). The realities of working within the DWAF and the Comprehensive Agricultural Support Programme (CASP) subsidy structure and guidance from the Government on likely funding scenarios left total "soft budget" component of only 10% to 30% on schemes, which is some 40% to 20% less than what international and local experience indicate is necessary.

- ICON (as used in the RPF) dealt with local hydrological factors but did not consider the scheme re-development in the context **of broad catchment issues** and IWRM and as such has fallen short on the success factors as determined from international experience. This success factor needs to be linked to the level of water stress in catchments, as arguably where there is no water stress then it is less important. It will however become increasingly important as water stress increases nationally and in the context of the water allocation reform process now underway nationally, where more or less water may be available for irrigation as a result of the reform process.

3.11 Group 2 - Infrastructure Centred Initiatives

This group comprises:

- RESIS Recharge
- E.Cape Infrastructure
- World Bank RBMSIIP – SIIP Component

3.11.1 RESIS Recharge and E.Cape Infrastructure Initiatives

The RESIS Recharge and the E.Cape Infrastructure initiatives are both similar in that they focus mainly on infrastructural components and do not consider the broader complex of activities in the agri-enterprise.

These two approaches score heavily negatively on each of the key failure factors and arguably show themselves to be fatally flawed, given the wider experiences and analysis of this review. Their overall scores are negative or close to zero as a result of high scores on the failure factors (-ve scores) and very low scores on the success factors.

International experiences in irrigation revitalisation, focussed on collapsed or largely dysfunctional schemes, are clear that investment in infrastructure alone is likely to fail. This includes the simplistic repair of existing systems and "upgrading" of infield irrigation technology. It is clearly important in almost all cases that irrigation initiatives need parallel elements addressing the complex of activities and functions as discussed in detail in earlier sections of the report.

Recent South African experiences have been documented earlier (e.g. Ncora scheme) where infrastructure degradation is observed on a scheme at the same time as new infrastructure rehabilitation initiatives are being undertaken. This demonstrates a disturbing lack of awareness of options on the part of the agencies funding infrastructure-centred approaches, or demonstrates that other expenditure or political motivations for these interventions are at play.

3.11.2 World Bank RBMSIIP – SIIP Component

The SIIP component had as its core concept the modernisation of irrigation infrastructure and was an infrastructure centred programme. But it has characteristics which differentiate it somewhat from the two infrastructure cases described above.

Firstly, some attempt was made to address the other multi-sectoral elements, even though this was relatively small. The financial allocation to the softer components (farmer, institutional and market development) fell substantially short of what is required for a wholly broad-based approach that addresses the irrigation complex in its entirety. RBMSIIP spent some 11% on the "soft" components of the initiative with and the remaining 89% on infrastructure, project management and environmental mitigation (World Bank, 2004).

The irrigation schemes of the RBMSIIP programme stand alone in one sense and are perhaps the exceptional case where a heavier emphasis on infrastructure may be justified. The schemes selected for modernisation were largely functional "traditional" irrigation schemes.

These had substantial existing production, farmer capability, marketing links, water allocation rules and local organisational systems prior to the intervention taking place. In this context of substantial existing production and local expertise in crop production and irrigation practice, infrastructure-centred interventions are arguably not as handicapped as in the case of 'revitalisation' initiatives which demand attention to all aspects of irrigation production, not just the mechanics of providing water. This statement is made with caution given the possible negative impacts of "modernisation" of water supply systems. These include disruption of existing organisational structures, water allocation practices and power balances between top-end and tail-end irrigators (in flood schemes).

3.12 Conclusions to the Comparative Analysis

1. The picture that emerges from this comparative analysis and scoring of success and failure factors presents a clear, if not particularly surprising case. **Multi-faceted intervention approaches** targeting irrigation revitalisation, that address a broad range of social, technical and production issues are **much more likely to be successful** than those which focus mainly on infrastructure repair or replacement.

   The multi-sectoral approaches that have been documented (namely WaterCare, RESIS, APPIA and the E.Cape RPF) are all similar in the participative development principles that underpin them and the range of issues that they address. These approaches are in line with local and international experience, success and failure factors and allocate a major portion of the budget to "soft" costs targeting human capital development.

2. **Infrastructure-centred approaches**, either with intent to repair existing canals and pipelines or to upgrade to higher-tech systems allocate most of the budget to engineering components. These initiatives **have a very high risk of failure**, are developmentally unsound, deny the lessons of South African and international experience and are likely to be financially wasteful on a large scale. The RESIS Recharge approach and the cluster of initiatives termed here as the Eastern Cape Irrigation Infrastructure Repair initiatives seem to fall into this category.

3. The sole exception to the general conclusion on infrastructure centred initiatives is on those schemes with **poor infrastructure but where existing irrigation practice is largely successful**, where there is production momentum and where infrastructure improvement will add to already profitable enterprise. There are numerous cases in East Africa of such "traditional" schemes, but few if any cases in South Africa where infrastructure centred development on its own have a chance of success.

4. What have been omitted from most of the multi-sectoral South African initiatives to date are the interconnected issues of **profitability, crop production paradigm and land-holding size**. Land tenure initiatives that promote a land-leasing market leading to consolidation of more financially feasible irrigated landholdings have not been included in South African approaches to date, except for the E.Cape RPF initiative. Larger individual farm sizes, in a commercial production context seem to be essential for success.

5. The importance of farmer's livelihoods and **linkages between on-scheme irrigation production and off-scheme livelihood activities** is a second key missing element in most approaches. This is relevant in the context of multiple water use as well as cropping and livestock systems. Promoting food production initiatives off-scheme (in home gardens or with low-risk infield rainwater-harvesting strategies) has direct links to how people can use irrigation land and presents opportunities for change. International experience shows that a broad and flexible planning approach which considers the diverse crop-production needs on and around the scheme is most likely to succeed.

6. The infrastructure centred interventions of the new South Africa can be viewed as an **ironic repeat of the apartheid era development approach**. The schemes developed in the late 1970's and 1980's were driven by the dominant development paradigm of the 70's which emphasised top-down planning and a belief in capital intensive technology in the form of high-tech irrigation systems. Analysis of success was based on simplified resource based assessments (soils, labour, water, climate) and macro-economics (Van Averbecke, 1998) and did not engage in addressing the human capital deficit, ownership, participation, all so critical for success, as this review so clearly illustrates. These schemes failed dismally in the mid-90's after government withdrawal and now present the starting point for all of these current interventions.

7. The funding realities within Government do not easily support politicians and bureaucrats to make **decisions which favour process oriented development**. The procurement bureaucracy and the rigorous transparency requirements mean that implementation timelines are long while a single financial year is relatively short to procure and implement any programme of substance. This is coupled with an increasing need for rapid expenditure by Government Departments over annual timelines as performance management is largely based on meeting expenditure targets. This undermines the 3 to 5 year programme lengths required for sustainable planning and implementation. **High cost infrastructure projects therefore find favour** with politicians and technocrats alike and are welcomed by private sector given the major investments, the public relations value and the professional fees that result. They present a relatively immediate, financially safe, visible outcome (given the implications of the Public Finance Management Act and the potential sting of the Scorpions) which is very different from outcomes of capacity building and investment in human capital, which are more difficult to quantify and demonstrate in the short term.

8. **South African revitalisation approaches in line with international best practice are in fact substantially developed**, (WaterCare, RESIS, E.Cape RPF) albeit not perfect or with a certain outcome. These address the complex nature of smallholder irrigation development and embrace the many socio-technical and agro-financial issues as a complete package and avoid piecemeal interventions so likely to fail. It is clear from our own South African experience that investment in human capital elements needs to approach that of capital works if there is to be a chance of success.

4 AGRICULTURAL PARTNERSHIPS AND MENTORSHIPS

4.1 Context

4.1.1 Potential for rural - commercial symbiosis

Since its official recognition in the World Bank's 1981, Berg Report, contract farming has been widely endorsed by the major development and funding agencies as providing a "dynamic partnership" between private capital and small-scale farmers (Williams and Karen, 1985 in Cartwright, 2002). As such it has formed a key component of many structural adjustment packages and its ability to facilitate peasant's access to markets, disseminate technology and forge linkages has even been prescribed as "the ideal medicine" for the Sub-Saharan African agricultural crisis (World Bank, 1981 in Cartwright, 2002).

The role of commercial agri-business in strategic partnerships with groups of small farmers on irrigation schemes is common in South Africa, particularly in the sugar, forestry, cotton and tobacco industries. Under the land reform programme, partnerships have seen success in the fruit, wine and dairy industry. JV's, contract farming and commercial partnerships have been and are currently central to revitalisation plans on many schemes. Current strategies on some schemes hinge almost entirely on partnerships (e.g. Tyhefu, Makuleke and Giba cases in this study and Hereford scheme farmers with Tobacco RSA (Tapela, 2005)). However, experiences show that while commercial partnerships are one of the particular opportunities in South Africa there is substantial reason for caution. The real financial benefits that accrue to participant farmers is often limited (or negative as in the Hereford case (Tapela, 2005)) and also in regard to empowerment issues where farmers can be marginalised to the extent where they are little more than labourers on their own fields.

The opportunity arises from the possible links that can be made between smallholder farmers and the sophisticated commercial agricultural sector. Companies can provide skills, technologies, resources and access to markets that the scheme plotholders would otherwise have difficulty gaining access to. AgriBEE legislation requiring equity sharing of existing white dominated commercial agri-business by black shareholders, plus the opportunity to gain cost effective access to increasingly scarce bulk water allocations, irrigation infrastructure and good soils effectively subsidised by government and placed in the hands of black irrigation plot-holders, makes partnerships financially attractive.

In addition to AgriBEE, Cartwright (2002) notes that the current water allocation reform process further strengthens the hand of plot-holders and that 'emerging growers' access to water will provide contractors with a significant incentive to engage in contracts with these growers". Similar motivations are evident in the outcome of current feasibility planning for the Sundays River Scheme extension by 3000 ha, where a range of commercial partners in the fruit and dairy industry have expressed substantial interest in collaborating with future black farmers in joint business arrangements – even by investing substantial own capital in on-farm infrastructure. This is driven simply by profitability (of subsidised access to developed irrigation land) and by AgriBEE targets. Water allocation reform could strengthen the position of irrigation farmers in stressed catchments where schemes are currently water-short. The role of Government as a key partner in this sense is noted.

4.1.2 Power Plays and reason for caution

Partnerships come with significant issues relating to equity, beneficiary representation and power imbalances given the very different knowledge base of the prospective partners. There is the spectre of farmers being excluded from complex contract details and farm decision-making due to engagement in wholly unfamiliar language, financial, legal and conceptual terrain and being reduced to labourers on their own land. Furthermore, marketing companies engaging with rural producers generally occupy the position of being monopsonists (Cartwright, 2002) i.e. they are a single buyer in relation to many sellers of produce with limited market opportunities. This places marketing companies in a position of substantial power in regard to small producers, as refusal by a small producer has limited bargaining effect, whereas the converse situation, i.e. the power of the single buyer has major bargaining power.

In this context, a range of factors may determine whether companies and groups of farmers may strike up deals or actively avoid them. External policy (such as AgriBEE), market duress to practise social responsibility, economic considerations such as discounted access to primary irrigation infrastructure and natural resources (water/soils) and potential to share risks with either plotholders or with Government all play a role (after Mayers and Vermeulen, 2002).

In any case partnerships are increasingly prevalent and are seen as a solution to many of the critical challenges in the smallholder irrigation sector in South Africa.

4.1.3 South African partnerships in irrigation

"Strategic partnerships" were used in the Limpopo WaterCare, the RESIS programme and are central to the RESIS Recharge approach where infrastructural investment hopes to set the stage for bringing partners to the negotiating table. A similar strategy of infrastructure investment to attract commercial partners was adopted reasonably successfully at Tyhefu scheme, where some R44 million was invested over a 5-year period leading to the successful tender of a commercial partner. At the time of writing, 15 months later, the potential partnership had not yet been finalised due to land conflict and institutional issues as reported in detail later in this report.

Partnerships in the sugar and forestry industry are the most well established with long-term success since the 1970's. However the context does not readily translate to other crops. Mayson (2003) argues that one of the reasons sugar and timber have been so successful in outgrower relationships is because the crop itself, unlike annuals, can be used as collateral for loans on land held under communal tenure. In addition, sugar and forestry production include many factors that make them substantially different from other crops, not least the relatively simple and long term crop production cycle and the guaranteed relatively stable market. These crops have parallels with the wine industry. The nature of the crop production expertise in sugar and timber particularly (which is relatively simple compared with high-value vegetables for example) and given the gravity of the supporting industry means that sugar, timber and to some extent grape/wine contract farming experiences will be of limited used in finding a way forward. On the bulk of smallholder schemes under question these crops are not climatically suitable and more complex crop production and marketing realities have to be engaged, including the low returns from commodity crops with the unavoidable link to land size and likely financial returns per farmer (explored further in Chapter 5).

The success of partnerships in sectors other than sugar, forestry is pockmarked with financial failure; Hereford scheme (Tapela, 2005), Makuleke and Tyhefu (documented in the following sections) but a few. Some success is also clearly evident, particularly in the Western Cape wine and fruit industry (Hamman, 2005) and in sub-tropical fruit (Zebediela Estate in Limpopo, Giba case study with bananas).

Commercial partnerships have potential to meet some of the most difficult challenges in revitalisation, given the strength of commercial agri-business in finance, input supplies, crop production, farm management, marketing and post-processing. But local and international experience show that these come with major equity, representation, empowerment and financial issues both during the process of establishing new partnerships and thereafter developing them into ongoing mutually beneficial relationships.

A variation on commercial partnerships are those with academic institutions which engage over extended periods in action research with schemes. These usually focus on one component at a time (cultivar trials, socio-economics of plotholders, water allocation practices etc.) but over time can cover a wide range of institutional, infrastructure, water, agronomic and marketing issues. These academic partnerships present substantial promise for opportunistic ad-hoc support and there is evidence that they have provided substantial information that is useful to farmers. Examples are Tshwane University of Technology's involvement at Dzindzi Scheme, University of Pretoria involved at Thabina Scheme and others, University of KZN at Mbumbulu (case study in Appendix F).

4.2 Case Study Selection and Categorisation

Case study fieldwork was undertaken on five existing partnerships (some commercial, others NGO and academic partners) to gain a better understanding of partnership dynamics. The study examined the factors that encourage or prevent partnerships and presents practical suggestions on how successful partnerships might be initiated, negotiated and concluded.

Other creative and recommended farmer support approaches (Resource Centres and NGO Extension services) are presented in Volume 1 – The Rough Guide. The aim of the study on partnerships in this Volume 2 was to more fully investigate the benefits in regard to both financial aspects and to empowerment of this popular, yet contentious route.

4.2.1 Selection of case studies

Discussions were held with a range of individuals from within Government departments, the research community and project management teams who are working in the four provinces where most of the smallholder schemes are located (Limpopo, E.Cape, KZN and Mpumalanga).

A total of nine projects were shortlisted and further information was obtained through field visits and interviews. Three field researchers visited and spent two days on each project, outlining possibilities and holding discussion with farmers', Departmental staff, companies and NGO's who were involved. The objective of these reconnaissance visits was to identify the most useful cases and assess willingness to

participate in research activity. All of the shortlisted irrigation projects have the key themes of interest which are linked to financial support, crop production knowledge and marketing information. It was decided that an intensive approach investigating fewer schemes would be more valuable than obtaining cursory information on many schemes.

The final research scope, necessarily bound by time and resources was reduced to detailed interaction on five schemes, located in four provinces. This would allow sufficient breadth to cover a range of partnership / mentorship scenarios in different provinces and also ensure that sufficient resources could be focussed so as to arrive at useful and practical outcomes.

The schemes selected from this shortlist were those where the history and current momentum were thought to be complementary to each other and the greater objectives of the project. The selected case studies are introduced in Table 4.1 and the details of each case study are then fully explored in the sections that follow.

4.2.2 Categorisation of partnerships

The partnerships that were investigated go beyond the conventional arrangement of a commercial company in partnership with scheme beneficiaries. Two other potentially useful partners have been observed over the course of many visits to schemes across the country that can play a constructive role in revitalisation. These partners can be grouped as follows:

- Commercial Agri-business Partners (in a range of contract or JV's)
- Academic Institutions
- NGO's actively working and supporting production

In all cases the partners played a key role in either material form or in the provision of knowledge related to:

- **Marketing** – either direct provision of secure markets, agro-processing or provision of a critical link to produce buyers,

- **Financing** – provision of production finance and in some cases capital for irrigation equipment, but also information on sources of finance and subsidies,

- **Crop-production** – which included direct provision of inputs (seed, fertiliser) or information on crop production information from cultivar selection, mechanisation and disease control.

- **Institutional development and conflict resolution** – which included assisting in the formation of farmer organisations and resolving conflict on representation between traditional and civic structures.

The five schemes studied are outlined in Table 4.1 below.

Table 4.1: Selected Case Studies and Partnership Typology

Scheme Name	Partnership Typology [1]	Comment
Makuleke Irrigation Scheme (Limpopo)	Outgrower scheme (cotton)	A cotton partnership with Noordelike Sentrale Katoen was a key strategy for the scheme but failed due to global cotton price decline in 2005.
Noko Development Trust (Mpumalanga)	Contract / Outgrower (combined with NGO mentorship) (wheat, maize, lucerne)	Simple contract-farming agreements and a broad based development approach, with mentoring by a supportive NGO, underpin the steady increase in production that this scheme has achieved. This is tempered by the exclusion of many beneficiaries through land consolidation and the emergence of a single commercial black farmer on a larger farm.
Giba Community Trust (Mpumalanga)	Share produce scheme (bananas)	A private management company, SA Farm Management has complete authority on all farming and marketing decisions in a profit share arrangement with landholders of the banana producing irrigation scheme. Issues of lack of empowerment, training and autonomy are a factors at play.
Ezemvelo Farmers Organisation (KwaZulu-Natal)	Academic Institution Partnership (High value organic vegetables)	The organisation has a close and symbiotic relationship with KZN university and is cropping high-value organic veg for sale to Woolworths. Information and support is provided by the academics who use the site for extensive research including expansion of irrigation.
Tyhefu Irrigation Scheme (Eastern Cape)	Share produce scheme (with risk shedding) (mixed vegetables)	The Department of Agriculture is a key player in this tri-partite arrangement where the commercial entity has shifted financing risk wholly onto government. Government is the primary financer of all capital AND ongoing production costs of this horticultural venture for the export market.

Note 1: After Mayson (2003) noting that two categories, namely share-equity schemes and municipal commonage schemes have been excluded as these do not pertain directly to the irrigation revitalisation context. NGO mentorships and academic partnerships are categorised from this study and are not in Mayson's definitions.

The Makuleke JV outgrower arrangement has an element of share-cropping and could be categorised differently from that above. While providing the typical outgrower support of post-processing, relatively secure market (subject to global market and forex fluctuations), input support in the form of finance, seed and mechanisation as well as production information, the production risk is carried (50/50) between the farmer and the partner. This arrangement effectively halves the risk of losses for the farmer by shifting it onto the JV partner, but remains essentially an outgrower arrangement.

4.2.3 Objectives of the study on partnerships

The fieldwork was undertaken with an emphasis on the 'actors' (individuals and organisations) involved and the process that unfolded during the formation and into production – where this was achieved. The questions that are of interest in the research are:

- What is partnership comprised of in contractual, legal and institutional elements?
- Why is the partnership important to participants?
- How did they evolve and who played a key role in developing them?
- What were the timelines, financial and transaction costs in establishing the partnership?
- Who benefits financially, who carries risk and who makes decisions?
- What keeps the partnerships going?
- When do partnerships present a viable solution in the revitalisation context?

The objective is to improve understanding of the conditions under which partnerships of various types can contribute to increased profitability and improved livelihoods on smallholder irrigation schemes in South Africa. By presenting a range of partnership types, it is hoped that opportunities to address difficult areas of need such as information access, finance and marketing can be better identified and exploited for mutual benefit of on-scheme and off-scheme partners.

4.2.4 Land reform and the case studies

Two of the partnership cases in this study draw on land reform experiences with the intention of extrapolating lessons to the irrigation revitalisation context. These are Noko and Giba schemes. Both of these projects have active partnerships of different types and are based on irrigated production. A brief outline of the land reform process is presented for context.

The land reform programme comprises three elements, namely restitution, redistribution and tenure reform (DLA, 1997). The restitution component deals with historical land rights and forced removals which took place after 1913, which applies to the Giba CPA case study also reported in this study. Redistribution aims at 'transforming the racial pattern of land ownership' (Jacobs et al., 2003) through providing the disadvantaged and the poor with access to land for residential and productive purposes as mentioned above. Tenure reform aims to secure and extend land tenure rights of diverse forms which are in the hands of previously disadvantaged people. In other words it is the broad objective of the tenure policy 'to create a unitary non-racial system of legal tenure rights in South Africa's former homelands' (Kariuki, 2004).

The delivery of the land reform is based on four main strategies. The first strategy aims at partnerships with the private sector 'wherever this is possible and practical'. The second strategy 'emphasises the key role of the non-governmental sector in supporting rural and urban development and land reform policies' (Department of Land Affairs, 1997). As will be shown later in this report the Transvaal Rural Action Committee - Mpumalanga (TRAC-MP) involvement at Noko and the Boyes / SAFM partnership at Giba are examples of such intent.

The third and fourth strategy on land reform delivery encompass an 'interim facilitation service' in order to ensure that prospective land reform beneficiaries have both access to necessary information and are empowered to apply for assistance and 'dispute resolution' from the newly established National Land Reform Mediation Panel (ibid.).

The cases adhere to the national land reform policies in the context of both the earlier Settlement and Land Acquisition Grant (under the RDP) and Land Redistribution and Agricultural Development (under GEAR) in that they conform to the Government's envisaged role for NGOs and the private sector as key partners who can deliver successful land reform. Both cases (Giba and Noko) seem to be moderately successful which is an exception from the broader land reform and smallholder irrigation experience in South Africa (Lahiff, 2003; Backeberg, 2005b).

It remains questionable in what way these two projects (and on closer investigation most smallholder irrigation projects) currently meet the dual objectives that have been identified for the revitalization of the agricultural water use sector namely:

- improved food security through own production ('food first'), and
- mainstreaming historically disadvantaged farmers in the local, national and international economy through active support for business and market development'

According to Jacobs et al. (2003) most LRAD funding is going to large-scale projects involving relatively small groups of better-off applicants and SLAG 'has effectively done away with the pro-poor elements of the previous programme'. Others argue that the LRAD programme 'removed poverty as a criterion for beneficiary selection and focused more on creating black commercial farmers' (Tilley, 2002). These active debates relating to the tensions between poverty objectives and commercialisation are clearly articulated in the land reform literature and apply equally to the smallholder irrigation sector.

There are currently a wide range of institutional vehicles through which communities can access government assistance (NDA, 2002). Those institutions were in the first instance formed in order to channel the funds of the relevant line departments into community projects. The most important institutions that are relevant for this research, but also for many other land reform projects, are Communal Property Associations (CPA's) and community trusts. Communal property associations were enabled by the 'Communal Property Association Act of 1996' (Act 28 of 1996), 'which created a new legal mechanism whereby groups of people can acquire and hold land in common, with all the rights of full private ownership' (Lahiff, 2003). In case of a community trust, restitution claimants jointly acquire, hold and manage land in terms of a written constitution or a Trust Deed. This applies to both cases of Giba Community Trust and Noko Development Trust.

The case studies are presented in some detail in the sections that follow to provide some understanding of the process and dynamics that have led to the formation of the partnership and its operation or failure. Cautionary notes on undue optimism on the financial returns for participant farmers from partnerships and the likely empowerment component (in terms of skills transfer and decision-making responsibility) are also made. The detailed case descriptions are presented in Appendix F to Appendix J and a summary is presented in Volume 1, Chapter 2.

5 OUTLINE STRATEGY

In this section the policy and planning level implications of engaging with revitalisation of smallholder schemes is explored on the basis of the comparative analysis of approaches, the detailed case studies and the action research which was undertaken in the course of the project.

The objective of this section is to establish some defining parameters which set a framework for the development of approaches. This framework and the outline strategies that emerge are further developed in the more action oriented 'Rough Guide' in Volume 1.

5.1 Profitability – A Key Success Factor

Financial profitability with links to cost effective farming strategies, financing flows and effective marketing that is responsive to the rapidly changing market reality is widely considered to be a critical factor for the success of schemes.

Backeberg (1994) evaluated the history of South African irrigation schemes and found that the **success of irrigation development in the past** can be related to marketing potential of produce and the **level of profitability of farming**. This does not imply that a range of other elements are not also key components of a successful irrigated farm operation, but implies that without profitability even all of these other components are in place, the efforts are unlikely to succeed.

In a similar vein an analysis of the national database of smallholder schemes established as part of this project showed clearly that commercialisation (as opposed to subsistence farming) and the production of higher-value crops (notably bulk and specialist vegetables) were common denominators in schemes which had high levels of activity or success. This activity is largely in the absence of support from government or parastatal agencies and indicated that **market forces and profitability were key drivers to ongoing production**.

The Du Roi Group in Limpopo Province is one of the prominent companies that has substantial experience and some success in working with groups of smallholder farmers in partnership arrangements (citrus, bananas, mangoes) and have as one of their **sustainability tenets, commercial viability** and financial profitability (Versveld, 2004).

To some this link between profitability (in a financial sense) and sustainability will be so obvious that it raises the question as to why it is stressed. But the implications are more complex than initially observed and are directly linked to the often undefined objectives of funded initiatives vis-à-vis "commercialisation" (objectives of cash surplus) and poverty alleviation / food security (broader social benefits linked to diversified agricultural production in a mixed livelihoods scenario).

These are expanded below.

- **Objectives of agency promoting revitalisation:** There is often a tension between a drive for commercialisation (with objectives of cash surplus and return per hectare) and poverty alleviation (with diverse objectives including food security, employment and broader social benefits linked to diversified agricultural production). For example increasing food security through crop selection linked to local food needs (e.g. Maize and beans) is arguably a sound strategy but may not be the most profitable or create the most jobs. Profitability as a principle assists to guide decision-making around objectives and crop selection.

- **Plotholders and farmers' objectives:** The farmers' and plotholders' objectives and hopes may well diverge significantly from those of the government department or agency funding the revitalisation initiative. Plotholders and farmers' are more directly engaged with day to day survival and in most cases irrigated farming is a small part of a diverse livelihoods strategy. Lofty political and macro-level development aims need to be harmonised with the more immediate needs and expectations of scheme participants. In any case, the understanding of profitability must be extended to include beneficial return for the investment in the farming activity beyond the financial sense and must include animal / crop residue, food production for home use etc. In this sense the case for profitability still holds.

- **Feasibility Evaluations:** It is difficult to assess and prioritise interventions that are focussed on an isolated element (e.g. Infrastructure repair, post processing, etc.) and which are not considered in the context of the whole irrigated business enterprise. Profitability considerations force a more holistic evaluation and planning process and avoid ad-hoc interventions which are often not what people on schemes need or want.

- **Policy:** Government policy on agricultural water and agricultural project funding is explicit and clear. Subsidies and grants are available and cover substantial components of capital costs as well as some water related running costs (reducing over 5 years). However, Government requires that schemes are self financing in terms of covering all of their running costs in the medium and long term. This means that on many pumped schemes these costs are significant (ARCUS GIBB, 2004a). Business planning approaches and profitability considerations must therefore be part of the whole intervention if policy objectives relating to funding decisions are to be met.

- **Decisions on crop production paradigms**. Irrigation Management Transfer experiences show that successful irrigated production is more likely where operation and maintenance costs are less than 5% of the gross production cost (Merrey et al., 2002). Where operating costs are unavoidably high (such as on many pumped schemes where O&M and water charges reach 10% or more (ARCUSGIBB, 2004)) crop-production approaches targeting mainstream commercial sector yields and the very yield-sensitive (and relatively small) gross-margins seem unavoidable. Technical and infrastructure realities on many schemes cannot easily be altered which means that technological determinism plays a role on financially feasible production choices (i.e. the expense of higher-pressure pumping systems ups the ante and demands a higher risk enterprise approach).

In practical terms, this means that high operation and maintenance costs force greater engagement with a cash based production system to cover monthly pumping and operational costs, whereas lower (cash) running costs associated mainly with gravity and flood schemes can accommodate a range of production approaches – i.e. when using profitability as a determinant.

5.2 Economic Viability, Commercialisation and "Subsistence" Farming

A simplistic division between commercial and subsistence farming does not capture the complex mixed systems that are prevalent in communal areas in both rainfed and irrigated contexts. A short discussion of this is presented briefly in Section 1 and the use of terminology, commercial orientation or subsistence orientation is made in acknowledgement that a continuum with varied ratios of cash-sale and home-use exists in reality.

In a recent detailed feasibility study of 10 irrigation schemes in the Eastern Cape (ARCUS GIBB, 2004), the costs of re-investment in revitalising existing schemes were found to be similar to the capital costs of establishment of new small schemes (averaging R59,000 per ha for total infrastructure and human capital investment). This is simply because the investment in organisational development, training, marketing and ongoing mentoring was some 30% to 50% of the total project costs and the capital component of revitalisation was in fact significantly less than the capital component for new schemes.

This need for major investment in human capital is corroborated by the experiences of the Water Care programme. The planning, training and institutional development costs increased from an initial 10% of the total project investment cost to 50% of the investment towards the end of the 5 year programme. This was a result of programme evolution and lessons learned where sustainability thinking demanded a (relatively) high investment in participative planning, training, market development and mentoring.

More importantly perhaps, the ARCUS GIBB studies indicated that if economic viability is a principle that must be adhered to as is currently demanded by the National Agricultural Water Use Policy then there is little choice but to drive a commercialised cropping agenda with medium to high value crops. This is the only way in which investment in the schemes could give rates of return that were economically viable.

The studies showed that net margins of R8 000 to R10 000 per ha per annum (gross of R12 000 to R16 000), were the minimum required for financial feasibility, based on farmer's expectations of returns. This demanded a mix of medium to high value crops. Exploration of lower value anchor crops (e.g. cotton, dry maize) showed negative financial and economic returns and therefore were concluded to be economically unviable options. Importantly, "multiplier effects" were calculated in the ARCUS GIBB study specifically for these schemes (1.802 on the economic rate of return) to account for broader social and economic impact resulting from returns directly attributed to the scheme itself.

It is useful to note that the average investment per scheme (R59 000 per ha) is not dissimilar to the planned investments in the RESIS programme in Limpopo Province

and are also comparable with international and sub-Saharan African experience (Inocencio, 2004). It is therefore highly likely that the Eastern Cape experience of unavoidable “commercialised production” will be replicated elsewhere in the country, assuming economic viability (i.e. returns for state investment) is upheld as current policy demands.

In summary:

- The **government’s policy on agricultural water use** highlights the fundamental importance of **economic viability and financial feasibility** of interventions funded with state money which emphasises operational sustainability. Irrigation revitalisation investment costs (three recent South African programmes of WaterCare, RESIS and the ARCUSGIBB Resource Poor Farmers evaluation on 10 schemes were all similar to sub-Saharan African programs) are so high that the necessary high returns per hectare leaves little option but an explicit commercialisation agenda in most cases.

- The subsistence – commercial continuum is a valid and useful concept in rainfed agriculture and in looking at the existing situation on dysfunctional schemes, but appears to be less useful when related to future intervention planning. The **polarising effect that high investment costs** have on farming styles in the irrigation revitalisation context means that future planning strategies and approaches have great difficulty avoiding a dualistic separation of the intervention strategy. The first is the targeting of higher-risk commercial outcomes and the second is engagement with lower risk farming styles, more geared to diversified livelihoods and food / animal fodder production. The exception to this general thrust is where low-cost infrastructure interventions are made on existing gravity and flood schemes targeting investment mainly in improving crop-production methods through training, provision of finance and access to limiting inputs and output markets.

This polarisation of commercial and subsistence strategies dictated by the financial and economic reality of expected returns demanded from policy, needs to be considered in parallel to another line of thinking, that of the **social and individual process of development** from a subsistence framework to a commercialised one.

5.3 Farm Size and Financial Feasibility

5.3.1 Income and farm size from a mix of medium value crops

The unavoidable consequence of engaging in production on schemes with significant operations and maintenance costs is that the crop-production paradigm must be underpinned by land-consolidation initiatives. Current irrigated plot sizes on schemes (typically 1 to 1.6ha) are highly unlikely to support financially sustainable production and a decision drive a commercialisation agenda means engaging in the politics of land allocation. The reason for this is simply the level of income realistically possible from existing parcels in the broader scheme production and marketing context.

The amount of money needed by an individual to justify their ongoing commitment to irrigated farming (given the financial risks and the lifestyle implications) will vary widely. One argument is that the prevailing smaller plot sizes on schemes are unlikely to yield sufficient cash income to cover water charges, maintenance, organisational costs and net profit.

The average income per ha in the ARCUS GIBB study with a mix of medium and high value vegetables at modest yields, showed net profits of R8,000 to R10,000 per ha per annum (after all farming, labour, input costs etc.). The final stages of the Water Care programme projected net returns on cotton partnership schemes in Limpopo of some R1,500 to R2,000 per ha (after all farming, labour, input costs etc.). The sensitivity to reduced yields in both of these scenarios is high and while the economic viability might be justified for the whole scheme, it is increasingly clear that farmers will not invest their energy, time and minimal resources to such high risk ventures for these very low individual returns. The Eastern Cape studies showed a clear rejection of lower incomes by participant farmers, but evidence on one of the case studies (Makuleke Scheme in Limpopo) indicated that farmers are keen to continue even with minimal incomes from cotton, as they have little other option. However, this was partly due to all risk of losses being absorbed by the commercial partner in de-facto writing off of losses incurred from lower than planned yields and declining market price.

In either case, ensuring larger farm sizes is likely to result in greater cash returns for the individual farmer taking the risk (income from total hectarage) and may have positive benefit from economies of scale. This will improve feasibility from the farmer's perspective. Avoidance of the land allocation and consolidation challenge means that intervention initiatives will have great difficulty in moving beyond marginal benefit to individual farmers as annual returns of a few thousand rand at substantial risk are unlikely to be accepted as sufficient reason to continue engaging in farming.

5.3.2 Income and farm size from high value crops

A more optimistic viewpoint on farm size and the potential of smallholders to generate sufficient income off smallholdings is made by Cartwright (2002) who suggests horticulture (mainly flowers, fruit and vegetables) is a sector in which some think new farmers can be established. He also presents a note of caution in that experience from the Land Reform Programme shows that this theoretical superiority (as argued by de Klerk in Cartwright (2002)) has not yet been translated into the successful establishment of small-scale farmers.

One of the central challenges facing high-value horticultural crops is the "existence of a sophisticated logistical chain between the producer and the end consumer. … If emerging horticulturalists on small tracts of land are to become successful farmers they will have to become successful at both (sophisticated) primary crop production as well as at contracting with the agribusinesses that control the marketing of high-value food chain" (Cartwright, 2002, paraphrased).

Backeberg (2005a) reveals the complications with regard to the participation of various stakeholders for the implementation of the revitalisation of irrigation schemes as well as the water reform process. He emphasizes that co-operation is required between individuals of different races, ethnicity, gender, language, age, etc. and that interaction between people in a heterogeneous society of African, Asian and European cultural heritage will create tensions. Backeberg continues that those 'tensions are often heightened by distrust and prejudice with various emotions of apprehension, anxiety, anger and accusations expressed reservedly or bluntly, due to the political history of South Africa' (*ibid*.). Backeberg's perspectives on culture and social relations add to the hurdles that are present in accessing market chains.

One of the few options available to achieve the necessary access to higher value markets is then to engage in contracts with the agri-business sector. This seems to be essential for farmers on small landholdings intent on generating cash surplus needed to cover high O&M costs on many schemes (typically piped and pumped), but remains optional for those with larger holdings, who choose a medium value crop mix, given the greater net income per individual resulting from larger farm size.

5.3.3 One or the other : Land Consolidation or high-value contract farming

It is therefore evident that adoption of a medium value cropping approach (or even lower margins from commodity cropping) which are less difficult to achieve in the crop production, management and training requirements leaves little option but to engage with land consolidation to generate sufficient income for an individual farmer on his or her parcel of land.

Alternatively, adoption of high value horticulture crops and the subsequent need to successfully engage with the highly competitive and strict quality controls of agribusiness seems to demand an engagement with contract farming in one or other form. In this second instance land consolidation is still likely to be required given that packers and agri-processing companies generally require commitment of substantial hectarages to ensure a secure supply of produce to meet their delivery contracts. The attempt at contract farming at Tyhefu Scheme studied in this project, is a case in point where collective land consolidation with a commercial partner failed due to insufficient emphasis on the land allocation and consolidation issue. The case study of Ezemvelo Farmers Organisation in this report is an exception to the argument supporting land consolidation. High-value organic produce was supplied to a private packhouse via verbal agreements from smallholders with no need for collective contracting or land intervention.

In many, if not most cases where there is a desire to engage with a more commercial orientation (commodity crops, large contract partnerships, individual enterprise on a larger scale) the constraints of climate, crop suitability, skills levels, market access and partnership options are likely to call on strategies for a land-leasing market to increase landholding size.

5.4 Conceptual Determinism – "Emerging" farmers and Intervention Strategy

The way that we proceed with an intervention strategy is unavoidably dependent on the "concept package" that underlies it. A logical and justified thought process based on critical evaluation, experiences and research can be invalidated because the concepts that underpin it are insufficiently defined or misunderstood. (De Bono, 1972, paraphrased). One of these is the disconcertingly ill-defined notion of the "emerging farmer", which is used widely with different meanings. It is not the intention to explore this concept directly here, but what is of interest is the evolution process implied by it which is widely accepted but is not sufficiently substantiated.

There is a general perception that the **development of commercial farmers** from a starting point of subsistence agriculture is **a roughly linear transition** that can be achieved in a small step process given sufficient training, support and time. This concept underlies two provincial programmes (Water Care, RESIS) and presents cause for thought as the consequences of the "concept package" being flawed are important in terms of resultant intervention planning.

The current situation on many (if not most) of the former parastatal schemes which are in need of revitalisation is that they are characterised by subsistence and semi-subsistence style farming, small plots, land-holders who are often not farmers, or farmers with very limited financial and information resources. The implication of the emerging farmer concept is that the current unviable situation can be changed and improved through development programmes (typically broad-based strategies over 3 to 4 years). These would include farmer skills and organisational development, entrepreneurial training, irri-system rehabilitation, establishment of strategic partnerships with agri-business (e.g. vegetable processing) leading to the "emergence" of commercially viable, profitable agri-business enterprises.

This perception of positive, **"emergent" growth on a steadily rising trajectory** from the unfavourable status quo to a desired commercialised (and profitable) paradigm is **looked at from different perspective by some** (Hebink (2004); Joubert (2004)). An alternative concept is suggested, where wholly different streams of subsistence and commercial farming styles are separated by a quantum leap in complexity and risk in all of the categories of activity and skills essential for production success. Van Averbeke (2005) shows on Dzindzi scheme how farmers move from one farming style to another dependent on cash and labour availability in the household, as well as other factors, which directly contradicts a linear "development" trajectory. These perspectives lead to a different view of how commercialisation might be achieved in terms of the process that underlies farmer development. Flexibility to change from one style to another emerges as a key concept.

The gradual, small-step upgrading of current low-risk subsistence oriented farmers, finally resulting in "commercial farmers" would seem to be an inappropriate development concept. Approaches targeting commercialisation and engagement with a competitive, necessarily higher risk market oriented strategy demands what could be described as a more aggressive approach, including farmer selection and intensive training and mentoring over long timelines. (Chancellor in a review of experiences in South Africa, Swaziland and Zimbabwe argues for extended support programmes linked to irrigation development of up to 9 years (Chancellor, 2001) to be embedded in the programme plans.)

5.5 Outline of Intervention Strategies

A logical set of broad strategies emerges from the above discussion. The strategies follow from profitability and on-scheme technology considerations as well as the constraints of economic policy demanding acceptable returns.

5.5.1 Commercially oriented production on consolidated farm enterprises

The first strategy would support farming enterprises which have a commercial-orientation, target higher yields and accept higher risks in the farming styles they adopt. This would be underpinned by land-consolidation and intensive production and defined, resourced marketing support initiatives, in the form of contracts or assistance in establishing links to markets. This strategy would respond to the needs of those individuals/groups with greater commercial interest, skills, market capability and financial resources. Strategies for the intensive production and marketing support that is necessary are expanded in Volume 1, the Rough Guide, and include the possibilities of partnerships and semi-privatised extension or mentoring.

5.5.2 Lower risk, diversified farming styles

The second strategy responds to the interests and capabilities of those plot holders, typically with more diversified livelihood strategies and where farming plays a smaller role their overall income mix and livelihoods, and who prefer to engage in lower risk farming styles. A lower risk crop-production approach (with lower cash requirements for inputs and lower expected cash returns) is on many schemes with high running costs not likely to be a financially feasible option as argued above, but is optional for those schemes with low running costs (typically gravity flood schemes) which do not require the same level of cash returns to cover operational costs.

Cousins (2005) argues a case which supports the above approach although not in the irrigated context but more widely. He notes the conservative view on market-oriented small-scale development is a stereotyped understanding of agricultural development, which is promoted by both the commercial farming lobby (Agri-SA) and by agricultural economists. In their opinion, only commercial agriculture is real agriculture and thus successful small scale farming must be a scaled down version of the market-oriented, technologically sophisticated and profit-maximizing commercial farmers (Cousins, 2005).

This second strategy could realistically include lower risk more diversified conservation agriculture and low-external input approaches with production for food and cash sale, currently evident and practical on smaller existing landholdings. Reduction of market dependency for inputs and outputs reduces external cash exchange and supports risk reduction and would therefore need to be a strategic aim of these kind of initiatives. This strategy of investment in learning and training in alternative crop production styles (Low External Input Sustainable Agriculture and conservation agriculture) is a different crop-production paradigm from conventional farming practice of the commercial sector and has not been adopted by any irrigation revitalisation programme to date, but has shown substantial success in dryland applications (Smith, forthcoming).

5.5.3 Land Consolidation Initiatives

Land consolidation initiatives and the associated institutional development component that is critical to this process emerges from the discussion as a key area for engagement. This relates to individuals who have the means and interest to expand their landholding size or for collective arrangements by a group or a whole scheme, with commercial partners.

There is research which looks at ways in which landholding size could be increased in communal areas (Van Averbeke, 2002; Manona, 2004) and a detailed strategy is presented in Volume 1. In the dryland context, the formation of land-registers, mapping on large scale aerial photos and the development of lease agreements has also shown reason for optimism. Land consolidation initiatives provide the opportunity for those who wish to expand operations through leasing, share-cropping, or consolidation of larger farms are seen to be a key success factor on schemes.

5.5.4 Food production initiatives off-scheme and the land-leasing link

Finally, given the need for broad social benefits in the politics of revitalisation (food security and poverty alleviation) and the established link between off-scheme support and land-leasing initiatives (Umhlaba, 2006) effort needs to be directed at off-scheme food production initiatives. This is most sensibly targeted in the villages adjacent to schemes where plotholders live for two reasons.

- First, there is evidence of a link between the promotion of a land market and home food-garden initiatives, that relieves the pressure on irrigated land as food production needs are met within the homestead (e.g. through infield rainwater harvesting, underground tank storage and intensive gardening in beds or swales). This creates an amenable climate and stimulates land consolidation initiatives as was found during the process at Ludiza in the Eastern Cape (Umhlaba, 2006).

- Secondly, food production in home gardens, using intensive and diversified methods such as propagated by the Water for Food Movement and Abalimi Bezekaya (of the Western Cape), Care South Africa – Lesotho and many others, present a very strong case for cost efficient, easily accessible production with immediate benefit to the poor, especially women and children. These “models” of support to home-food production are outlined in Volume 1. They are particularly attractive when linked to rainwater harvesting into low-cost 30m^3 tanks with consequent multiple water use and water conservation advantage through grey-water re-use. Home gardens are squarely placed within the locus of control of women and make a logical first intervention point when targeting poverty through agricultural production. Field production (in irrigated gardens and food plots on schemes), with additional social and allocation complexity, water supply and maintenance issues, higher financial cost, risk and distance are a second option.

5.5.5 Policy Note

Lahiff and Cousins (2005) argue that current agricultural policies are dominated by “narratives of the efficiency of large scale agriculture. … The deregulation of commodity markets and removal of most state support to the agricultural sector since 1990 have contributed to a climate that is exceptionally hostile to new entrants and to existing smallholders wishing to expand production”.

They argue further that since 1999 there has been a policy shift away from providing land for subsistence purposes in favour of creating a new class of black commercial farmers (Lahiff, 2005).

While these comments do not solely address the smallholder irrigation sector, the statements do apply to the sector. Policy, even accounting for capital and start-up packages available from the different departments, still demands a highly competitive agricultural enterprise to survive in the open market. Some of the strategies in these Guidelines for revitalisation are unavoidable influenced by these realities and this has led to approaches for land consolidation and the promotion of more commercialised larger farmholdings on schemes. This will essentially result in a move to establish black commercial irrigation farmers. This outcome (even if by a different and circuitous route of logic) supports the argument presented by Lahiff that policy strives towards the creation of a new class of farmers.

It is important however, to note that the guidelines also address issues of "subsistence farming" and home food production. Alternative production paradigms (discussed in Volume 1, Chapter 2) have a key role to play in shifting to lower-risk more poverty appropriate narratives which are not aligned to large scale agriculture and which will, in many cases be more relevant to the needs and context of small irrigators.

5.6 Concluding Note on Volume 2

This Volume 2, the Concepts and Cases, is intended to cover a wide range of issues and case studies that provided the basis for the strategy and guidelines presented in Volume 1. Each chapter of Volume 2 is to some extent a stand-alone section and is brought together not in this conclusion, but in Volume 1 itself where the diverse issues, case analysis and literature reviews are drawn into a substantiated strategy. Central to the whole thrust of the guidelines are the local and international experiences which are synthesised into the success and failure factors (Chapter 3) and the discussion on financial feasibility, plot size and farming styles (Chapter 5).

Changes in agricultural policies will impact on the guidelines. However no major shift is expected in the core tenets of policy which would result in the strategies that have been developed in the Guidelines becoming inappropriate. Farmers will, due to their diversity of location, interest, agro-climatic, technical, financial and market access, require a wide range of approaches to be drawn on. The farming styles and range of possible support approaches consciously respond to this diversity and are expected to be useful in part or in whole depending on the specific details of each scheme and the people and organisations involved in revitalisation.

6 AREAS FOR FURTHER RESEARCH AND DEVELOPMENT

6.1 South African Irrigation Revitalisation Policy and Current Practice

Policy frameworks for agricultural water are well developed in South Africa at a National Level. These include the DWAF Agricultural Water Use Policy and the Department of Agriculture National Agricultural Strategy.

Provincial Departments, notably Limpopo and the Eastern Cape each have their own, more detailed irrigation revitalisation approaches. Limpopo has RESIS Recharge and the Eastern Cape has the "Green Revolution and Six Peg Policy". Furthermore, District Municipalities have their own and often contradictory policies and approaches on schemes.

There is a need to review the National Policy on Agricultural Water Use and to compare the intentions of national policy with what has been written at Provincial and District levels. Furthermore, there is a need to critically compare the Provincial policies where they exist with the actual practice and what is being carried out on the ground. These policy reviews and the subsequent critique thereof needs to be made with reference to international best practice in smallholder irrigation.

Evidence shows that the RESIS Recharge approach by the Limpopo Department of Agriculture relies heavily on infrastructure development underpinned by the hope of commercial partnerships. In a similar vein, the Eastern Cape Department of Agriculture is driving technical investment and a top-down organisational structure which is identical for all agricultural projects, both irrigation and dryland. the Concept of partnerships is also key to production. While, as clearly shown in these guidelines, partnerships have a role to play, they are unlikely to meet the needs of all schemes, or all farmers on a given scheme. Policy driving only these approaches are likely to fail in their generic attempts at revitalisation.

Provincial practice in South Africa at present seems to contradict much of international best practice in regard to an infrastructure focus and denies the reality of diversity. There is opportunity, through a policy research assignment, to strengthen National Policy to ensure closer adherence to core principles and approaches more likely to result on constructive outcomes to these major investments of public money.

6.2 Land Registers and Land – Leasing

The methodology for promoting a land market on communal land was developed by one of the authors in a dryland context on a number of sites in the former Transkei, and are described in Volume 1 Chapter 5. The principles of the methodology including the relationship with home-food production were piloted on the Ludiza Irrigation Scheme and were shown to be substantiated and useful in arriving at consolidated farm sizes of 9ha with a commercial lessee.

However, there are clear indications from other parts of South Africa such as Dzindzi Scheme documented by van Averbecke (2006) that the local practice and precedent opposes land-leasing in general and the principle of “use it or lose it” applies.

Given the range of cultural practice that is prevalent on communal land in South Africa, there is a need to experiment with the concept of land-leasing and explore ways of involving Tribal Authorities or the Department of Land Affairs more actively to developed appropriate methods cultural practicalities. There are also fundamental policy implications, where policy may well need to be put in place that treats communal irrigation schemes differently from other communal land given the high-value resource and the fact of considerable infrastructure that is in place.

6.3 Scheme Classification System

A theoretical discussion is made in this volume in Chapter 5, on profitability, farm size and financial feasibility and this includes an element of technical determinism that is evident on schemes.

Technical determinism relates to the high operation and maintenance costs on some schemes, mainly those developed in the 1970’s and 1980’s along modernisation lines and typically include technical elements of pumps, pipelines and higher tech infield systems such as centre-pivots and sprinkler systems. These schemes generally have higher rehabilitation, operations and maintenance costs as well as major management implications compared with the older flood schemes. Condition (state of degradation) is obviously a major variable and scheme classification would need to address this as well as attend to the technical elements.

Scheme classification will have a direct link with some or all of the four farming styles set out in detail in Volume 1 (Chapter 2). Schemes with substantial technical complexity or high costs force the direction of more commercial approaches and tend to make subsistence farming impossible from a financial perspective.

Similarly, schemes which have lower operational costs, perhaps smaller hydraulic units and therefore easier management and institutional needs present opportunity for a range of farming styles including lower-risk subsistence oriented approaches. presented potential revitalisation

A scheme classification for South African irrigation schemes was produced by Bembridge (2000), but this not particularly useful or applicable to the current situation. An attempt at Scheme Classification using the concept of technical size, condition and complexity was made in Project Report No.1 (End of Year Progress Report, 2004) of this assignment, but it was not developed sufficiently to become a useful tool. Similarly, researchers at IMWI have been working and talking about scheme classification but this also not been put into writing for discussion or peer review.

Further research into Scheme Classification is required at a theoretical level, but in the context of technical determinism, farming styles and revitalisation approaches. Furthermore, it would be useful if Scheme Classification would lead to a prioritisation approach which could form a basis for revitalisation investment.

6.4 The National Irrigation Database

The compilation of the National Irrigation Database in the course of this assignment, and which is now accessible on the internet at the Department of Agriculture website www.agis.gov.za, is useful but needs further data entry and data validation. The scope of the assignment demanded secondary data collection, mainly through existing databases and information supplied by provincial departments and extension officers. The database contains gaps in information, particularly on scheme use and condition, which are partly due to lack of information, but also due to the fact that revitalisation initiatives and investment on schemes in ongoing.

Subsequent work to improve the database needs to take place at three levels:

- Detail needs to be added where this was not obtainable using the limited methods of desktop compilation and secondary interviews.

- The internet accessible Agricultural GIS system (AGIS) actively interfaces with the database and will present information as requested by the user. Currently the user accessible options are limited to a few scheme elements (name, location, size etc.) and this interface can be substantially developed so as to become more of enquiry-based research tool.

- A scheme classification system needs to be developed (as discussed earlier) and could then be systematically added to the schemes on the database. This would be useful as a theoretical tool as well as presenting the opportunity to guide scoping studies at Provincial or regional levels.

6.5 Accessible interactive media on irrigation revitalisation

Written guidelines are only useful if those implementing revitalisation actually pick them up and read them. Evidence from a national workshop held by the project team in 2005 showed that the WRC Guidelines produced in 2000 had only been read by 4 people out of 80 who attended the workshop, most of whom are directly and actively involved in irrigation revitalisation practice or research.

There is need to research and develop a means of getting the information out to key decision-makers in Government at National, Provincial and Municipal levels, as well as to consultants and planners working in irrigation and agricultural water use. This could include, at its simplest level posters or interactive PowerPoint slides, or perhaps requiring more sophistication an interactive website or short film sequences on DVD or a mix of the ideas.

The main issue at stake is how to change deeply-rooted agricultural development philosophies, many which stick to modernist paradigms (infrastructure and mainstream agricultural production approaches) to consider the merits of other ways of addressing the complexity – some of which are set out in the Guidelines.

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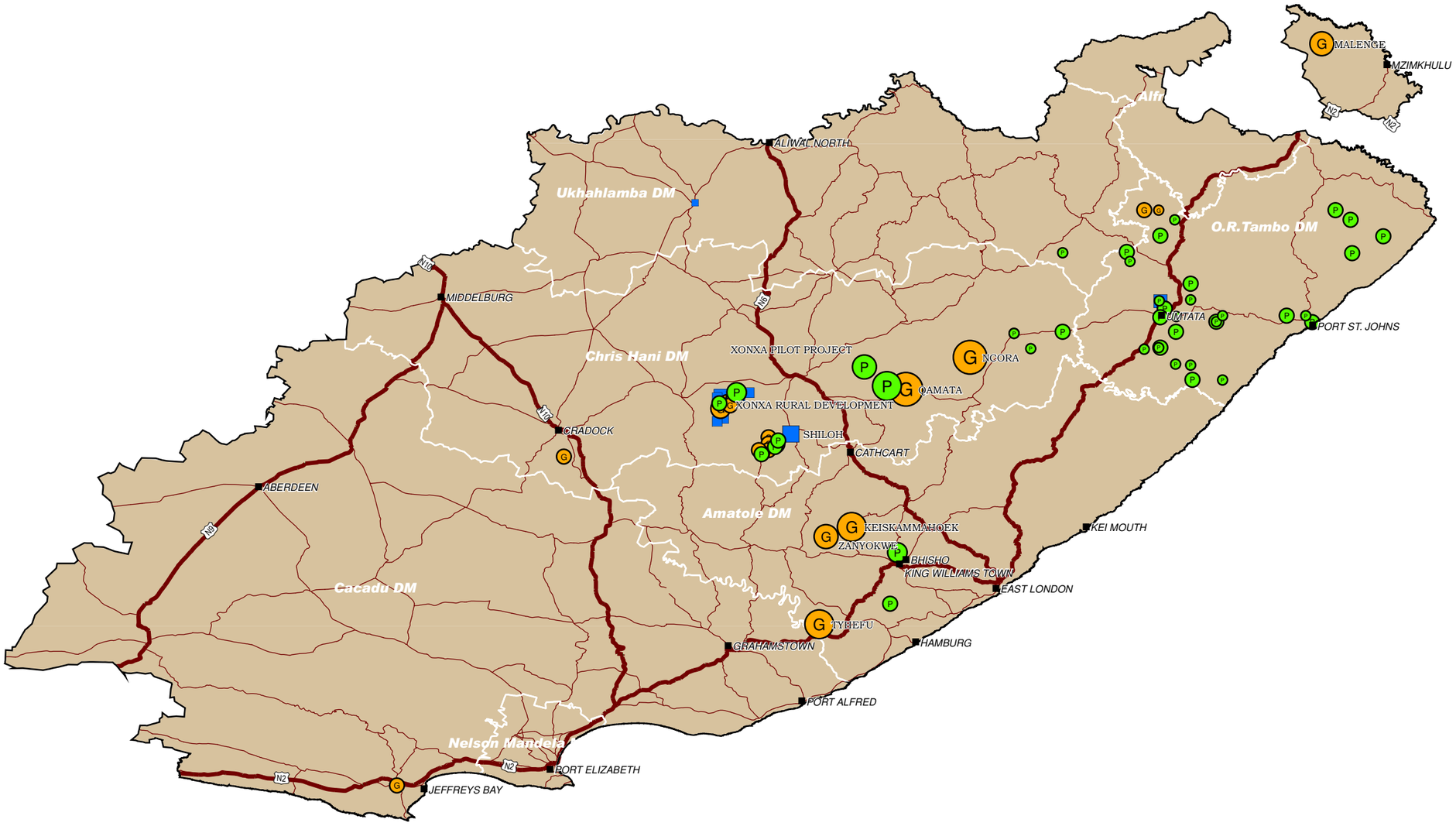
Appendix A

Maps of Smallholder Irrigation Schemes by Province



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PRINCIPLES, APPROACHES AND GUIDELINES FOR THE PARTICIPATORY REVITALISATION OF SMALLHOLDER IRRIGATION SCHEMES

Title :

EASTERN CAPE

Scheme Size & Location

Plan #

Legend :

Irrigation Schemes

Irrigation Area (Ha)

- 0.00 - 5.00
- 5.01 - 50.00
- 50.01 - 150.00
- 150.01 - 500.00
- 500.01 - 1500.00
- 1500.01 - 3500.00

- Pumped
- Gravity
- Both

Date :

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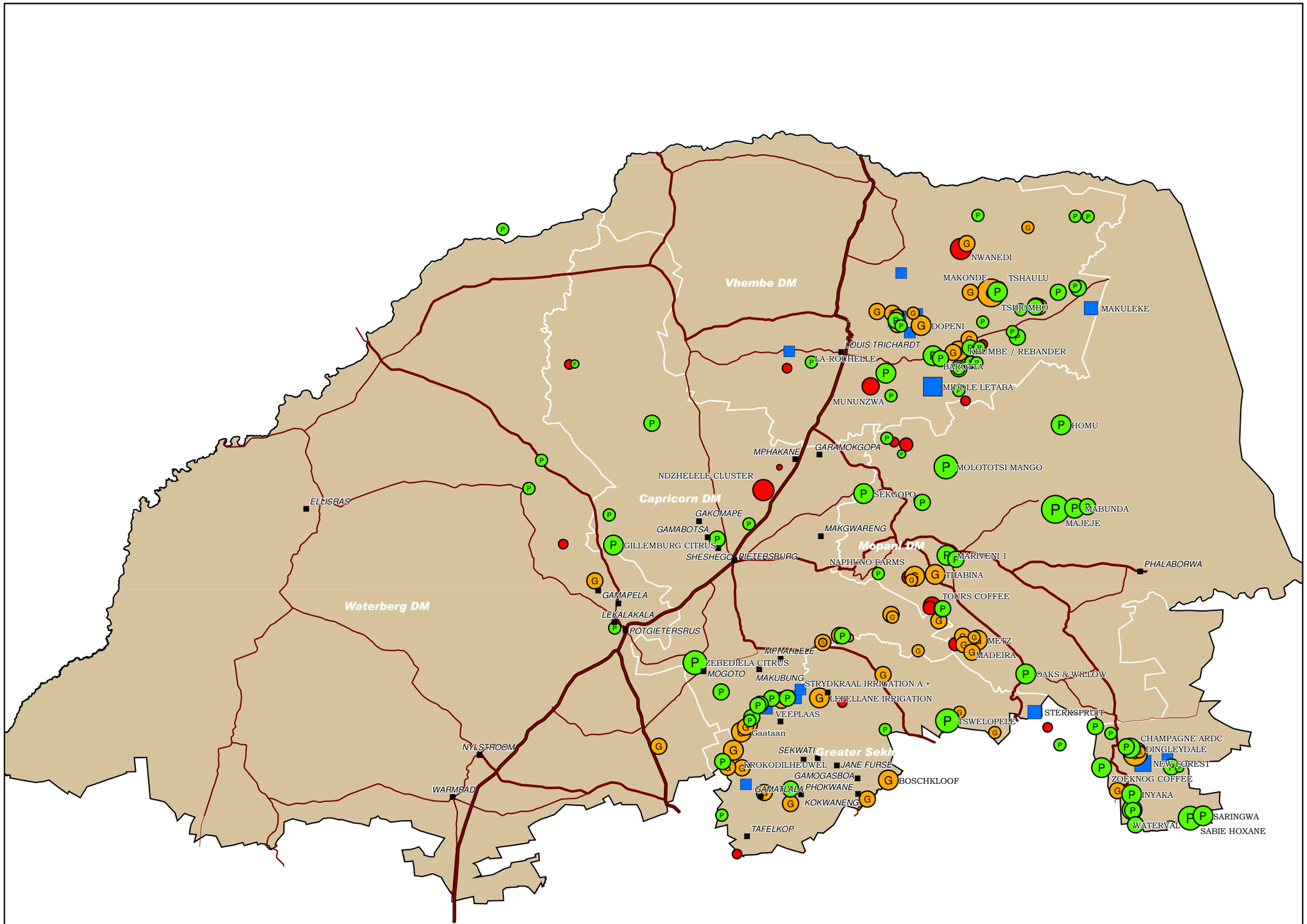

WATER RESEARCH COMMISSION

PRINCIPLES, APPROACHES AND GUIDELINES FOR THE PARTICIPATORY REVITALISATION OF SMALLHOLDER IRRIGATION SCHEMES

Title :

LIMPOPO PROVINCE

Scheme Size & Location

Plan #

Legend :

Irrigation Schemes

Irrigation Area (Ha)

- 0.00 - 5.00
- 5.01 - 50.00
- 50.01 - 150.00
- 150.01 - 500.00
- 500.01 - 1500.00
- 1500.01 - 3500.00

- Pumped
- Gravity
- Both
- Unknown

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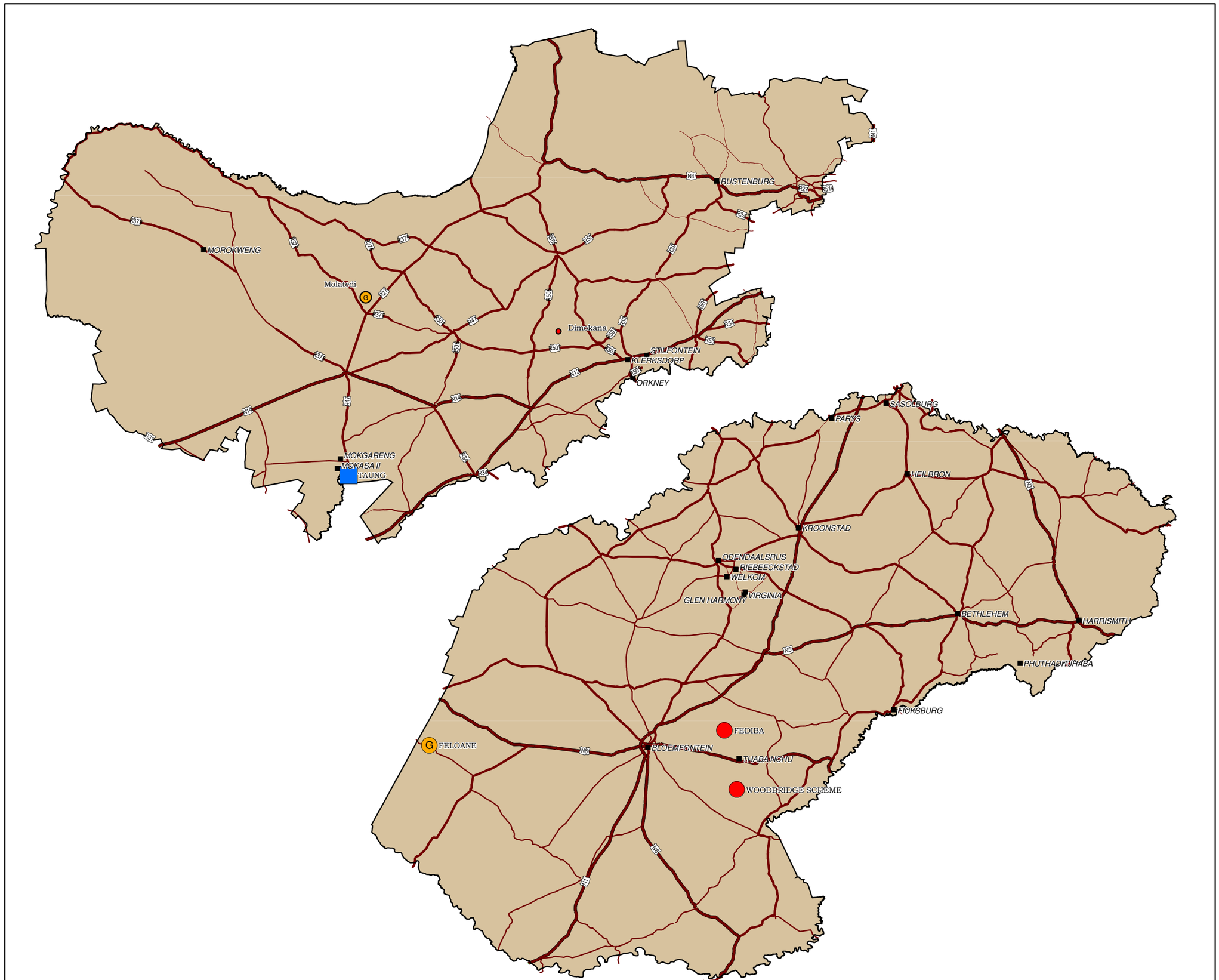

WATER RESEARCH COMMISSION

PRINCIPLES, APPROACHES AND GUIDELINES FOR THE PARTICIPATORY REVITALISATION OF SMALLHOLDER IRRIGATION SCHEMES

Title :

FREE STATE and NORTH WEST

Scheme Size & Location

Plan #

Legend :

Irrigation Schemes

Irrigation Area (Ha)

- 0.00 - 5.00
- 5.01 - 50.00
- 50.01 - 150.00
- 150.01 - 500.00
- 500.01 - 1500.00
- 1500.01 - 3500.00
- G Gravity
- Both
- Unknown

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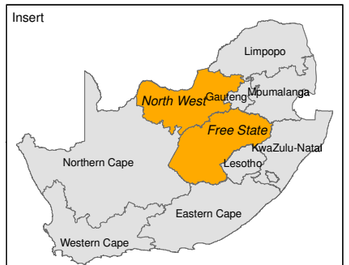

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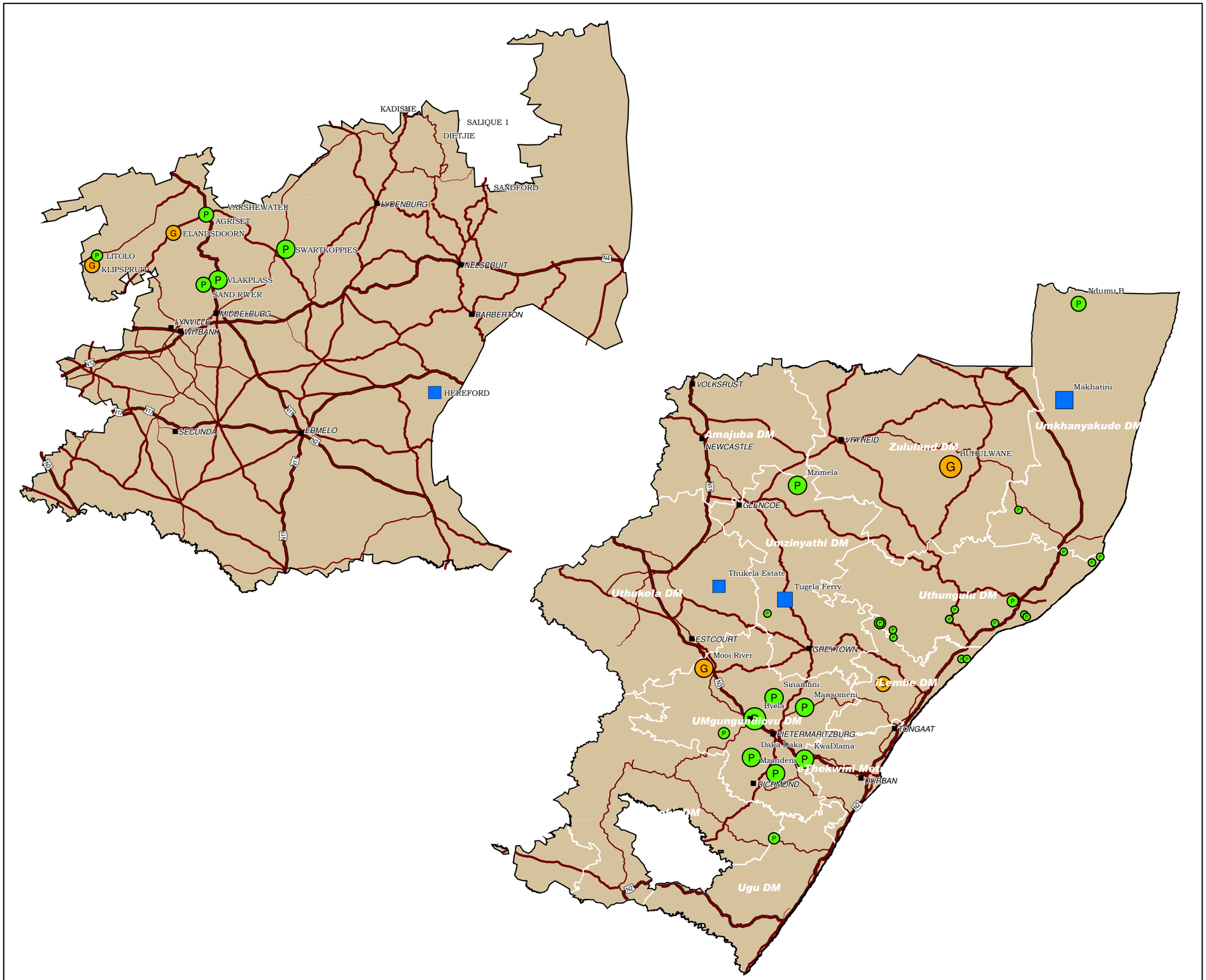

WATER RESEARCH COMMISSION

PRINCIPLES, APPROACHES AND GUIDELINES FOR THE PARTICIPATORY REVITALISATION OF SMALLHOLDER IRRIGATION SCHEMES

Title :

Mpumalanga and KwaZulu - Natal

Scheme Size & Location

Plan #

Legend :

Irrigation Schemes

Irrigation Area (Ha)

- 0.00 - 5.00
- 5.01 - 50.00
- 50.01 - 150.00
- 150.01 - 500.00
- 500.01 - 1500.00
- 1500.01 - 3500.00

- Pumped
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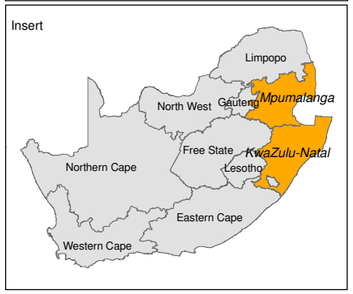

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WATER RESEARCH COMMISSION

PRINCIPLES, APPROACHES AND GUIDELINES FOR THE PARTICIPATORY REVITALISATION OF SMALLHOLDER IRRIGATION SCHEMES

Title :

WESTERN CAPE

Scheme Size & Location

Plan #

Legend :

Irrigation Schemes

Irrigation Area (Ha)

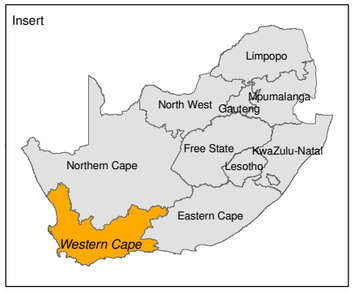
- 0.00 - 5.00
- 5.01 - 50.00
- 50.01 - 150.00
- 150.01 - 500.00
- 500.01 - 1500.00
- 1500.01 - 3500.00

- P Pumped
- G Gravity
- Both

Date :

JULY 2006

Insert



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Appendix B

Evaluation of the Limpopo WaterCare Program

From Rehabilitation to Revitalisation

The Evolution of a Smallholder Irrigation Revitalisation Approach in the Limpopo Province, South Africa.

WRC Project No: K5/1463//4

G. Veldwisch and J. Denison

"*For when faced with the complexity, diversity, and dynamism of human and local conditions, there is no normal bedrock on which to anchor, and few fixed points. Rather we need a repertoire of skills for staying afloat, steering, finding our way and avoiding shipwreck on a turbulent and transient flux.*
So much we thought we knew we did not know, or were wrong about; and very likely much we now think we know we still do not know, or have got wrong; and what we need to know is constantly changing."
(Chambers, 1997:32)

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1. Introduction

Rehabilitating irrigation infrastructure is nowadays a more common practice than building new schemes. 'Revitalising' schemes is a newer, arguably trendier offspring of this global movement, but one rooted in a holistic development philosophy more likely to achieve successful outcomes. Where **"rehabilitation" is referred to here as the engineering-centred** re-construction of dilapidated infrastructure.

The concept of **revitalisation** is much broader in its development focus and carries with it the expectation of a **holistic approach to re-building socially uplifting, profitable agri-business** on existing schemes.

The Revitalisation Programme of Smallholder Irrigation Schemes in the Limpopo Province of South Africa, is an interesting case study in the evolution of an approach, which moved from a "rehabilitation" (i.e. infrastructure driven) style of intervention to "revitalisation", a much broader based intervention covering a wide range of sectoral activities linked to successful small scale irrigated agri-business. This particular research assignment has attempted to document this evolution, and record the methodology that evolved from extensive field work on a number of schemes over a six-year period.

The Programme started in 1998 when, as a pilot, the 'Northern Province Irrigation Scheme Project' was initiated by the Northern Province Department of Agriculture, Land and Environment (NPDALE, 1998).
In later stages the programme's name changed to 'Water Care Programme' and finally, in 2003, to the 'Revitalisation of Smallholder Irrigation Schemes'. For an overview of this development see table 1.1.

Table 1.1 – Overview of stages of the Revitalisation Programme in the Limpopo Province Sources: LPDA, 2002a and 2002b

	Name of the stage	No. of schemes involved	Names of the schemes	Started	Finished
1.	Northern Province Irrigation Scheme Project (Water Care Pilot Program)	3 pilots	Thabina, Boschkloof and Morgan	1998	2001
2.	Water Care Programme - Mega Plan I	5	Metz, Madeira, Capes Thorn, Dingelydale and New Forest	2000	2002
3.	Water Care Programme - Mega Plan II and III	6 clusters/ 24 schemes	Ndzhelele, Makuleke, Matsika, Homu, Tswelopele	2002	2004
4.	Revitalisation Programme of SIS	114	Not listed	2003	Planned for 2010

The idea for revitalising the smallholder irrigation schemes in the Limpopo Province originates from the observation of the decline of almost all of them, following the withdrawal of the subsidies on these schemes by the National Government of 1994 (Perret, 2002; Hope and Gowing, forthcoming). The history of many of these schemes can be traced back to the 1950s, following the Thomlison Commission's advice to erect these schemes as investment projects in the rural areas (Hope and Gowing, forthcoming). In the decades that followed they

were mostly run by parastatal entities, on huge external budgets, basically organising a contract farming arrangement with the people working on the land (Shah et al., 2002).

After nationally closing the subsidy tap to these schemes, almost all parastatal management entities collapsed. Not being able to cover the running costs, the provincial government of Limpopo, initiated the Revitalisation Programme aiming at an Irrigation Management Transfer (IMT) to locally organised user groups. Participative rehabilitation of the infrastructure was initially seen as the corner stone of such a revitalisation (NPDALE, 1998). The long-term objectives were financial viability and self-management, which are common objectives in IMT programmes (cf. Vermillion, 1997).

National perspective and current initiatives

This research has been carried out as part of the three-year research project of the Water Research Commission, which is directed to produce "Principles, Approaches and Guidelines for the Participatory Revitalisation of Smallholder Irrigation Schemes". The programme in the Limpopo Province started some four years earlier and its experiences provide a valuable source of information and inspiration for countrywide programs. Rehabilitation initiatives (i.e. infrastructure-centred initiatives) are at the time of writing, still the major style of intervention on many existing and even new schemes in some of South Africa's provinces. Initiatives in other Provinces can use the valuable experiences of Limpopo to guide the content of their planned interventions and can profit substantially from an early evaluation of the Limpopo initiative

Objective of the research

The objective of this report and the underlying research is a documentation of the intervention approach used in Limpopo, particularly its evolution from a more engineering-centred approach (rehabilitation) to one which addresses the wide range of management, training and engineering issues that all together create a conducive environment for successful agri-business (revitalisation). The rehabilitation and management transfer programme is complemented with an analysis of its impact on water control and management practices. It is a study that focuses on the mechanisms in the implementation process in order to make sense of the effect of the IMT process. This is quite different from the more common, indicator-based approaches to do research on the effect of IMT processes (cf. Vermillion, 1997).

Content of the report

Chapter 2 describes, analyses and concludes on the first stage of the Limpopo focus on irrigation scheme rehabilitation / revitalisation, i.e. the NPIS Programme and is firmly rooted in fieldwork on one of the pilots; Thabina Irrigation Scheme (Row 1 in Table 1.1). It shows that the revitalisation approach was right from the beginning innovative and an improvement compared to infrastructure rehabilitation. Yet, it also describes many things that could have been done better. This chapter is strongly based on fieldwork that has also been used for a CIRAD research report on the current socio-institutional situation at Thabina Irrigation Scheme (Veldwisch, forthcoming).

The second phase of the Limpopo Programme is not discussed (i.e. Water Care Mega Plan I), but **Chapter 3** deals straight away with the most recently finished, third, stage in the Limpopo Programme: (Water Care Mega Plan II and III, in Row 3 in Table 1.1). It clearly shows the improvements that have been made based on the earlier experiences, particularly the shift of budget and effort from infrastructure-centred activities to "soft development" activities such as in-depth consultation, learnerships, institution building and agri-business development. The current planned strategy of the much larger RESIS program, underway in late 2003, is presented elsewhere (Denison, 2004).

Yet, there are still remaining challenges for improvement of the approach. **Chapter 4** describes some of these challenges and gives ideas for the direction in which solution might be found.

In **Chapter 5**, the final chapter, a summary is given. It clearly shows the development that the approach went through, why it developed in this particular way and what the effect was on the ground.

2. The Northern Province Irrigation Scheme Project – The Pilot Phase

This chapter describes and analyses the first phase in the Limpopo Programme of rehabilitating / revitalising smallholder irrigation systems in the province, which commenced in 1998. The most central and innovative elements of the used approach at that time are highlighted, followed by an analysis of the effects it had in a specific case; Thabina Irrigation Scheme, one of the three pilots.

Table 2.1 – Content of this chapter

In the context of this research project several visits have been made to Thabina Irrigation Scheme. In total about thirty days were spent on the site, spread over six visits in the period from November 2003 till April 2004. Semi-structured interviews, field observations, flow measurements, transect walks and the studying of documented material resulted in a reasonably thorough understanding of the current social-institutional situation. Most of the detailed knowledge about this specific case is documented in a CIRAD report (Veldwisch, forthcoming). In this report the link between the used approach and its effects on the current situation are further explored.

An explicit objective of the pilot phase was to gain experience and to further develop an appropriate approach. In later stages of the Limpopo initiative lessons have been drawn and incorporated into the approach. Though the approach has therefore significantly changed in the past few years it is deemed relevant to document these early experiences and the lessons drawn from it in order to gain a better understanding of the background and width of the current approach.

2.1. Introduction

The revitalisation programme commenced in 1998 with a rehabilitation and transfer initiative in three pilot schemes; Thabina, Morgan and Boschkloof Irrigation Scheme. Table 2.1 shows some of their specific characteristics.

Scheme	District	Irrigation area	No. of farmers	Irrigation system	Crops
Thabina	Mopani	198	153	Flood	Vegetables, field crops and sub-tropical fruits
Boschkloof	Sekhukhune	200	200	Flood	Vegetables and field crops
Morgan	Vhembe	75	24	Flood	Vegetables, field crops and sub-tropical fruits

Table 2.1 – Some characteristics of the three pilot projects
Source: LPDA (2002b), Magingxa (2001) and author's own field data

2.1.1. Vision and objectives

In this period the overall objective of the revitalisation exercise was to get irrigation schemes running again mainly through rehabilitation of infrastructure, i.e. carrying out repairs and some minor upgrades of the physical infrastructure. In addition, ensuring that the schemes are fully operational should open the way for a transfer of the ownership of the schemes to its beneficiaries. This objective of handover was in line with the Engineering Directorate's Strategy Policy drawn up in 1996 with a general objective of empowering beneficiaries to own and manage their projects (NPDALE, 2001a and 2001b). Capacity building and training were also seen as indispensable elements in the turnover strategy.

The ultimate vision for these schemes was self-management by the farmers' groups through a legal governance body and financing of the running costs through the collection of water services fees. This vision builds strongly on a **presumption of profitable agriculture and a centralised management** of the scheme as an enterprise as a whole, though to a large extent this remained implicit.

2.1.2. Timeframe and organisation

The project was carried out by a group of consultants[1], contracted by the Limpopo Provincial Department of Agriculture (LPDA). The approach and methodology used was to a large extent developed by this group of consultants. The time spent on the pilot phase was roughly three years (between 1998 and 2001). The consultants have frequently argued for a longer period of involvement in order to be able to take more time for a stable internal organisation to develop.

Initially there were only four phases indicated in the planned process:

(1) the pre-development study,
(2) participatory planning and capacity building,
(3) actual implementation of the rehabilitation and
(4) establishment of a legal body and handover of the facilities.

Implementation of the physical works took place in 2000. Almost simultaneously Thabina was given the status of Water Users Association by the Department of Water Affairs and Forestry (DWAF). Official handing over of the scheme was to take place soon after, but has not taken place up to the time of writing.

2.2. Central elements and principles in the approach at Thabina

It is acknowledged, prior to reporting and analysing the process, that the consultants and the LPDA were working on constrained budgets and were exploring new terrain. The present review is made with full recognition of the reality imposed by limited budget and the ever advantageous viewpoint of retrospective critique.

Seven central elements of the intervention approached are described here. Many are consequences of the expressed intention to work 'fully participatory'. Several of the project documents mention the following: "The process of hand-over must be fully participatory with the maximum involvement of participants/beneficiaries in all aspect of the process"[2]. The described elements and principles are mainly on programme level, but they are illustrated with concrete examples of only one of the pilot schemes; Thabina Irrigation Scheme.

[1] The main consultant was LVA, currently known as Golder Associates. Rural Integrated Engineering (Rieng) was sub-contracted for the technical engineering side and WOMIWU for the socio-institutional aspects.
[2] Taken from (NPDALE, 2001), but similar statements can be found in other project documents as well.

2.2.1. The pre-development study

Typical of the approach, and in South Africa innovative at the time, was the pre-development study undertaken before planning the actual work. At Thabina Irrigation Scheme this was done in the beginning of June 1998, carried out by a team that was a mix of consultants (2 persons) and local government workers (6 persons). Over three days about 75 PTO holders were interviewed, mainly by the government workers, in local languages (Tsonga and Sepedi). The interviews were semi-structured and data acquired was mostly qualitative in nature. Besides a general basic understanding of the irrigation scheme and its community, the main output of the study is a table in which the problems, needs, fears and aspiration of the farmers in Thabina are summarised and linked. They are presented in order of priority as analysed by the team. Table 1.3 shows the first five (of nineteen) of the lines of the original table in the pre-development report on Thabina Irrigation Scheme.

The method for this pre-development study was developed by Johann Adendorff and is more elaborately described in WRC (forthcoming).

PROBLEMS	NEEDS	FEARS	ASPIRATIONS
Inadequate water for irrigation	Reliable water sources needed e.g. construction of a dam, and drilling of bore-holes	Drought and therefore hunger	Sufficient irrigation water which will ensure food security for the farmers
Damaged main canals and sub-canals	Repairs and upgrading of canals		Scheme rehabilitation
Theft of produce in the lands by the resource poor. Thieves also cut fences such that livestock enter the scheme	Security to prevent theft	Hunger and deprived income	Implementation of some form of security system
Shortage of tractors and poor tractor services	Additional tractors and provision of adequate tractor services	Low yields	Higher and better quality produce
Inadequate water pumps and frequent breakdown of pumps	Repairs to broken down pumps and additional pumps needed		

Table 2.2 – Part of the summarising table in the report on the pre-development study on Thabina
Source: (NPDALE, 1998)

In addition to a social-institutional pre-development survey also technical surveys including reviews of maps, infrastructure, natural resources and agricultural potential were done. As part of this study, on Thabina Irrigation Scheme reports were produced on water use efficiency (Radley et al., 1999) and development potential (Smal, 2000).

Principle: Executing a 'fully participatory' intervention implies that ***beneficiaries can express their ideas and priorities in the planning phase*** *of a project.*

2.2.2. Capacity building and participation

Another practical consequence of this 'participation intention' was the establishment of Development Committees (DC) at scheme level, early in the process. At Thabina the Development Committee was a continuation of an already existent group of elected farmers that functioned as a counterpart to the governments' Programme Manager. At the moment of the pre-development study, the consultants already worked with this committee (NPDALE, 1998:8). The Development Committees were elected by the holders of a "Permission To Occupy" (PTO) within the scheme's boundaries.

The DC's prime responsibility was to co-ordinate the transfer process from the farmers' side. The Development Committee also functioned as a body that took part in decision-making concerning the rehabilitation, while at the same time gaining practical experience in management of the scheme. The consultants saw the working together with a Development Committee during implementation explicitly as a capacity building component of the approach. Eventually the Development Committee was to become the Water Users' Organisation's Management Committee (WUA-MC). At this stage of the programme no money was available for training on (water) management issues.

*Principle: Giving farmers the opportunity **to participate in decision-making and water management** in collaboration with both government officials and consultants **is (a kind of) capacity building**, as people can learn by doing while under mentorship.*

2.2.3. The turnkey approach

The concept "turnkey approach" was coined as part of the project approach and should not be confused with the conventional civil engineering turnkey type contract which is wholly different. The "turnkey approach" as used in the NPIS and Water Care Project context, means making the community central in decision-making as well as for carrying out minor repairs on the irrigation schemes, as part of the larger project (which would include also training etc.). The community, by word of mouth or signature of the DC, had to agree to every decision made about planning and implementation before the consultant could continue. The objective of such an approach is power sharing, as neither the community nor the consultant can make decisions on its own.

Complementary to this, there is also a training and employment aspect to this turnkey approach. As much as possible the repairs are done by local labourers and local private contractors and suppliers of materials and services. It aims to build a basic understanding of the system and a skill base for maintenance and repair of infrastructure on a local level.

Principle: Power-sharing, training and practical participation can easily and functionally be constructed around minor and urgent repairs on infrastructure.

2.2.4. Agricultural training

During the period from June 1999 till March 2000 intensive agricultural training took place on a two-weekly basis. The training sessions were done in four groups of about thirty people; all PTO holders were invited to join and also people from outside the scheme boundaries were welcome. The focus of the training was on planting techniques, fertilizer application, crop choice, etc. Story telling, parables and very practical instruction, partly in-field, play an important role in this training developed by Johann Adendorff. Like Adendorff's pre-development study, also this training programme has been described in WRC (forthcoming).

In the Thabina Irrigation Scheme this element of the approach is the one most often referred to as having had a strong impact on the functioning of the scheme as a whole.

Principle: Though the complexity of irrigation schemes often requires a complex approach, in many cases ***some practical issues can simply be overcome by straight forward practical training****.*

2.2.5. Stimulating land leasing within the customary land tenure system

Almost all smallholder irrigation schemes in the Limpopo province have a traditional land tenure system in which the Traditional Authority (TA) has official ownership of the land. Certificates with a "Permission To Occupy" (PTO) are issued to the users of the land. Mostly the PTO is inheritable but it is not allowed or possible to sell this right of usufruct. If land is not being used anymore by the PTO holder the land is returned to the chief who can issue a new PTO to people applying for a piece of land. This land tenure system was by the consultants seen as a possible major obstruction to development because of its rigidity. Yet, it was accepted as the situation one had to work with; changing it was out of the scope of the project. Alternatively it was tried to make the land tenure system more flexible by promoting land-leasing arrangements, with approval by the Traditional Authority. The underlying objective was to increase the use of the land, which at the moment of the start of the project was estimated to be only about 40% (NPDALE, 1998; Perret et al., 2003).

During the project implementation and the following year some leasing arrangements were settled, which opened possibilities for new farmers. About four new farmers, each with three or more plots started to farm on formerly unused land. Recently conflict arose between historic leadership and new farmers, which has discredited the land-leasing arrangements that are claimed to be illegal constructions within the customary land tenure system.

Principle: ***The existing socio-political situation is explicitly taken as a starting point****; if a management structure exists, it is this structure that is initially worked with. Besides it is tried to involve both the TA and local government in the project.*

2.2.6. Rehabilitation of the infrastructure

The budget available for rehabilitation of the infrastructure was limited and **was fully utilised in the upgrading, i.e. fixing, of the existing infrastructure**. The limited budget implied that there was no room for re-design or major changes in the layout of the systems, fixing the canals and division structures guaranteed that the system was at least technically capable of delivering water to the fields and in with lower losses than before.

In Thabina the major diversion weir, the night storage dam, both main and sub-canals and long-crested weirs at the 18 off-takes were repaired or reconstructed. Social or management implications of the used technology and layout were not considered in decisions on whether and how to rehabilitate. Therefore, the highly problematic socio-technical situation present in Thabina remained and exerts its influence until today. The situation is elaborately described and discussed in Veldwisch (forthcoming), while this specific issue within the Revitalisation approach is discussed in Chapter 4, about the still remaining challenges.

Principle: ***Financial and technical considerations for self-management*** *played an important role in the decisions on* ***material and construction method****. It means that wherever possible simple and cheap techniques*

were used so that the community would in the future be able to fix these structures themselves (NPDALE, 2001b).

2.2.7. Building a local management structure (the WUA-MC)

Though right from the beginning it was clear that management of the schemes would be handed over to a farmers' body, in the beginning of the process both the organisation structure and legal status of such a body were not clear yet. The consultants made the decision that the Water Users' Association (WUA), as described in the New Water Act of 1998, was the most appropriate vehicle for handling both:

- Water management as would generally be carried out by a WUA.
- Scheme management around agricultural production issues, land allocation etc. which are not linked to the water system management and operation.

While this approach, of combining a number of scheme management functional activities with farm level functions into one structure, has the obvious advantages of minimising any duplication of elected structures at scheme level, there is a counter argument against centralising all control on the scheme into a single structure. Chancellor (2003) argues for a separation of the water management and the other, broader agricultural production management systems as the centralisation of these activities potentially constrains, and limits other more dynamic associations from emerging. This is an area of research that warrants further exploration and but is not covered in further detail here.

Beside farmers, representatives of the Traditional Authority, the Municipal council, the Department of Agriculture and the Department of Land Affairs should sit on the WUA Management Committee. The organisational structure and its responsibilities were only defined at a very late stage in relation to the rest of the rehabilitation process. See respectively Figure 2.1 and Table 2.2.

Furthermore, there was no budget available for explaining the model and training in specific tasks. Thus, it is not surprising that at Thabina currently no reference is made to a (previously existent) technical committee neither to a committee related to marketing. It is clear that the organisational model has not been maintained in the years that followed the initial intervention.

In contrast to Thabina, study of later phases of the Water Care Programme showed that this organisational model was effectively sustained in some cases (Makuleke for example), particularly where it was introduced in earlier stages of the intervention combined with institutional training (see chapter 3).

(1) implementing the constitution	(5) monitoring the functioning of sub-committees
(2) establishing a disciplinary code	(6) linking with other WUAs, and
(3) finance and bookkeeping,	(7) other outside structures, and
(4) keeping record of all structures,	(8) dealing with land issues.

Table 2.2 – The eight core function set-out for the WUA-MC
Source: (NPDALE, 2001b)

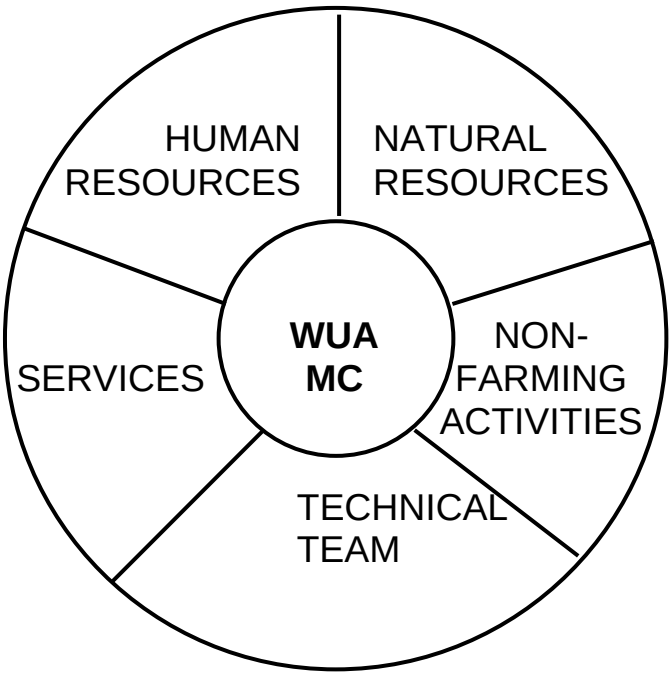

Figure 2.1 – Structure of the WUA as envisaged by the consultants; The Management Committee is in the middle of five issues ("portfolio's") to be managed on the scheme. Various sub-committees were to be established to function under the general MC.
Source: (NPDALE, 2001b)

2.3. Looking back

In this report we are looking at the development of an approach over several years and implementation stages. It is important to see how and why the approach was adapted at every stage and what the effects of these adaptations were. It makes it possible to learn from previous experiences, to use solutions found for certain problems and to prevent making the same mistakes over and over again.

2.3.1. Positive effects

The NPIS Programme had positive effects on the situation in Thabina in the following five aspects:

1. The consultative pre-development study done at Thabina showed clearly the main concerns of the people farming in the scheme's area. Most of the concerns listed in the pre-development report (see also Table 2.1) were confirmed by the information obtained from the fieldwork for this research assignment.

   The pre-development study helped in identifying where irrigation, rehabilitation and transfer come in at the farmers' lists of priorities. A good example is the expressed concern about bad tractor services, which could not easily be incorporated into the programme. Yet, it was tried to get the tractors and implements included in the facilities to be transferred to the WUA. Furthermore the pre-development study gives a good indication whether it is wise to continue with a rehabilitation and transfer programme at that specific scheme. When the pre-development clearly shows that irrigation is not a limiting factor for development, it is a good basis to look for other opportunities.

2. Thabina Irrigation Scheme presently has a functional Management Committee, delegated by the PTO holders in the area. It is strong in its external functioning and maintains good relations with the extension officer, researchers, provincial government and DWAF. The members of the committee have at least a reasonable understanding of all the various tasks that come with management of an irrigation scheme. But, as discussed in the next sub-section, it functions very poorly in other areas.

3. The water availability in the irrigation system is at present apparently better than it used to be before the rehabilitation intervention, though some people claim it did not improve and many people still mention water shortages as their biggest problem.

4. Many people refer to the agricultural training received under the project as being very helpful and people claim that it improved their yields significantly.

5. The running costs for the government have been drastically reduced, mainly by transferring about ninety of the more than one hundred government workers that were employed at the scheme.

It can be concluded on Thabina Irrigation Scheme, that a reasonable successful rehabilitation was implemented without cutting the users' community off from the ownership and use of the system. In addition, a Management Committee consisting mainly of farmers in the scheme has become the legal management body and is functional as such.

Compared to rehabilitation processes of smallholder irrigation schemes that only focus on large infrastructure rehabilitation with a prescriptive, top-down implementation structure, the intervention at Thabina was clearly a step forward at the time, although still largely focused

on infrastructure repair in terms of budget allocation (some 90%). The approach that was adopted proved that it was at least to some extent possible to incorporate perceptions of "user-experts" (i.e. local farmers have expert knowledge) and give them some power over decision-making as well.

2.3.2. Issues of concern

However, developing a more user-inclusive approach was a long process. As an integral part of the approach, lessons learnt were documented and reflected upon. Some issues that were observed in this phase and dealt with in later phases are described here. The next chapter will describe some of the improvements made.

Some of the observed difficulties in Thabina in relation to the NPIS Programme:

1. **Feeling of ownership over the project**; farmers complain that wrong priorities have been set, that money could have been spent better and that some tasks have never been properly finished.
   On a deeper level of analysis the problem seems to lie in communication and decision-making processes rather than in the outcomes. Even in this participatory set-up farmers have the feeling that decision have been made for them rather than by them. For that reason outcomes and decisions are challenged.

2. There is a big **gap between the MC and the rest of the farmers**; information is poorly shared and farmers do generally not feel connected to decision-making processes.
   Most people in the Management Committee are commercial farmers with relatively large portions of land. The majority of small, subsistence farmers do not participate in decision-making, nor are they aware of the transfer process and related information. Consequently they still go to the Extension Officer (the former Programme Manager) if they have complaints about water management issues.

3. **Problems around land tenure**; leasing of land is surrounded with difficulties, while people still hold on to their land when not interested in farming.

4. **No credit or financial support is available**; going commercial is implicitly assumed in the programme. This requires high capital inputs, which many people do not have while credit is lacking.

As described in the next chapter these four issues were explicitly addressed in later phases of the Revitalisation Programme. However, there are more issues of concern in Thabina. These are discussed in Chapter 4 (Remaining Challenges) and relate to

- the remaining role of the government,
- the organisational structure of the WUA and
- the interconnection of social and technical aspects of the infrastructure.

3. The Water Care Programme – Mega Plan III

Table 1.1 in the introduction gives a good overview of the phases in the initiative to develop the Smallholder Irrigation Schemes in the Limpopo Province. This chapter discusses the Water Care Programme (WCP), Mega Plan II and III (the third row in Table 1.1), which ran from 2002 till the beginning of 2004. The WCP, Mega Plan I, which took place in between the NPIS pilot phase (Chapter 2) and the phase described in this section, is not explicitly discussed in this report.

Table 3.1 – Content of this chapter

3.1 Evolution of the Approach

3.1.1 Objective and old elements in the approach

In this 3rd phase of the Limpopo initiative, the overall objectives encompassed a broader range of "revitalisation" activities than in the NPIS pilot phase. The development initiative now covered the rehabilitation of irrigation infrastructure, and in addition placed much greater parallel emphasis on:

- farmer training,
- establishment of a Water Users' Association (legal and constitutional)
- collective organisation around water-use practicalities (practical and organisational)
- subsequent transfer of management responsibilities and ownership of the facilities to the WUA.

The main difference with the earlier (NPIS pilot) phase is the availability of a larger budget and more time to go through a process of transformation, in both social and technical arenas. The basics of the approach remained the same, i.e. agricultural training, the pre-development study and "turnkey" management, but time and money invested in these "soft" activities increased substantially (from 10% to an estimated 40%) (Pers comm, M. de Lange). Furthermore the management structure that was briefly discussed in Section 2 of this paper was now more fully developed and was established at scheme level earlier in the process. (LPDA 2002a and 2002b).

3.1.2 New Components of the Revitalisation Approach: Empowerment Training

A new component of the approach was what the implementing team termed 'capacity building and empowerment training', intended to stimulate a transformation process of individuals and the community.

While the term "empowerment training" might be seen as a contradiction in terms, i.e. the process of empowerment is by its very nature something that cannot be trained like a technical or skills transfer activity, the naming of the process belies to some extent the positive outcomes it seems to have achieved. Empowerment involves individualised and personal growth processes, at an emotional and confidence level, which may or may not be linked to skills development. In this case, the emotional and personal growth of individuals was linked to and part of skills and inter-relationship development, through a dynamic and often humorous series of activities.

This process became the central point of contact between the consultants on the one hand and the community on the other. It partly precedes the planning and implementation phase, but it also overlaps with it and follows from it.

Though by the implementing team referred to it as a 'training programme', it can better be seen as a **broad social approach to help a heterogeneous community to take part in the intervention**. Therefore this element has the capacity to become the **core of a 'fully participative' approach**.

In its early stages the empowerment training programme aims at joint problem identification and project formulation, and thus runs partly parallel to the pre-development study, which aims to quickly result a comprehensive understanding of the local situation through a large number of one-on-one semi-structured interviews. The main outcomes of the pre-development study are reported in a table with four columns presenting problems, needs, fears and aspiration. Finally the issues are listed according to analysed priority (see also section 2.2.1).

As a problem-identification and planning tool, the training programme is more inclusive of local actors and integrates analysis more directly with action, as compared to the pre-development study.
The training group that is formed will, in later stages of the project, become the leadership that can give guidance to the project from the side of the farmers' community.

3.1.3 Also new: joint ventures

The significant challenges related to critical production elements of credit facilities, agricultural implements and markets, were addressed by the consultant team by establishment partnership arrangements between farmers' groups and mainstream agribusiness. In most cases cotton was chosen as the main crop, largely due to large increases in raw cotton that the existing cotton ginneries both urgently need and can readily absorb, translating into substantial hectarage of irrigable land. The consultants brokered contractual arrangements between Nasionale Sentrale Katoen (NSK) and the individual farmers.

In short, the farmers committed to:

- growing and selling cotton to NSK under the close supervision of NSK, including instructions relating to seed varieties, fertiliser applications and pest / disease control and contracts.
- Repaying the loans, which were at prime interest rates, for seed and for the infield irrigation equipment funded by NSK.

NSK provided much needed seed-finance as well as a secure market for the cotton that would be produced, with bale prices linked to variable world prices. While the benefits of the partnership arrangements are subject to considerable debate including issues of:

- Financial sustainability where projected profitability for the participant farmers on optimistic yields give net margins of less than R4000 per ha (i.e. will participant farmers continue to take the risk given the actual benefits), and
- Given the relatively small portions of land (approx 1 ha) accessible to individual farmers results in substantial risk for relatively small potential benefit for the individual, not least given full-interest loan obligations on seed capital and equipment, and
- To the issues of dependency that emerge from such partnership arrangements where farmers are dependent on a single relationship for the entire agri-business cycle (with little option for alternative cropping, marketing, financing, training etc)

these partnerships do offer an opportunity for market-oriented production for the whole scheme, where other alternatives may be difficult to establish in the short term. Thus the cotton partnerships provided an avenue for immediate production, and financing, where little alternative seemed to exist. It is worth noting that while first year (2002) yields and market prices generally yielded a net loss for farmers, the 2003 crop was better and yielded an overall marginal positive benefit over the 2 years to date.

The advantages and disadvantages of the “cotton partnerships” or other extensive cropping partnerships (particularly low value, high risk crops such as cotton) are a key area of debate in the irrigation revitalisation discussion, but are not entered into detail here.

The intention here is to note the extent to which the intervention extended beyond infrastructure repair to the multiple issues related to successful agri-business on the schemes. This critical shift from an engineering-centred approach to an agri-business / skills-development centred approach is a key shift of emphasis both in content of the intervention and the monetary value of funding attributed to “hard” (engineering) costs and “soft” training and organisational development costs.

3.2. Techniques - Community Mapping and Relationship Strengthening

3.2.1. Objectives and set-up

In this initial phase there are two objectives.

- To get a full understanding of the existing local relations of collective action, information sharing, decision-making, etc.
- Joint problem identification (see mainly section 3.2) by the various parties affected by the intervention, i.e. a common base of understanding.

The inception activities (described in section 1 and 2) take place in about fourteen days of contact spread over a period of about a month.

3.2.2. Mass meeting and delegates

At first a mass meeting is held in which each and everybody that might be, however slightly, affected by the intervention is invited to come and express opinions and interests. The purpose of the meeting is to come up with a reference group of about thirty to forty people that represent the various parties. That is about five persons of each interest group.

Principle: ***Communities are heterogeneous and have no clear boundaries.*** *Consequently interest based representation is very important as well as including parties that are only indirectly related. However, in the end full-time farmers will manage the scheme.*

3.2.3. Choosing a training assistant

The reference group is asked to select a training assistant that is going to be paid directly by the facilitator for the entire period of contact. He/she will translate during the meetings and will be the central element in information dissemination while also functioning as an important informant to the facilitator. If the group of farmers is very large a second assistant might be employed (about one for each fifty to sixty farmers). In this initial period the assistant receives a training of about a week to get a good understanding of the principles underlying the approach.

*Principle: **The community as a whole should delegate the assistant.** They usually arrange this themselves, but an alternative is to put together a small selection committee. The community support-base is more important than keeping control over the selection process by the facilitator itself.*

3.2.4. Mapping the present and future

Mapping is used to understand and document the current situation and then facilitate a vision-building exercise.

1. During a plenary session of the reference group each group (or individual) is given large sheets of paper and is requested to draw a map that shows both the physical situation as well as the social relations surrounding the production system. An indication of relevant information needed is supplied to the groups.

2. After this instruction session the representatives bring the sheets of paper and draft maps back to the respective groups they represent. The assistant plays a central role in helping the various groups in compiling their map.

3. The facilitator compares and combines the various maps to one large map that is discussed upon with the reference group usually leading to some minor changes.

4. As a next step the map-drawing exercise is repeated but this time people are asked to dream about the future. The resulting overall map shows where people would like to be in about five to ten years from that moment. No boundaries are set in the identification of their hopes/needs. The unattainable goals will be sorted out in the later prioritisation.

An example map from the Phadzima Irrigation Scheme can be found in Annex I.

*Principle: The facilitator should **show respect and trustworthiness** in day-to-day acts like ensuring to be in time for appointments, living up to ones promises and wearing appropriate clothes. It is also important from the outset to spell out very clearly what the intention of the programme is throughout to **be realistic in what is possible** and what will not be possible.*

3.3. Problem identification and prioritisation

3.3.1. Community based 'gap analysis'

The *status-quo-map* and the *map-of-dreams* are compared and the gap indicates challenges and problems identified by the community. The gap-analysis is initiated in the reference group. Each group or individual makes a list of the differences, which usually ends up being a very concrete wish list. It is a heterogeneous list that for example shows the following issues:

- Clean drinking water at homesteads.
- Schools (nearby for children).
- Better public transport and roads to bigger towns/centres.
- Electricity in households.

- Better sanitation (toilets; sewerage system; refuse handling).
- Jobs/markets.
- Clinics/medicine at current clinics.
- Crime management.
- Recreation for youth.
- Production credit.

3.3.2. Re-interpreting the needs

The facilitator takes a leading role in re-interpreting the gap as documented by the various groups into workable principles underlying the concrete needs expressed.

Need expressed	Re-interpreted as
"We do not have water at our house"	Women have to spend two to three hours to fetch water and spend valuable time to stand in a queue waiting for water
"We need more police stations to report crime"	We need help to tackle issues like poverty; illegal aliens and unemployment to counteract crime.
"We need more dams because there is not enough water"	We need to protect our water source, manage the water use/scheduling better, fix leakages/cracks and clean dams/canals.
"We need tractors" (or "We do need to have ploughing services")	There is mechanisation contractor present in the area but they do not plough property (standard of excellence) and they charge too much for their services.

Table 3.1 – Examples of the re-interpretation of needs

*Principle: **The facilitator** is personally involved in the process and has an active and guiding role, i.e. he/she **is a 'facipulator'**, a facilitating manipulator.*

3.3.3. Community based prioritisation

The re-interpreted list of problems, wishes and challenges is presented to the reference group and explained in relation to their respective wish lists. The group verifies whether the list is correct. For the prioritisation everybody in the group is asked to give a value ranging from one to five to each issue. The scores of each issue are added up and the prioritisation simply follows from the score total.
Sometimes the results are surprising to the team and facilitator and especially the reality and clear thinking of the groups are impressive. Table 3.2 presents a typical list of priorities.

Within scope of the project	Out of scope of the project
• Restoration of the water system • Fixing broken canals • Fence (to keep out animals and thieves) • Infield roads to be prepared	• Payment of outstanding bills e.g. electricity • Repair of tractors and implements • Start up capital for inputs • Infield irrigation equipment

Table 3.2 – Typical list of expressed priorities

3.3.4. Back to the mass meeting

As a conclusion to the whole process of problem identification and prioritisation everything that has been documented is taken back to the mass meeting to be checked and confirmed. A period of about a week is reserved for discussion in smaller groups to follow-up on this meeting and report back to the reference group members. The final objective of this period is common base of understanding, clear to everybody involved.

At the mass meetings there is normally agreement on priorities but the history of bad experiences of the past crops up and you have to deal with it. Some communities had bad experiences with broken promises and hidden agendas both by department officials and consultants.

*Principle: Representation makes it manageable to work with a 'community as a whole', but **keeping their constituencies informed and involved is not obvious to most delegates**. Stressing this aspect and organising report-back sessions at micro level is an essential element in the approach, as well as keeping the related organisational structures, like the Chief and Councillor, personally informed.*

3.3.5 Using the prioritised list of issues

Ideally this period would be followed by an implementation programme that counters the items that show on top of the list. In this case the list is used to evaluate at what point the revitalisation programme of smallholder irrigation systems fits into the perceptions and priorities of the community. Before a final list is compiled, all the needs that cannot be addressed in light of the terms of reference of the project are identified and it is explained to the community that this project cannot tend to these problems. As a follow-up these needs are transferred to appropriate departments, NGO's and other institutions. See for instance table 3.2 for some frequently expressed needs that fall outside the scope of the project.

*Principle: Though the core of the programme is not changeable at this point, **priorities expressed by the community should be taken serious** and tried be worked into the programme as much as possible. Transferring the concerns to other organisations is sometimes a good alternative.*

3.4. Establish a local management body

3.4.1. Electing a management body

In situations where a local management body exists it is this body that is initially worked with. Only in exceptional situations is the management committee encouraged to re-structure, to prevent the project from stalling. In cases where there is no local management body at all, a management committee is elected during the final mass meeting, described in the preceding section. In this phase in the process very little attention is being paid to categorical representation, like gender and background. The only conditions that are set by the facilitator are that it should be the best people available being 100% farmers. So, no teachers, councillors, etc. allowed to be chosen, though exceptions do of course exist. However, these exceptions must be community driven and initiated. Where possible, after a phase-in period, (re-)elections are encouraged to confirm the credentials of the management body.

*Principle: As far as possible clear boundaries are set in which choices by the community have to be made. This means that there is **clarity about the level and ways of interference by the facilitator**. It builds trust and avoids suspicion.*

3.4.2. Composing a technical committee

In the final mass meeting, a technical committee of about four to five people is formed to go into the field and record primary maintenance requirements such as cracks in canals, breakdowns of structures, unlevelled fields, etc. as well as the perceptions of the reasons for this. After this first exercise the map and list with breakdowns is handed over to one of the external service providers who are responsible for the technical component of the revitalisation. Together with the technical committee, they engage in planning and implementation of small repairs by local contractors in collaboration with (sometimes free) labour input by the community. This is the turnkey management that has also been described in section 2.2.3. These minor repairs precede the repairs and redesign of major infrastructure. The Technical Committee is also actively involved in the compilation of the Technical Report, which outlines the major physical rehabilitation work to be done.

*Principle: **Some change should be visible in this early phase** of the programme in order to keep people interested in what is going on. In all cases, a working irrigation system and running implementation programme are a prerequisite for the hands-on training of the management committee.*

3.5. Hands-on training on project and scheme management

Project management is understood as management of the rehabilitation process, i.e. dealing with contractors, tendering, relations with consultants and government etc. Scheme management is understood as day-to-day management of the irrigation scheme. Training on both aspects is central in the training programme.

3.5.1. Objectives

The main, overall objectives of the training programme are:

1. Project management - managing the rehabilitation process
2. Scheme management (day-to-day management of the scheme)
3. Building confidence in local leadership abilities
4. Mind-mobilisation/ taking ownership

There are many sub-goals and issues that are dealt with to accomplish these main four objectives, some examples of these are:

- Strategic planning
- Financial Management
- Conflict resolution
- Sustainability of the project
- Transparency
- Commitment
- Accountability

3.5.2. Organisational set-up

In the first one and a half year of the programme the facilitator meets with the management committee every second week. Project Leaders (consultants responsible for the physical rehabilitation) and local extension officers are also invited to attend. The meeting starts at nine in the morning and finished at latest at one in the afternoon. At the end of the meeting a simple meal is provided.

While it is a detail, and given the positive intent and substantial success of the development team (government and consultants) might be argued to be of little importance, it is worth noting that the concept of scheme development leadership is by virtue of the labelling that is adopted, vested with the Consultant and not with the de-facto leadership of the schemes. The term “Project Leader” is one given to the Consultant’s lead individual who works with a number of schemes concurrently and coordinates activities on these schemes. However, these individuals are outsiders and might better be called “coordinators” or “facilitators”, leaving leadership and the decision-making that is implied in that, in the hands of the individuals who should be empowered by the whole process, i.e. the individuals who are scheme participants, and their leadership as they have defined them through the process.

*Principle: **People’s time is valuable and should be respected as such.** Consequently no meeting should take more than four hours. The simple meal provided has a function in compensating for lost time, but is also seen as an important aspect in the group dynamics and as a tool to build trust, following the philosophy that one eats with friends, not with enemies. Furthermore it creates a congenial forum to discuss the training that has taken place.*

3.5.3. Twenty lessons

A training program with 20 distinct modules has been developed and while this has been documented informally for use by the consultancy team, it is not yet available in published form. It is understood that some of the subject areas that are covered by these modules include:

- Understanding your Project (What is the project all about)
- The Roles and Functions of the Management Committee
- Chairman, Vice-Chair, Secretary, Treasurer, Additional Members
- Project Cycle Management
- Identification of Project Management Gaps / Problems
- Prioritisation of Project Management Gaps / Problems
- The project Planning Matrix (PPM – Action Plan)
- How to combine the PPM with the existing Management Structures (Wheels)
- The Management Structure Portfolios roles and functions – Clarity on our actions.
- The Management Structure Portfolios – training audit.
- Management and Leadership Skills
- Basic Bookkeeping
- Development of the community as a group within the project.
- Constitutions
- Conflict resolution
- Joint ventures & partnerships
- Day/operation management

3.5.4. Urgent issues come first

There is a schedule of training sessions for up to six month in advance, but it is dealt with in a flexible way. Every meeting starts with an informal discussion on the preceding two weeks. It is a good principle to give people the opportunity to put to rest the things that are busy on their mind in order to be able to get in a learning mood. Besides, in this particular project management training most of the issues are directly related to the project. Therefore the ‘disturbances’ are rather used as opportunities for improvisational training on basis of a concrete example.

Sometimes discussing the urgent issues from the last two weeks takes the whole time planned for training. More usually time is available and one of the twenty lessons of the training programme is addressed.

*Principle: There is **no use in overriding real concerns** with a training session on a scheduled issue and **practical experience has double the value** compared to a theoretical lesson. Therefore urgent issues of direct concern to the group have priority to be dealt with.*

3.5.5. Development Team - Interpersonal Values and Interaction Style

The message conveyed indirectly by the intervention team was consciously acknowledged to have an impact on the process. Body language and interpersonal behaviour during planned activities and in one-on-one interactions has a substantial effect on the overall message communicated by the team to the community members. An open leadership style, which was promoted under the program, where leaders listen to the people they represent, cannot be taught with an authoritarian attitude, and thus interactions were planned strategically with this reality in mind.

Similarly, commitment to a process, in terms of meeting deadlines and appointments, were indirectly taught by the intervention team being committed to the training in a disciplined fashion, which meant holding sessions regularly at two weekly intervals and (almost) never missing a session.

Accountability over funds was made an issue for small as well as major expenditure items, even as small as a simple meal provided at a training session or meeting. At most places the meal was cooked by two people from the community, as much as possible with local ingredients. These practical applications were used as an implicit part of the process, where for example, the facilitator paid the cooks and let them sign the receipts for items brought from outside, with a committee member as a witness. This is a healthy accountability mechanism towards them and illustrates that it is normal and good practice that she herself is also being held accountable by the people by whom she is employed.

*Principle: **Acts are at least as important as words**; the way the facilitator behaves during and around the workshop and training sessions are critical to the success of it.*

3.5.6. The role of the assistant trainer

In the two weeks between the training sessions, the assistant trainer duplicates the last training held with the management committee (or recap on any training that has been given) to small farmer groups and reports on the development to all parties involved. The duplicate training is usually done in groups of twenty to thirty people. At the end of every month the assistant trainer hands in a report with pictures and full descriptive captions illustrating his/her activities. The main content of such a report consists of:

- Activities/Action
- Reaction of Participants
- Problems experienced
- Recommendation of additional training needed.

Furthermore, a ‘Session Plan’ is made, which is basically his/her work plan for the following month.

Principle: Though the assistant trainer can usually be of great help in understanding the local situation, ***(s)he is never actively used as a spy or asked to gossip****. It is important that his/her trust base in the community is not violated. The fact that (s)he is delegated by the community at large also helps to maintain that trust base.*

3.5.7. Exit is still possible

Though at this stage of the programme all the related activities around rehabilitation also start running, the possibility to leave a community is still kept open. The whole basis for starting a process with a community is partnership, shared responsibility and a concrete request from the community. Sometimes only during the course of the process it shows that this basis is lacking, for instance because people have engaged in the project for ambiguous reasons or when a community is torn by conflicting interests.

Taking partnership implies that if there is no partnership the process can be broken off or temporarily seized. In Homu Irrigation Scheme this has actually happened and it took the community about four months to reinitiate contact with the consultants.

Principle: ***If a community does not take ownership and initiative during the process the project at that specific place should be seized****. Leaving this option explicitly open helps to look for genuine partnerships.*

3.6. Follow-up: a period of mentorship

3.6.1. Objectives and organisation

During a period of several months after implementation the monthly Management Committee meetings are attended by the facilitator. When necessary she intervenes in discussions on current issues and repeats the previously taught management principles, with refinements for each particular group as necessary. In addition, an interactive scheme management calendar is developed during this time, with and by the Management Committee, showing the different tasks and responsibilities on a month by month basis throughout the year.

3.6.2. Repetition and taking it a step further

The experience of the facilitators was that while intervention was still necessary in these meetings on a number of occasions, these slowly decreased during this mentorship period. In the beginning even relatively simple interventions like reminding the secretary about note-taking responsibility was necessary, but these processes slowly became habitual and MC members began to support and remind each other about their designated responsibilities.

Some issues that still frequently arose during the mentorship period were noted as follows:

- Requests of farmers to intervene with disputes between themselves.
- Dealing with “unknowns” e.g. dealing with outside institutions like government, researchers and companies (MTN/Vodacom/Eskom) that weren’t covered during the training process.
- Requests to retrain on certain topics that the members subsequently discovered are vital to successful management.
- Advice on planning (a repeated request from which the idea of developing a ‘Scheme Calendar’ evolved).

3.7. Looking back

The Water Care Programme, as discussed in this chapter, has concluded in the beginning of 2004, and the schemes that were part of this initiative will be absorbed into, and be mentored under the next phase of the Limpopo initiative, the RESIS programme. Thus, some of the fieldwork took place during implementation and the time of writing is soon after finalising implementation. In addition, the follow-up RESIS programme has only just started and it may therefore be early too give a sound analysis. However, there are some more obvious issues and these are discussed here.

3.7.1. Project management and ownership

Through training on issues related to project management and continuous support of the Management Committee to take ownership over the project themselves, people started to take an active role in project planning and in relations with consultants and government. In situations where, at the start of the project, dependency mechanisms were evident at many levels, towards the end of the project it was observed at several schemes that communities and their leaders had their own vision and did not shun confrontations with government officials and consultants when they thought this necessary to protect their interests.

Compared to the experiences during the pilot phase, people interviewed at schemes that were part of the last phase of the initiative (i.e. the more process based phase investing heavily in the training and capacity building) had a much stronger sense of ownership over the project and the irrigation scheme itself. Frequently this was linked to the fact that decisions regarding the project had been taken by the community (leaders) themselves. The available budget could only be spent once, and being aware and jointly responsible for this, real priorities had been set. Though there are still issues that communities would like to see addressed, they themselves have chosen to use the available money for other issues first.

3.7.2. Leadership and representation

As the chosen leadership had real and important decisions to make during the project implementation, they have gained substantial experience in managing both projects and their irrigation scheme. During this period of many decisions, people were intensively supported in establishing healthy democratic and management principles.

It seems that several of the Management Committees are aware of the importance of keeping the community informed and well represented in decision-making. In one of the schemes (Makuleke) the Assistant Trainer is now partly employed by the MC to keep informing the whole community about what is going on. In this way the MC has acted to prevent a gap between elected scheme management and the community to widen, as for instance happened in Thabina (see Chapter 2).

3.7.3. Cohesion in the broader community

The broad approach in problem identification and prioritisation, which involved anybody, however slight, related to project, effected a situation in which everybody is aware of what was going to happen. Furthermore people had not only formally agreed with the path to take, but had taken responsibility for the decision as well. Keeping the TAs, municipalities and related ministries directly and regularly informed of the developments strengthened the support for the projects and the coherence in thinking about the project.

4. Remaining challenges

The Limpopo Province initiative to revitalise the former parastatal smallholder irrigation schemes is far from complete and the programme is evolving and has now entered its largest phase, renamed the RESIS program. This phase, in which 114 schemes are to be rehabilitated and re-organised, has started with planning in 2003. The first implementation on new schemes is to start in late 2004. The schemes which were part of the earlier Water Care Program will be included in the Revitalisation Program

Following on to the descriptions and analyses in the preceding chapters, some challenges that still remain have been identified. There are many issues that were at play in the previous phases until now still have no satisfying answers, and may well possibly never have satisfying answers. Some of these development debates are addressed here with (cautious) suggestions as to how they might be approached, while other issues are simply raised as questions or areas of concern that have no simple solution. The intention in raising them and making people aware of these specific difficulties is intended to be a small step on the path to developing an approach that will prove workable.

4.1 A more holistic approach towards development of technology

It should be acknowledged that by the Revitalisation Programme until now, the approach towards improving SIS has widened beyond physical rehabilitation of the infrastructure and has become more process oriented and now also includes agricultural, personal development (empowerment) and management training. Though brought together in one programme, a thorough understanding of the **integrated nature of social, managerial and technical issues is arguably still lacking**.

The case about Thabina Irrigation Scheme (see also Veldwisch, forthcoming) is a very clear example of this. Eighteen sub-canals are directly connected to the main canal, while the off-take structures have a layout that strongly privileges the farmers in the head-end. Sharing the water equally is hardly possible due to managerial implications of technical design. Furthermore a hierarchical organisational structure has been set-up that is not congruent with water management boundaries and consequently the organisational structure has no direct function in water management. More examples could be mentioned here, but this is enough to illustrate the principle.

Though the examples mentioned here are from an early pilot, and many lessons have been learned since then, the interconnectedness of management and physical layout has still not been brought up as an explicit point of attention. The interaction with the socio-political environment is also only touched on indirectly.

Here, the challenge lies in building interdisciplinary teams, which goes a step further than a multi-disciplinary approach. Working in a process oriented way in which “user experts” have a substantial input, overcomes part of the problem as in their experience the interconnected understanding of an irrigation scheme usually comes natural.

4.2 Discussion on After-Care, Mentorship and Extension Officers

The irrigation schemes that were most recently rehabilitated under the Water Care Programme are at the time of writing of this report still in a follow-up or mentorship period. These are the first schemes to get such a follow-up service. The programme and tasks for such a follow-up period are only now being developed. It is clearly important to pay full attention to this ongoing development, as in the end it may make or break the success of the project.

Though much has been learned in the years during implementation one should not underestimate the extent to which this requires a complete shift in thinking and working on the part of ALL concerned, government, consultants and scheme participants. The complexity of a social production system such as irrigated farming (particularly in the context of broader livelihoods) is very high, adding to the demand for external support. This is all the more relevant given the precedent of three to four decades (depending on the scheme) of highly autocratic, centralised, dependency inducing, and undeniably actively disempowering history of operations, that has to be reversed and re-directed in the course of a comparatively short intervention program.

The underlying question is how to support (and not lead!) a community to self-management, making the intervening agents ever less necessary. Though in the first two years or so after implementation a consultant-led programme might be of high value, there is necessarily a time for such programmes to conclude an active role. This shift from a consultant driven, pro-active intervention (even if phased out sensitively and realistically) requires follow-up and mentorship to be taken over by the Department of Agriculture.

It is therefore essential that the any provincial Revitalisation Program addresses the capacity building within the department that is necessary to allow such a phase-in of ongoing support and mentoring to the schemes after the departure of external consultants takes place.

In the early pilots the importance of the position of the Extension Officer in a project could be easily observed. In many places, it is openly stated by scheme participants and by implementing agents, that they are obstacles towards development of self-management, probably because they feel that their position as scheme manager and the sometimes holder of the key to ad-hoc government resources is threatened. In any case, the introduction of farmer driven scheme leadership is a significant change, which shifts power and status, and places unavoidable tensions on small community, individual relationships.

The central role of EO's in scheme development and evolution, has been acknowledged and even taken as an explicit lesson learned during the pilot projects (NPDALE, 2000). But this knowledge does not appear to have been strategically addressed, in terms of the future role of EO's, in a revitalised scheme context, with leadership driven by participant farmers. In the latest Water Care phase, the EOs were invited to join the training sessions for the MCs, but they have not been given a specific role in the process neither a new perspective on what their role could be after IMT.

Notwithstanding the above critique, the difficulty in resolving such an issue is substantial. How to make EOs part of the process and give them a central role in follow-up and support at management level, given the existing structure of the Department of Agriculture needs attention. In-house and ongoing training of EOs either within the department, as part of the implementation or else at least as part of the follow-up programmes seems essential for the functioning of the scheme in the period after all consultants have left.

4.3 Additional Scheme, Water and Farmer Organisational Models Need to be Considered

There is clearly a need, based on the conflicting theoretical perspectives and documented experiences (Water Care Approach documented briefly here vs. Chancellor's, 2003) to explore alternatives to a single scheme level management structure. Building WUAs which effectively cover all agricultural production functions, and scheme level water and organisational functions is possibly not the best solution for all schemes. There is a case for allowing a less structured framework that allows for the development of farmers organisations (at scheme and sub-scheme level) that are more flexible and accommodate more effectively the dynamic and diverse nature within and between schemes.

4.4 The need for explicit choices on commercialisation vs subsistence

The Revitalisation Programme has from the beginning been based on an objective of self-management, financial self-sufficiency included. Though this implies a choice for commercialisation of the agricultural production in Smallholders' Irrigation Schemes, this choice has never explicitly been made. Consequently the effects of this choice are often not dealt with, leading to a number of unexpected and unwanted effects.

In Thabina Irrigation Scheme, for instance, not making this explicit choice has resulted that many subsistence farmers and non-farmers could stay within the system, putting a heavy burden on financial self-sufficiency. At the same time the newly established WUA-MC became strongly dominated by commercial farmers. This caused the development of a gap in representation and decision making between the commercial farmers that had taken place in or taken a position close to the MC on the one hand and subsistence farmers that to a large extent had missed the recent developments towards self-management.
At policy level an explicit choice will have to be made to either really go for commercialisation and taking its consequences fully into consideration or to leave room for other ways of farming, like subsistence (with its financial consequences), and take provision for its fair representation in management of the scheme.

It is acknowledged at this point, that the terms commercialisation and subsistence are subjective and will have widely varying meaning to different readers. But in the above discussion, it is intended that commercialisation means moving towards a cash-based, external market driven (but not necessarily market dependent) farm production system, which may be low-input and low-risk or high-input and linked to high-value markets. Subsistence is intended to mean a localisation of the economic value of the scheme produce, and would relate to an extensive, low risk approach to farming, which is arguably in contradiction to the very concept of infrastructure-intensive irrigated agriculture.

At no point, is traditional agriculture considered to be confused with either subsistence or commercial, and depending on the particular case or point, traditional agricultural production methods are considered to comfortably fit into either commercial or subsistence categories, as grey as the margins to these categories might be, given the relatively unimportant economic place of agriculture in the current rural household economy.

Assuming a general tendency towards commercialisation is necessary to justify the investment and operational costs of irrigation schemes, the challenge is to find ways to provide those people who are not willing or not able to commercialise, a fair chance to continue farming in their preferred way.

As an alternatively the revitalisation programmes could incorporate extra attention for these people so that they can also have a fair chance of achieving substantial improvement in their lives. There is opportunity here to consider a parallel approach where initiatives on-scheme are more commercially oriented, and that resources from the revitalisation initiative are allocated to working in surrounding villages on home-gardens to address the need for home-food production. Water-harvesting, tank-building, intensive gardening methods and similar well-established approaches are available to achieve this.

4.5 Irrigation Revitalisation Initiatives to Extend Beyond the Scheme Boundary

There is a strong argument that irrigation development projects cannot be demarcated simply around the irrigated fields and the people who have rights to this land. The networks and relationships of the individuals in the irrigation farming community are complex and cross multiple boundaries, both organisational and physical. Simplistic interventions that do not respond to the complexity as experienced by the individual participants (in terms of complex linkages on the scheme and surrounding communities) are less likely to be responsive to their needs, and arguably therefore, to success of the initiative. Revitalising irrigated agriculture and smallholder agri-business, is most likely to be successful when it acknowledges this complex reality by "demarcating" the extent of the project boundary in consultation with the irrigation farmers. This means that broader issues should be included in the scope of discussions and planned revitalisation interventions and should include as a start:

- Discussions on the importance of food security in surrounding villages (off-scheme) and how this might be addressed by home garden food production (using water harvesting, diversified intensive production techniques)
- Promotion of a land-leasing market by addressing and formalising land tenure (to facilitate increased up-take of unused land, in a formal and secure way for both the lessor and the lessee).

The link between the above two items is still to be explored in the course of this research assignment, but it is thought that addressing the need for food security (by intensive homestead garden promotion) will be one of the catalysing agents in the releasing unused land as part of the land-leasing initiative. Those "farmers" who are not able, or interested, in irrigated farming but are using the high value irrigation land primarily for food security reasons, may consider leasing when their need for food production is to some extent met by the home garden initiatives. This has substantial potential to release high-value irrigation land into the hands of those farmers who have capability and intent on profit driven agriculture.

5. Summary and conclusions

This final chapter summarises the evolution that the approach went through over a five year period, why it developed in this particular way and what the effect was on the ground.

It is this general shift from a technology and infrastructure centred “rehabilitation” approach to a broader, multi-faceted “revitalisation” approach, which addresses the many aspects of collective irrigated agri-business both on-scheme and outside of the scheme, at an individual development level and at scheme leadership level, that is the essential message of this paper.

Repairing pipes and canals alone, as is currently the strategy in many provinces in South Africa, while motivated from noble political objectives, is likely to have the same depressing and wasteful results as the apartheid driven, scheme development strategies of the past.

The lessons of the last five years of experience in Limpopo are among the most valuable in in South Africa today, in how to address the transformation of the former parastatal schemes and while there is a long way to go to achieve profitable agri-business, this experience must be acknowledged as part of the strategic planning and policy development process.

The table overleaf summarises what has changed over the years in the approach. The table compares the two cases with each other on a number of characteristics. Thabina is a case from the Pilot Phase, described in chapter 2. Makuleke is one of the schemes recently rehabilitated under the Water Care Programme, described in chapter 3. Their backgrounds and community history are very different and thus the varying results are not simply the result of the different approaches, but of many factors related to the individual dynamics and history of two different localities.

What these cases clearly illustrate is the change in approach over the last years, covering the essential items listed below:

- Substantially **more time has been taken for the process of change**, project timelines for the intervention have extended significantly, from 4 – 6 months to 2 – 3 years.

- **decision-making was left more in the hands of the community**, who had to be fully informed and fully understand the implications of their decisions. This meant that considerable program effort was expended in working through and explaining the implications of various designs, farming systems, profitability, etc.,

- **project budget** was to a substantial extent **diverted from physical infrastructure rehabilitation** to the softer, but critically important components of farm production training, capacity building of farmer level and scheme level skills, and scheme level institutional set-up,

- substantial effort has been made to establish the **agri-business and marketing components**, essential for profitable farming ventures, either individual or communal.

Table 5.1 – Summary of differences in approach over a 5 year project period (Case studies Thabina and Makuleke Schemes)

	Pilot Phase – Thabina	Water Care Programme – Makuleke
Case specific information	200 ha; vegetables, maize, beans; average landholding is 1.5 ha; open-canal system from river diversion; no external storage; socially diverse, over 10 villages involved.	200 ha; cotton (5 ha plots) and food plots (0.2 ha); pressurised sprinkler system from a dam with storage for a 5-cropping seasons; a cohesive community with strong history of struggle.
Budget allocation	**0% preparation** **90% infrastructure rehabilitation** **5% farmer and organisational training** **5% institutional set-up**	**10% preparation** **50% infrastructure rehabilitation** **30% farmer and organisational training** **10% institutional set-up**
Planning tools	- Pre-development study	- Pre-development study - Participatory planning through mapping exercise - Step-by-step process plan
On-site time spending	2 years effectively	3.5 years plus follow-up
Training components	- Maize crop training	- Maize crop training - Project management training - Scheme management training - Mind-mobilisation/taking ownership - Cotton training
Capacity building components	- Turnkey approach - Participation in decision-making	- Turnkey approach - Facilitation of decision making (democratic principles, transparency, accountability, etc.) - Follow-up coaching
Local organisation	Establishment of WUA at scheme level, 4 ward-committees. MC consists of 5 executive members and 2 members of each ward.	Establishment of WUA at scheme level, thematic sub-committees with representatives to general MC.
Infrastructure rehabilitation	Repairs of existing system, no re-design.	Repairs of existing system, no re-design. Strong role for the Technical Committee.
Land tenure	Land leasing within the customary land tenure system was propagated, but has come under strong criticism. Still no more than 60% of the area is cropped.	Dispute over the area between 2 Traditional Authorities, temporary jurisdiction lies with the State. The area is fully cropped since rehabilitation.
Marketing/ investment strategy	Promotion of joint planning and sale, 'Marketing Manager' as a position in MC. In practice hardly any co-ordination.	Joint venture with a large cotton company. Yearly investment costs are offered as a loan by the company in exchange a guaranteed price. In practice only two farmers have made profit, the rest are in debt.

The reason for substantial changes in the approach is the **learning attitude** that has explicitly been taken by both the Limpopo Provincial Department of Agriculture and the consultants. During, as well as after the various phases, evaluations were held on the effectiveness of the approach, possible reasons for this and possibilities for improvement.

The establishment of a Pilot Phase had this learning aspect as one of its explicit objectives. As Chambers (1997:15-32) argues, such an attitude is absolutely necessary to avoid making the same errors in development work over and over again. He also shows that this is rather exception than rule. Therefore the Limpopo Smallholder Irrigation Revitalisation Programme is promising indeed. Not because of the developed set of problem identification methods, training programmes or institutional set-up, but because of the underlying principle of a willingness to learn, to be self-critical and to focus on local needs and trust on local capacities.

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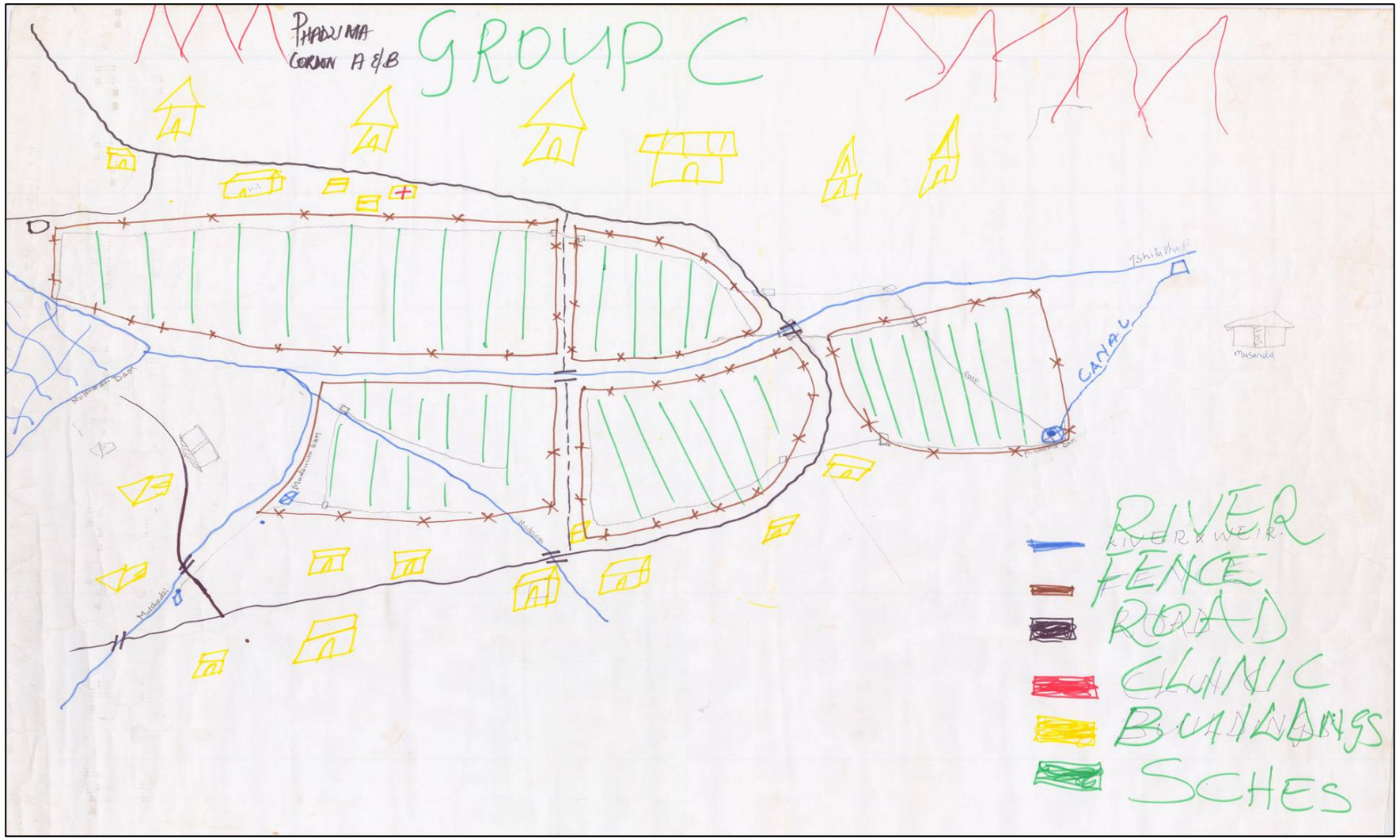
Annex I – Example map of Phadzima Irrigation Scheme



Appendix C

Evaluation of the RESIS Program

WATER RESEARCH COMMISSION

WRC Project No. K//5/1463/4 : Principles, Approaches and Guidelines for the Participatory Revitalisation of Smallholder Irrigation Schemes

RESIS - The Limpopo Program for the Revitalisation of Smallholder Irrigation Schemes : A Description and Critique

RESIS – The Limpopo Program for the Revitalisation of Smallholder Irrigation Schemes: A Description and Critique

CONTENTS

1 INTRODUCTION

1.1 Outline of the RESIS Program

1.1.1 National and Provincial Policy

The National Guidelines on Agricultural Water Use describes government policy to transfer the management of smallholder irrigation schemes to farmers and to broaden opportunities for multiple agricultural water use to rural communities.

The Limpopo Department of Agriculture (LDA) has taken the lead in implementation of this policy by launching a major programme for the Revitalisation of Smallholder Irrigation Schemes (RESIS). RESIS is a provincial flagship programme for the Limpopo Province in combating poverty and joblessness in the rural areas.

1.1.2 RESIS Objectives

The overall goals of the RESIS programme (website: www.RESIS.org) are to:

- **Raise and sustain incomes of farm families** in Limpopo Province on irrigation schemes and in the villages surrounding them within the Programme period from 2004-2010.

- Transform society by **enabling rural households to exercise more control** over their daily lives and especially their economic activity. This is achieved by giving the farmers authority over management and expenditure on their irrigation scheme infrastructure and farming choices, supported by training, capacity building and mentoring. Simultaneously, the general lack of access to farming inputs and services is addressed, as well as the upgrading and redesign of infrastructure to enable management-by-the-farmers.

- **Maximize benefits to the broader community** by addressing community agricultural water needs, water for homestead gardening, animal watering and dipping tanks, and training and support for dryland crop production.

- A key parallel objective of the RESIS programme is the **'transformation of government service'**, as reflected in the Integrated Provincial Support Programme (IPSP).

1.1.3 Project Leadership and Personnel

A key feature of the project structure for the implementation of the RESIS Programme is a Multi-Disciplinary Team consisting of government and private sector staff responsible for the provision and management of key specialist services to the Programme. The Multi-Disciplinary Team is being established through :

- Specific nominations from the Department for full-time assignment to the RESIS Multi-Disciplinary Team (MDT);
- Part time participation by certain Departmental staff; and

- Soliciting of private sector participation in the RESIS-MDT, through open tender for the positions on the MDT.

The RESIS rollout programme provides for the awarding of a range of contracts to service providers, as and when required in the rollout of the programme. This approach helps to address historical inequities by enabling participation by a multitude of service providers and specifically creates opportunities for smaller and emerging service providers.

1.1.4 Activities

Each of the 126 irrigation schemes in the RESIS programme requires a full four-year period of intervention to complete the RESIS project cycle. All 126 schemes need to be completed within a six-year term. This implies that activities need to run in parallel on all schemes for a number of years (Botha et al, forthcoming).

The RESIS objectives will be achieved through the following activities:

- Thorough **consultation with farmers** and their communities about their problems, needs, fears and aspirations, leading to an agreed Development Plan between the farmers, communities and the Department for each RESIS scheme.
- Establishment and/or **strengthening of farmer Management Committees** to manage the irrigation schemes.
- **Farmer training** in crop production, scheme management, entrepreneurship and water management, dovetailed with implementation activities.
- **Implementation of crop production** with relevant support services (market and transport arrangements, credit, access to inputs, stimulation of group activities, and institutional building).
- **Infrastructure rehabilitation**, and redesign where necessary to enable management-by-the-farmers.
- **Follow-up advisory and mentoring services** to farmers and their Management Committees.
- **Monitoring and evaluation** of all activities to provide data for refinement of approaches as the rollout moves to additional irrigation schemes.

The RESIS program is the largest program in South Africa that systematically addresses the major challenges associated with the presently underutilised smallholder irrigation schemes located in the former homelands. The lessons from the initial WaterCare Program and the continually evolving RESIS Program are unique in South Africa and present important lessons and experiences on irrigation revitalisation.

1.2 The Limpopo RESIS Program and the Irri Revitalisation Guidelines

RESIS is built on the experiences of the WaterCare program undertaken in Limpopo over the period of 1998 to 2004. This was directed at the revitalisation of 32 schemes in 3 phases and was documented by Veldwisch et al (2004).

The objective of detailing the content of the RESIS program is to document the expanded body of knowledge, new strategic direction and revised challenges as they are found within RESIS at this juncture. This will be useful for **two main purposes**:

1. The **project level thinking** that underlies the RESIS strategy is based on learning through practice. The intervention strategy has been developed over a period of 6 years in the WaterCare Program by an experienced group of Government officials, consultants, planners and has been informed by farmers (Veldwisch et al, 2004). RESIS has expanded and **revised these learnings**, both in content and in the substantially enlarged scale of the program. The strategies at **individual project level** will inform the "Irrigation Revitalisation Guidelines" being compiled under this WRC Project.

2. The **programmatic scale** of RESIS is bold in the total number of schemes that it engages with, equal to 126 schemes in total (114 schemes plus 12 of the Phase 3 WaterCare schemes). This is almost half of the smallholder schemes in South Africa and presents a unique opportunity for **informing the provincial and district strategies** of the other provinces starting out on revitalisation initiatives.

1.3 Rehabilitation vs Revitalisation

Rehabilitating irrigation infrastructure is internationally a more common practice than building new schemes. In South Africa, research similarly tends to justify further investment in existing schemes rather than in the construction of new schemes. On this issue, Backeberg (1994) argues for broad-bases strategies, driven by market, land and management thinking, and states that "…priority must be given to improved utilisation of existing schemes".

The distinction in the terms "Rehabilitation" and "Revitalisation" is directly linked to the investment into existing schemes and the terms differentiate between an engineering centred approach and a people/systems/market centred approach.

"Rehabilitation" is the more engineering-centred re-construction of dilapidated infrastructure and is focussed primarily on securing the water supply repairing the irrigation distribution system. Rehabilitation interventions tend to have minimal engagement with the organisational dynamics of water apportionment, the agricultural production system, farmer learning processes, financing and market, all of which are central to a successfully operating scheme.

“Revitalisation” of irrigation schemes on the other hand is a global trend that is rooted in a holistic development philosophy that is argued to result in more successful outcomes. The concept of revitalisation is broad in its development focus and carries with it the expectation of re-building socially uplifting, profitable agri-business on existing schemes and in the communities surrounding schemes. People development both individually and organisationally, empowerment, access to information, marketing and business strategy development are emphasised alongside repair of infrastructure.

The RESIS program builds on the WaterCare program which demonstrated the need for a shift from rehabilitation to revitalisation. One of the many learnings of the WaterCare program is documented by Veldwisch et al (2004) who reports that the initial planning, financial investment in farmer learnerships, organisational development and mentoring increased from approximately 10% of the total project investment on the initial scheme to approximately 50% of the total project investment towards the end of the WaterCare program some 5 years later.

This shift in the emphasis of funded activities parallels the shift from rehabilitation (focussed on infrastructure) to revitalisation (focussed on broad-based people and business centred strategies).

2 WATERCARE – THE FOUNDATION OF RESIS

2.1 Background to WaterCare

The evolution of the WaterCare intervention approach over a 5 year period was documented in some detail by Veldwisch et al and Denison (2004) as part of this WRC project and the detailed findings are presented in Project Report No.3. An overview is presented here as it provides valuable context to why a broad-based approach evolved and how this has lead into the new strategies that RESIS has developed. Comments on the RESIS revisions to the WaterCare elements are noted.

The WaterCare programme started in 1998 when the 'Northern Province Irrigation Scheme Project' was initiated by the Northern Province Department of Agriculture, Land and Environment (NPDALE, 1998) as a pilot project.

Table 2.1: Stages of the Irrigation Revitalisation Programme in Limpopo Province

	Stage Description	No. schemes involved	Names of the schemes	Started	Finished
1.	Northern Province Irrigation Scheme Project (WaterCare Pilot Program)	3 pilots	Thabina, Boschkloof and Morgan	1998	2001
2.	WaterCare Programme - Meg Plan I	5	Metz, Madeira, Capes Thorn, Dingelydale and New Forest	2000	2002
3.	WaterCare Programme - Meg Plan II and III	6 clusters 24 schemes	Ndzhelele, Makuleke, Matsika, Homu, Tswelopele	2002	2004
4.	Revitalisation Programme of SIS (RESIS)	114	Listed in Annex	2003	Target 2010

Source: Veldwisch et al (2004)

2.2 Central elements of the WaterCare Approach

Nine central elements of the WaterCare intervention are described here. Most of these elements still underpin the RESIS program, but have substantial additions as well as important changes to the timing of the processes which are discussed later in this report. A description of these building blocks of WaterCare provides a sound basis for understanding RESIS and further discussion in the report.

The underlying intention in both WaterCare and RESIS is to work in a participatory manner as indicated by references in the project documents such as the following: *"The process of hand-over must be fully participatory with the maximum involvement of participants/beneficiaries in all aspects of the process" (NPDALE, 2001).*

WaterCare demonstrated a clear strategy from the start that was participatory and considerably more broad-based in that it went well beyond the traditional techno-centred "rehabilitation" work typical of many South African interventions on

smallholder irrigation schemes at the time. An example of the techno-centred approach still prevalent in the late 1990's, is the extensive investment by DWAF at Qamata, Thyefu and Ncora irrigation schemes in the Eastern Cape which only addressed water infrastructure and the formation of Water User Associations and with no agricultural related activities, consultations or participatory planning of broader activities. Broader work was considered to be outside of the DWAF operational brief and coordinated cross departmental funding on schemes was not carried out then.

But even with this initial broad and explicitly participatory focus, the WaterCare program found over the years of working with different schemes that these initial attempts still fell short of what was needed to gain momentum and sustainability. The central components of the WaterCare approach are outlined below. This is followed by discussion on the evolution and broadening of the strategy, with a look at the substantial change in the investment profile from "hard infrastructure costs" to "soft people development" costs over the WaterCare program life.

The final intervention strategy is summarised in Table 2.3 and demonstrates the shift of the development emphasis. The elements of the WaterCare revitalisation process are closely similar to the current RESIS program and are expanded as an introduction to RESIS.

2.2.1 Element 1: The Pre-development Survey

The Pre-development Survey, which was carried out before the actual planning of the work, was typical of the approach and was an innovation at the time. The method was developed by Johann Adendorff and is described in detail in Botha et al (forthcoming).

The survey is typically carried out by a team of consultants (2 people) and local government workers (6 people) who are seconded to the program. Plot holders are interviewed over (25 per day) days, mainly by the government workers in the local languages (Tsonga and Sepedi). The interviews are semi-structured and data acquired is mostly qualitative in nature. Besides a general basic understanding of the irrigation scheme and its community one of the main outputs of the study is a table in which the **problems, needs, fears and aspirations** of the farmers are produced.

A mass meeting is held where a **reference group is chosen** representing general groupings, women, agricultural and youth groups to support the information gathering and community mobilisation. One or two training assistants are also chosen from the community who assist as link persons, are trained in the methodology of the pre-development survey and assist the intervening team more generally.

This reference group also carries out **social and technical mapping** exercises of the present situation and the desired future (hopes and needs in the next 5-10 years) on the scheme. They do a **gap analysis** of these maps where the differences are listed, re-interpreted by the facilitator (in terms of achievable development activities) and then prioritised by the group through voting. These are presented in order of priority as analysed by the team. Table 2.2 shows five typical lines of the table which comprised nineteen lines in total.

Table 2.2 – Extract of the Pre-Development Survey Summary Table

PROBLEMS	NEEDS	FEARS	ASPIRATIONS
Inadequate water for irrigation	Reliable water sources needed e.g. construction of a dam, drilling of bore-holes	Drought and therefore hunger	Sufficient irrigation water for food security
Damaged main canals and sub-canals	Repairs and upgrading of canals		Scheme rehabilitation
Theft of produce in the lands by the resource poor. Thieves cut fences for livestock access	Security to prevent theft	Hunger and deprived income	Implementation of some form of security system
Shortage of tractors and poor tractor services	Additional tractors and provision of adequate tractor services	Low yields	Higher and better quality produce
Inadequate water pumps and frequent breakdown of pumps	Repairs to broken down pumps and additional pumps needed		

Source: (Veldwisch et al, 2004) for Thabina Scheme

In addition to a social and institutional pre-development survey, technical surveys are also undertaken. These include reviews of maps, infrastructure, natural resources and agricultural potential. Along with the **Pre-Development Survey Report**, **technical reports** are produced on water use efficiency and development potential.

The pre-development survey is still a pivotal entry-point for the RESIS strategy and the core team undertaking this work are now skilled and efficient at conducting the process.

2.2.2 Element 2: Organisational capacity building and participation

In keeping with the principle of participatory planning, **Development Committees** were established at scheme level very early in the process. At Thabina the Development Committee was a continuation of an already existent group of elected farmers that functioned as a counterpart to the governments' Programme Manager.

The Development Committee's prime responsibility was to co-ordinate the transfer process on the part of the farmers'. The Development Committee also functioned as a body that took part in **decision-making concerning the rehabilitation**, while at the same time gaining practical experience in management of the scheme.

The process of working together with a scheme Development Committee during implementation was explicitly seen as a capacity building component of the approach. The growth was such that the Development Committee was to **become the Water Users' Organisation's Management Committee** (WUA-MC).

Of central importance to the theme of Veldwisch et al's paper on the evolution of the intervention priorities (i.e. from rehabilitation to revitalisation) is that on the initial WaterCare pilot schemes **no finance was available for training** on (water) management issues. Thus while the principles of leadership training and organisational development were in place, the financial commitment was not available until the later WaterCare stages, when lessons showed these were critical for sustainability. The RESIS program has built on the later experiences and accentuates farmer organisational training and development.

2.2.3 Element 3: The turnkey approach

The concept “turnkey approach” was coined as part of the project approach and should not be confused with the conventional civil engineering turnkey type contract which is altogether different. The “turnkey approach” (in the WaterCare Project context) meant making the community **central in decision-making** and for carrying out **minor repairs** on the irrigation schemes.

The community, by verbal or written agreement with Development Committee, agreed to every decision on the planning and implementation before the consultant could continue. The objective of such an approach is power sharing, as neither the community nor the consultant can make decisions on its own.

Complementary to this, there was also a technical training and employment aspect to this turnkey approach. As much of the small construction work and supply of materials was carried out by local labourers, local contractors and local suppliers. The **“turnkey approach” aimed to build a basic understanding of the system and a skill base for maintenance and repair of infrastructure on a local level**.

The RESIS approach has continued with this approach where farmers are in control of the decision-making process in collaboration with the intervention team.

2.2.4 Element 4: Agricultural training

Initially in WaterCare, **intensive agricultural training** took place on a two-weekly basis over about 6 to 8 months **in the farmer’s fields on the scheme.** The training was based on a training approach developed by Johann Adendorff which is currently being documented under a current WRC Project, (Botha et al, forthcoming).

- The training sessions were planned in four groups of about thirty people.
- All plotholders were invited to join
- People from outside the scheme boundaries were welcomed.
- The focus of the training was on planting techniques, fertilizer application, crop choice, etc.
- Story telling, parables and very practical instruction, partly in-field, play an important role in this.

In the Thabina Irrigation Scheme the **agricultural training** element was regularly referred to as having had a **strong impact on the functioning** of the scheme as a whole. RESIS has built on this by introducing careful timing of the training into the intervention cycle, discussed in Section 3.

2.2.5 Element 5: Stimulating land leasing within the communal land tenure system

Almost all smallholder irrigation schemes in the Limpopo province have a traditional land tenure system in which the Traditional Authority (TA) has official ownership of the land. Certificates with a “Permission To Occupy” (PTO) are issued to the users of the land. Mostly the PTO can be inherited but it is not allowed or possible to sell this right of usufruct.

If land is not being used anymore by the PTO holder the land is returned to the Chief who can issue a new PTO to people applying for a piece of land. This land tenure system was seen as **a possible major obstruction to development** because of its rigidity and the limited size of land parcels available for commercialised expansion.

The approach adopted was to make the communal land tenure system more flexible by **promoting land-leasing arrangements**, with approval by the Traditional Authority. The underlying objective was to increase the use of the land, which at the time of the start of the project was estimated to be only about 40% (NPDALE, 1998; Perret et al., 2003). This has had some limited success in WaterCare and is subject to renewed effort under RESIS.

2.2.6 Element 6: Rehabilitation of infrastructure

The budget available for rehabilitation of the infrastructure was limited in the initial WaterCare schemes and was fully utilised in repair of the existing infrastructure. The existing scheme designs are mostly 30 to 50 years old and are planned on a management model that has centralised control by an authority and not collective water control by farmer organisations. Thus the existing technical design can complicate present day water management compared with alternative layouts.

In general, the WaterCare program did not re-design the layouts of the systems to make water apportionment and management easier and focussed on repair of existing designs. This may have simply been a response to limited budget.

In Thabina, for example, the major diversion weir, the night storage dam, both main and sub-canals and long-crested weirs at the 18 off-takes were repaired. The water sharing challenges as a result of the technical design are described in detail by Perret (2004) and show how **technical designs can complicate or ease water management**, impacting on risk and sustainability.

In the WaterCare intervention at Thabina, the social or management implications of the technology and layout did not result in re-design during rehabilitation. Therefore, the highly problematic socio-technical situation present in Thabina prevails and exerts its influence today.

This awareness of the critical inter-relationship between technical design and ease of water management is one of the many constructive changes that the RESIS program has now brought into play.

2.2.7 Element 7: Building a local management structure (the WUA-MC)

One of the clear objectives of WaterCare was that management of the schemes would be **handed over to a farmer controlled legal entity** along the lines of the international Irrigation Management Transfer process. The training on water management is focussed on:

- Water use efficiency and sustainable irrigation practice in terms of drainage through addressing basic irrigation principles, either flood or sprinkler irrigation infield. This involves training in correct furrow construction, such as the introduction of “short furrow” irrigation (Crosby et al, 2000), or in correct sprinkler application times for varying soils, crops and stages of growth.

- Irrigation scheduling from the perspective of the soil-crop-water relationships, and the adjustments required to account for rainfall, and

- Water conveyance cycles and operational rules for water allocation and distribution.

Training on infrastructure maintenance is linked to technical functioning of weirs, silt traps, canals, balancing dams, underground pipes and hydrants, sprinkler and moveable pipes, measuring devices, pump stations. These various organisational functions, in WaterCare, were carried out by subcommittees of the Water User Association.

The consultants made the decision that the **Water Users' Association** (WUA), as described in the New Water Act of 1998 was the most appropriate vehicle for handling the mix of organisational roles required to keep a scheme functioning including:

- **Water management** as would generally be carried out by a WUA.
- Scheme **management of agricultural** production issues, land allocation etc. (and which are not directly linked to the water system management and operation).

While this approach of combining a number of **water management** activities with **farm production functions** into one organisational structure (with sub-committees addressing different subject areas), has the obvious advantages of minimising any duplication of elected structures at scheme level. But there is a counter argument against centralising all control on the scheme into a single structure. The agricultural functions of the combined body are complicated by the statutory need for representatives of the Traditional Authority, the Municipal council, the Department of Agriculture and the Department of Land Affairs to sit on the WUA Management Committee, when these have nothing to with the agricultural functions.

Chancellor (2003) for example, **argues for a separation of the water management** and the other broader agricultural production management systems. The centralisation of agricultural production (inputs, mechanisation etc.) and marketing activities potentially constrains and limits other more dynamic associations from emerging. This approach of **separating water and agricultural organisational** functions was contrary to the WaterCare approach.

Notwithstanding the sensibility of Chancellor's position, the research by Veldwisch et al showed that this complication did not always result in a dysfunctional management system. The later phases of the WaterCare Programme showed that this organisational model was effectively sustained in some cases (Makuleke for example), particularly where it was introduced in earlier stages of the intervention combined with institutional training.

The **RESIS approach has adopted a more flexible standpoint** on water and agricultural organisation at scheme level and is working to build on existing organisations, rather than introducing pre-conceived structures from outside.

2.2.8 Element 8: Empowerment Training

A component of the later stages of the WaterCare approach was what the implementing team termed 'capacity building and empowerment training', intended to stimulate a **transformation process of individuals and the community**. While the term "empowerment training" might be seen as a contradiction in terms, i.e. the process of empowerment is by its very nature something that cannot be trained like a technical or skills transfer activity, the naming of the process belies to some extent the positive outcomes it seems to have achieved.

Empowerment involves individualised and personal growth processes at an emotional and confidence level, which may or may not be linked to skills development. In this case, the emotional and personal growth of individuals was linked to and part of skills and inter-relationship development, through a dynamic and often humorous series of activities. This process became the central point of contact between the consultants on the one hand and the community on the other. It was structured to partly precede the planning and implementation phase, but also overlapped with it and extended into the operational and mentoring phases.

In its early stages the empowerment training programme aimed at joint problem identification and project formulation and **ran in parallel with the pre-development survey.** As a problem-identification and planning tool, the empowerment training programme is more inclusive of local actors and integrates analysis more directly with action compared with the pre-development study. In parallel these were successful approaches to build capability, trust and to plan practical ways forward.

The group of scheme farmers working on the empowerment training evolved to become the scheme leadership in later stages of the project development. It was this group that made decisions and provided guidance to the project from the side of the farmers' and the community.

2.2.9 Element 9: Joint Ventures and Strategic Partnerships

The significant challenges relating to critical production elements of credit facilities, agricultural implements and markets, were addressed by the consultant team in some cases by establishing partnership arrangements between farmers' groups and mainstream agribusiness.

In most cases cotton was chosen as the main crop, largely due to the significant demand for raw cotton that the existing cotton ginneries needed to bring underutilised plants to more efficient processing levels. This processing demand translated into a substantial area of irrigable land (estimated at 5,000ha) and the relatively favourable exchange rate and global cotton price were thought to be acceptable in financial terms.

The consultants brokered contractual arrangements between Noordelike Sentrale Katoen (NSK) and the individual farmers. In short, the farmers committed to:

- growing and selling cotton to NSK under the close supervision of NSK, including instructions relating to seed varieties, fertiliser applications and pest / disease control.

- Repaying the loans, which were at prime interest rates, for seed and for the infield irrigation equipment funded by NSK.

NSK provided much needed seed-finance as well as a secure market for the cotton that would be produced, with bale prices linked to variable world prices.

The benefits of the strategic partnership arrangement are subject to considerable debate including issues of:

- Financial sustainability where projected profitability for the participant farmers on optimistic yields give net margins of less than R2500 per ha (i.e. will participant farmers continue to take the risk given the actual benefits), and

- Given the relatively small portions of land (approx 1 to 1.4 ha) accessible to individual farmers results in substantial risk for relatively small potential benefit for the individual, not least given full-interest loan obligations on seed capital and equipment, and

- Dependency that emerges from such partnership arrangements where farmers are dependent on a single relationship for the entire agri-business cycle (with little option for alternative cropping, marketing, financing, training etc)

However, these partnerships do offer an opportunity for market-oriented production for the whole scheme, where other alternatives may be difficult to establish in the short term. The RESIS strategy now emerging, still relies on extensive, lower value crops and partnerships, but is exploring options for higher value crops and on-farm processing to ensure higher net returns per hectare.

2.3 Summary of WaterCare Evolution and Learnings

The lessons of the last five years of experience in Limpopo are among the most valuable in South Africa today in how to address the transformation of the former parastatal schemes. While there is a long way to go to achieve profitable agri-business, this experience must be acknowledged as part of the strategic planning and policy development process.

Table 2.3 overleaf summarises what has changed over the years in the WaterCare approach. The table compares the two cases with each other on a number of characteristics. Thabina is one of the early cases from the Pilot Phase where much was being learnt and Makuleke is one of the schemes rehabilitated in the last phase of the WaterCare Programme.

Their backgrounds and community history are very different and thus the varying results are not simply the result of the different approaches, but of many factors related to the individual dynamics and history of two different localities.

Table 2.3 – Evolution of an Irrigation Revitalisation Approach in the WaterCare Program

	Pilot Phase – Thabina	**Final Phase – Makuleke**
Case specific information	200 ha; vegetables, maize, beans; average landholding is 1.5 ha; open-canal system from river diversion; no external storage; socially diverse, over 10 villages involved.	200 ha; cotton (5 ha plots) and food plots (0.2 ha); pressurised sprinkler system from a dam with storage for a 5-cropping seasons; a cohesive community with strong history of struggle.
Budget allocation	**0% preparation** **90% infrastructure rehabilitation** **5% farmer and organisational training** **5% institutional set-up**	**10% preparation** **50% infrastructure rehabilitation** **30% farmer and organisational training** **10% institutional set-up**
Planning tools	- Pre-development study	- Pre-development study - Participatory planning through mapping exercise - Step-by-step process plan
On-site time spending	2 years effectively	3.5 years plus follow-up
Training components	- Maize crop training	- Maize crop training - Project management training - Scheme management training - Mind-mobilisation/taking ownership - Cotton training
Capacity building components	- Turnkey approach - Participation in decision-making	- Turnkey approach - Facilitation of decision making (democratic principles, transparency, accountability, etc.) - Follow-up coaching
Local organisation	Establishment of WUA at scheme level, 4 ward-committees. MC consists of 5 executive members and 2 members of each ward.	Establishment of WUA at scheme level, thematic sub-committees with representatives to general MC.
Infrastructure rehabilitation	Repairs of existing system, no re-design.	Repairs of existing system, no re-design. Strong role for the Technical Committee.
Land tenure	Land leasing within the customary land tenure system was propagated, but has come under strong criticism. Still no more than 60% of the area is cropped.	Dispute over the area between 2 Traditional Authorities, temporary jurisdiction lies with the State. The area is fully cropped since rehabilitation.
Marketing/ investment strategy	Promotion of joint planning and sale, 'Marketing Manager' as a position in MC. In practice hardly any co-ordination.	Joint venture with a large cotton company. Yearly investment costs are offered as a loan by the company in exchange a guaranteed price. In practice only two farmers made profit in year 1, however year 2 (2004) was substantially better.

Source (Veldwisch et al, 2004)

What these cases clearly illustrate is the change in approach over the last years, covering the essential items listed by Veldwisch et al (2004) below:

- Project budget was to a substantial extent diverted from physical infrastructure rehabilitation to more people oriented investment. These critically important human capital components were linked to farm production training, capacity building of farmer level and scheme level skills and scheme level institutional set-up. Project budget changed from 90% infrastructure oriented to only 50% on infrastructure.

- Substantially more time has been taken for the process of change, project timelines for the intervention have extended significantly, from 4 – 6 months to 2 – 3 years.

- Decision-making was left more in the hands of the community, who had to be fully informed and fully understand the implications of their decisions. This meant that considerable program effort was expended in working through and explaining the implications of various designs, farming systems, profitability, etc.,

- Substantial effort has been made to establish the agri-business and marketing components, essential for profitable farming ventures, either individual or communal.

Veldwisch et al further concluded that one of the key reasons for the substantial improvements in the approach over time is the **learning attitude** that has explicitly been taken by both the Limpopo Provincial Department of Agriculture and the consultants. During, as well as after the various phases, evaluations were held on the effectiveness of the approach, possible reasons for relative successes and possibilities for improvement.

The RESIS program explicitly continues with the important internal processes of self review and learning attitude, maintaining an open mind to adapt to the overall program and the site specific conditions as experience directs.

3 THE RESIS INTERVENTION STRATEGY AT SCHEME LEVEL

3.1 RESIS Innovations since the WaterCare Program

Section 3 of the report should be read in conjunction with the description of the nine elements outlined in Section 2, which are still central to the RESIS intervention plan. However, RESIS has brought **important new ideas and innovations** into the program which have potential for significantly different impact.

In addition to the major increase in program size (total of 34 increasing to 126) there are fundamentally important shifts in scope and emphasis which impact on process and expected outcomes. These innovations relate to:

- A **substantially broadened scope of development activities** on and in villages adjacent to the scheme boundaries linked to small livestock development, food production in rainfed field and intensive home-garden production, water harvesting and includes other poverty alleviation initiatives.

- **Linkages with local economic development initiatives** that are planned or are active in the area arising out of the district and local municipality Integrated Development Plans (IDP's) or from Non Government Organisations (NGO's).

- The **sequence and timing of scheme intervention activities** which is designed so that community awareness and initial consultations precede the regional summer and winter crop planting dates. Thus the subsequent detailed consultations and organisational training coincides with visible and tangible activity on the schemes, initially in the form of crop production training (on-farm) and emergency infrastructure repairs. The detailed planning, organisational development, market development etc. then takes place while the (improved) crop is growing and is a visible marker of the ongoing revitalisation effort.

The main elements of the intervention from the WaterCare program (presented in Section 2) are similar in the RESIS program. Additional detail on the WaterCare program and Pre-Development Survey can be obtained in Veldwisch et al (2004) and Botha et al (forthcoming) respectively. This section addresses the strategic additions and revisions that RESIS has made to the project level intervention plan.

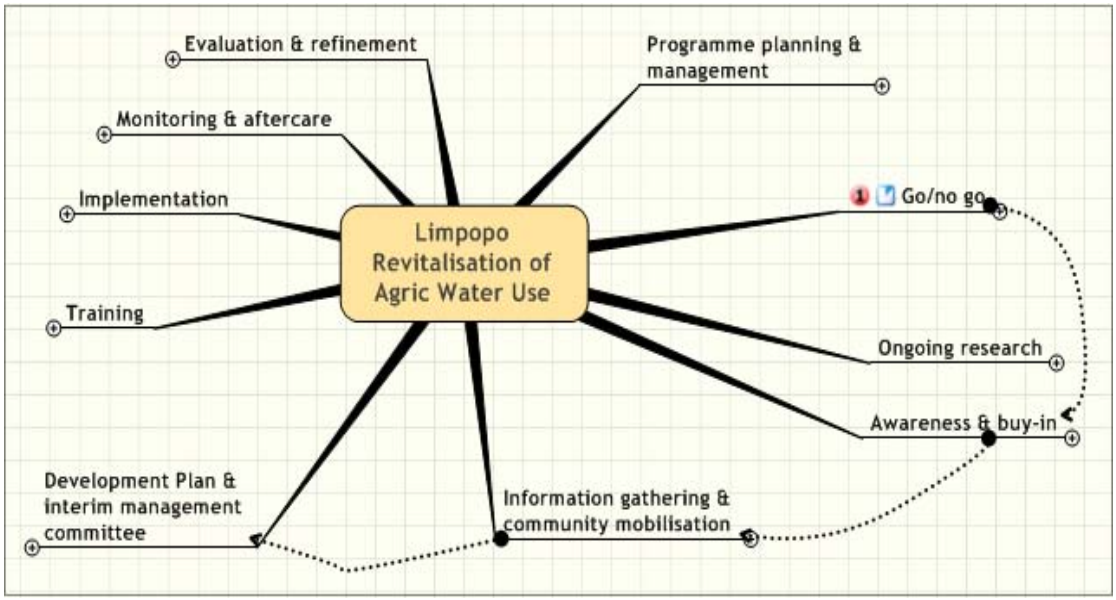
The significant size of the program calls for efficient interaction and coordination of large numbers of teams active in a range of subject areas, including crop production, training, organisation building, marketing and infrastructure across the province. The programmatic planning is bold, targeting 126 schemes. However the RESIS strategy at scheme level does not expect major variations in the step by step process for each scheme though emphasis and solutions will vary for each scheme based on local priorities and the consultative planning process.

3.2 Principles of the RESIS Intervention Process

3.2.1 Consultative Planning and Broad-based Intervention

The RESIS approach is rooted in consultative and participatory planning development thinking, with ownership and decision-making vested in community members and local leadership. Skills development at organisational and agricultural levels follows alongside rehabilitation of infrastructural components. The diagram below gives a schematic indication of the components of RESIS that will take place at each irrigation scheme and the surrounding communities where the program is active.

Figure 3.1 : A Schematic of the RESIS Program Intervention Components



Source: M de Lange (unpublished, 2004)

This coordinated activity takes place over four years of ongoing interaction and consists of the following generic steps, but which are applied flexibly depending on the scheme specific dynamics that become apparent during the process. For example, a scheme with strong organisational structures will not go through the same intensity of organisational building activities as one which has fractured leadership and weak arrangements in place at the time of the intervention.

3.2.2 Looking beyond the Scheme Boundaries

RESIS has **expanded the intervention** to beyond the strictly delimited boundary or the irrigation area to integrate where possible with Local Economic Development (LED) initiatives and homestead food production in villages neighbouring the schemes. This strategy of broadening the “intervention footprint” evolved in parallel with a similar consultative planning process on irrigation schemes was being developed in the Eastern Cape (ARCUS GIBB, 2004b).

The approach and justification for a broader focus is documented in some detail in the ICON Approach (Denison et al, 2004) and was found to have substantial merit in the jointly formulated plans the resulted from the "Resource Poor Farmers Irrigation Pre-feasibility Study" on 10 schemes in the Eastern Cape.

The need for a more responsive range of interventions as identified both in RESIS and in the ICON approach, resulting in a "flexible mix of approaches" is not new to development and the need is succinctly outlined by Chambers (1997):

"For when faced with the complexity, diversity, and dynamism of human and local conditions, there is no normal bedrock on which to anchor, and few fixed points. Rather we need a repertoire of skills for staying afloat, steering, finding our way and avoiding shipwreck on a turbulent and transient flux. So much we thought we knew we did not know, or were wrong about; and very likely much we now think we know we still do not know, or have got wrong; and what we need to know is constantly changing."

RESIS has embraced the need to **flexibility to respond to a wider range of community priorities**, resource diversity and development opportunities. The interventions that result through the consultative planning process meet needs linked to homestead food production, multiple use of water, livestock and scheme interrelationships, rain-water harvesting. This is now in addition to the more common on-scheme initiatives linked to food production and to agri-enterprises with more mainstream commercial orientation.

3.2.3 Evolution of Approach and the RESIS Slogan "Boseka Boeja"

The WaterCare program and intervention approach was characterised positively by Veldwisch et al (2004), as one that evolved over time and was revised according to learnings, feedback and internal evaluation. In this light, RESIS can be seen as a further set of refinements and innovations building on the strengths and learnings of WaterCare, but with an injection of new thinking in terms of timing and synergy of activities, scope and financial feasibility of individual farming operations.

The RESIS program has a slogan "Boseka Boeja" (literally - we drink as we milk the cow) which in the RESIS context means "we fine-tune as we go". Thus RESIS explicitly intends to proceed with an ongoing process of self-evaluation based on learnings through practice. This ability to review in an ongoing process is a considerable point of strength in the program.

3.3 RESIS Steps in Community Introduction and Consultative Planning

The RESIS program introduction to a community follows a series of steps, which include all of the "elements" that were developed in the WaterCare program as discussed in Section 2. The timing of processes is a pivotal innovation in the new RESIS thinking and attention to the sequence is addressed in the text and figures that follow here.

3.3.1 Go/ No Go assessment

This is an initial reconnaissance investigation to assess the current status of a scheme in terms of political, economic, social, technical and environmental aspects to identify 'fatal flaw' elements. These include unavailability of water, lack of local political support, major existing social conflicts or impossibly high infrastructure operation & maintenance costs.

This process involves minimal interaction with the local community to avoid raising expectations and leads to a "go/no go" decision being taken with regard to the revitalisation of a scheme. An initial "no go" decision does not necessarily preclude a scheme from being revitalised at a later stage following the addressing of the initial major impediment(s) to revitalisation.

3.3.2 Awareness & In-Principle Agreement of Revitalisation Process

Once a decision has been taken to "go", the RESIS program is formally introduced to the local leadership on and surrounding the scheme including:

- the tribal authority,
- municipal councillors and staff
- existing farmer management committees and
- other relevant local organisations, such as umbrella committees.

When general **agreement to the overall principles and objectives** of the intervention has been reached with the leadership structures, the RESIS program is introduced to the whole community – both farming and non-farming households.

This is done through an **awareness campaign**. Following from the themes of storytelling and imaging central to the approaches associated with Johan Adendorff who was one of the key individuals in the WaterCare Program (and who is now active in RESIS), the scheme is depicted as an overloaded wagon which is stuck in the mud. The intervention is compared with the process of removing the excess load to get the wagon back on track again.

A mass meeting is held where a **reference group is chosen** to support the information gathering and community mobilisation. These total between 30 and 40 people who are delegated responsibility for the planning process from 4 interest groups:

- general,
- agriculture,
- women and
- youth.

3.3.3 Pre-Development Survey - Information gathering & community mobilisation

The awareness campaign is followed by the "Pre-Development Survey" (described in Section 2), which engages the community in group discussions and individual house-to-house interviews to establish **problems, needs, fears and aspirations** regarding agriculture and life in general. This is described in Veldwisch et al (2004) and in some detail in Botha et al (forthcoming).

The outcome of the Pre-Development Survey is captured in a report which is presented back to the community and discussed and adapted to their satisfaction. When the **community confirms** that the **report accurately and comprehensively** reflects their situation and development needs, it is formally signed by a community representative in a public meeting, and thus becomes the recognised Development Plan for RESIS interventions.

3.3.4 Establishment and Confirmation of Management Committee

Using the Adendorff analogy (Botha et al, forthcoming), the wagon's excess load is compared with the problems that need to be off-loaded and dealt with by the most appropriate body for the particular problem. A properly constituted, elected and recognised **Management Committee** is the key body to do this, while the Department of Agriculture, Health, input suppliers or even joint venture partners may be needed to take on others.

The Pre-Development Survey is followed by a **scheme management structures workshop** to lay the foundation for addressing the key issues (i.e. unloading the stuck wagon). This workshop is followed by an in depth process of analysis, mentoring and training. Some of the steps in this institutional arrangements process are:

- Workshop with beneficiaries on different roles of committee members,
- Combined workshop to agree on roles of farmer and other stakeholder committees,
- Workshop with farmers on the type of scheme structure,
- Election of group committee members,
- On site training,
- Election of scheme management committee members,
- Development forum, nomination and election,
- Workshop on different legal entities,
- Constitution development,
- Registration of the legal entity,

It is important to note that organisation building process may take up to one year or longer. As the formal management structures are evolving through the training and workshop process, the **interim management structures** are responsible for assisting with the participatory planning process, to generate scenarios for the scheme development. This includes cropping, marketing and infrastructure options, according to the prioritisation in the implementation plan.

3.3.5 Water and Agricultural Infrastructure Evaluation

In parallel with the organisational development component, a **technical evaluation is carried out by an engineering consulting firm**. In collaboration with the technical committee they review existing infrastructure and carry out a natural resource evaluation.

The **hydrology and security of water supply** is critical in this process and it has been learned that attention must be paid to monthly water demands and availability within the legal framework of water rights. The engineering team writes a draft report and presents it to the beneficiaries before finalising it. This is followed by workshops on types of irrigations systems and then the final design of the system for the scheme. This includes the committees and also the farmers.

RESIS has very importantly brought new awareness into the technical process that elements of the **existing infrastructure may need to be re-designed** to better facilitate collective management of the irrigation system.

An example of this, which is typical of many of the simple gravity schemes motivated by the Tomlinson Commission Report of 1956 is Thabina Irrigation Scheme. Here a single long main canal supplies 18 offtakes which are in fact tertiary canals (i.e. canals running across the fields with outlets directly to infield irrigation furrows). The result is not only that the users at the head of the canal have guaranteed supply of water and reliability decreases down stream with tail end users having access to infrequent and unreliable water (Perret, 2004), but that coordination of sub-scheme groupings to address this inequity is made impossible by the layouts which dictate small hydraulic units. Reliability of water supply is a key determinant to irrigation success and thus the introduction of secondary canals, reducing the scheme into smaller discreet secondary blocks with equitable access to water would be a major contributor to changes in power relations and to simplifying water management arrangements.

RESIS is now addressing the complex interaction between irrigation layouts, irrigation technology and collective water management.

3.3.6 Business Plan for Scheme Development

The development of the business plan for the scheme takes place concurrently. It may include meetings with the beneficiaries to discuss elements of the plan. This is where decisions on cropping, marketing and agribusiness partnership options are made. Draft reports on possible scenarios are presented and discussed. Then the business plan is drafted and ratified by the beneficiaries before implementation can start.

3.4 Training and Learnerships

Skills development through learnerships and training is a central tenet in the RESIS strategy. The high proportion (some 40%) of total project investment in the human capital and business development components illustrates this clearly. The justification and need for the relatively high investment in people development aspects is presented explicitly by Veldwisch et al (2004) and is based in program learnings to achieve sustainable scheme operation.

The **RESIS development philosophy acknowledges a shortfall** in many of the diverse skills required for success in the complex activities of agri-enterprise in a communally organised irrigation scheme. The **skills development activities** are directed at project management, crop production, water management and infrastructure maintenance. Training is usually a 2 to 4 hour input in a morning on a weekly or bi-weekly basis at the scheme. It includes ongoing mentoring, provision of advice and interaction directed at problem solving. A single year's training programme will vary depending on the specific opportunities and needs of each scheme but will include the elements outlined below.

3.4.1 Project management

The modules developed for in-house use in the WaterCare program are being formalised under RESIS by WOMIWU Consulting (pers comms Colleen du Plessis, Consultant to WaterCare Program).

These cover a wide range of generic organisational and irrigation specific elements:

- Understanding your project,
- mapping,
- identification of project management gaps,
- project planning,
- roles and function of project management structure,
- meeting procedures,
- project cycle,
- tenders and contracts
- inspection,
- financial control,
- basic bookkeeping,
- community development,
- constitutions,
- conflict resolution,
- joint ventures and partnerships, and
- day to day project management.

The process of learning and training is a dynamic and even entertaining one, with anecdotes, stories and play acting. The underlying clear objectives of the modules are to **promote empowerment of individuals** with an emphasis on democratic and explicit public process, leadership, ownership of decisions and of their consequences. The development of these modules into a more formal and accessible medium in the current RESIS program is a step forward for irrigation revitalisation in South Africa.

3.4.2 Crop Production Training and the importance of timing

What the new RESIS leadership at provincial program level has introduced is a number of **innovations linked to the timing** of farmer learnerships with other parallel revitalisation activities (such as re-construction and organisational development).

The approach is to carefully coordinate the **timing of parallel sectoral** interventions (agriculture, organisation, infrastructure) on a single scheme so that it **generates synergy** and the successes on one element (egg. crop production or basic infrastructure upgrading) feed positive energy into other parallel development activities (e.g. organisational training and institution building).

The **RESIS crop production training** is timed so that the intervention coincides with the summer and winter plantings each year. This allows the introductory and consultation phases to take place before the planting times so that the crop production training can **take place at the time of planting**, and then ongoing support follows during the growing season.

The crop production training and learnerships are centrally based around on-farm training and the detailed methodologies are the subject of a full Water Research Commission Report by Botha et al (forthcoming). The crop production training uses **story telling** and other techniques for **non-literate learners** to engage with and

readily recall the complex and large volume of crop production information that is being shared.

Common elements in the training relate to; soil preparation, seedbed preparation, nursery establishment and management, seedling management, types of fertilizer and their method of application, soil pH and liming, weed control, pest control, grading and storage, value adding and processing. This may be conducted for a number of crops; typically maize, cotton or vegetables.

The crop production training takes place directly on farmer's fields and they experience immediate and direct benefits from the training process. The successful field of the crops (maize, cotton, vegetables) is a vivid visual image that says "revitalisation is here and is making a difference" and this positive message feeds directly into the other (longer term and more ephemeral) revitalisation elements at the scheme at the same time.

3.4.3 Water Management and Infrastructure Maintenance

The RESIS approach to infield irrigation practice, water allocation and scheme maintenance is similar to that described in Section 2. RESIS, as with the later WaterCare interventions stresses the need for development of each sustainability component of the irrigation scheme (crop production, water supply, organisation building, marketing, etc.) to move forward as an interlocking process.

The important interrelationship between water management and infrastructure design that has been made a priority in RESIS is discussed earlier in Section 3 and the water management and maintenance training follows on logically from this.

3.4.4 Monitoring & Aftercare

An important component of the programme is monitoring and the establishment of an "aftercare" system which must enable the smallholder irrigation schemes to continue producing at least at the levels attained during the programme and to continue to improve and adapt to changing market and economic circumstances.

The aftercare is envisaged to consist of the following:

Aftercare Activity	Timing
Scheme management support	1 day per month
Crop production	1 day per fortnight
Water management	1 day per fortnight
Farm business management	1 day per month

The aspect of aftercare has been identified as of central importance to sustainability and alternatives for establishing mentoring and support systems are still being developed.

3.4.5 Future possibilities for training

RESIS is currently exploring possibilities for including new elements into the suite of training courses, which include entrepreneurship development and water harvesting strategies (both in-field and in adjacent homestead food gardens).

3.4.6 Ongoing Research

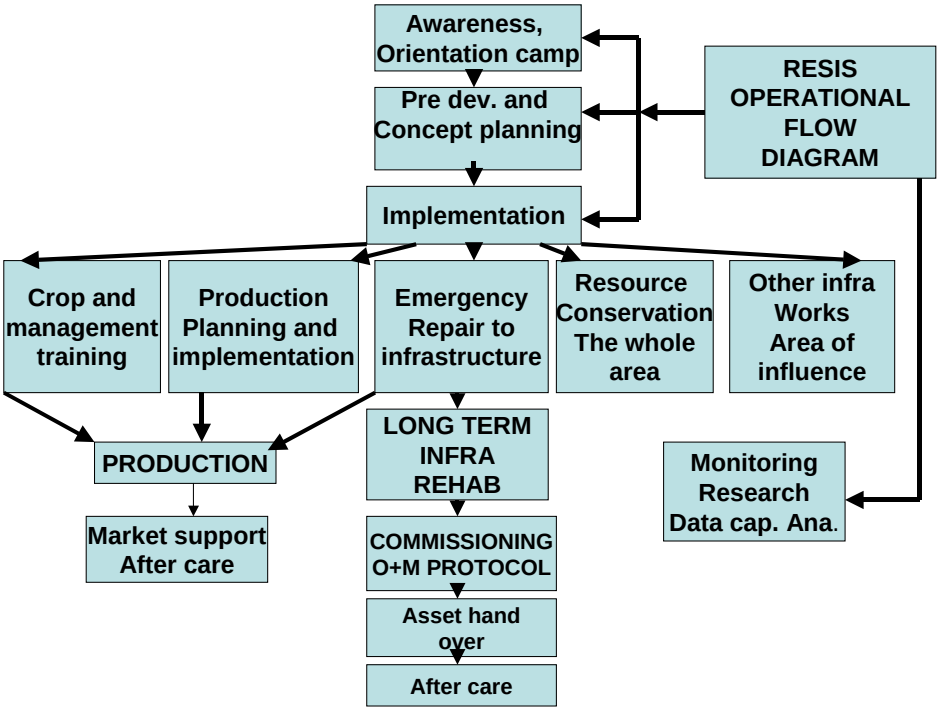
The organisations involved in research related directly to RESIS include this WRC project as well as others being implemented by the University of Pretoria and the International Water Management Institute. The need for ongoing research is seen by the RESIS team as important to:

- Develop appropriate strategies for new areas of program intervention.
- Fully justify existing strategies that have been developed on the basis of qualitative methods or on the grounds of yet undocumented experience.
- Provide an informed basis for monitoring of outcomes, review of strategies and subsequent internal revision at both program and project levels.
- To allow the RESIS experiences and learnings to inform similar revitalisation interventions in other provinces and beyond the borders of South Africa.

3.5 RESIS Implementation Process and Timing of Activities

The diagram in Figure 3.2 gives an indication of the processes involved in implementation of the RESIS programme.

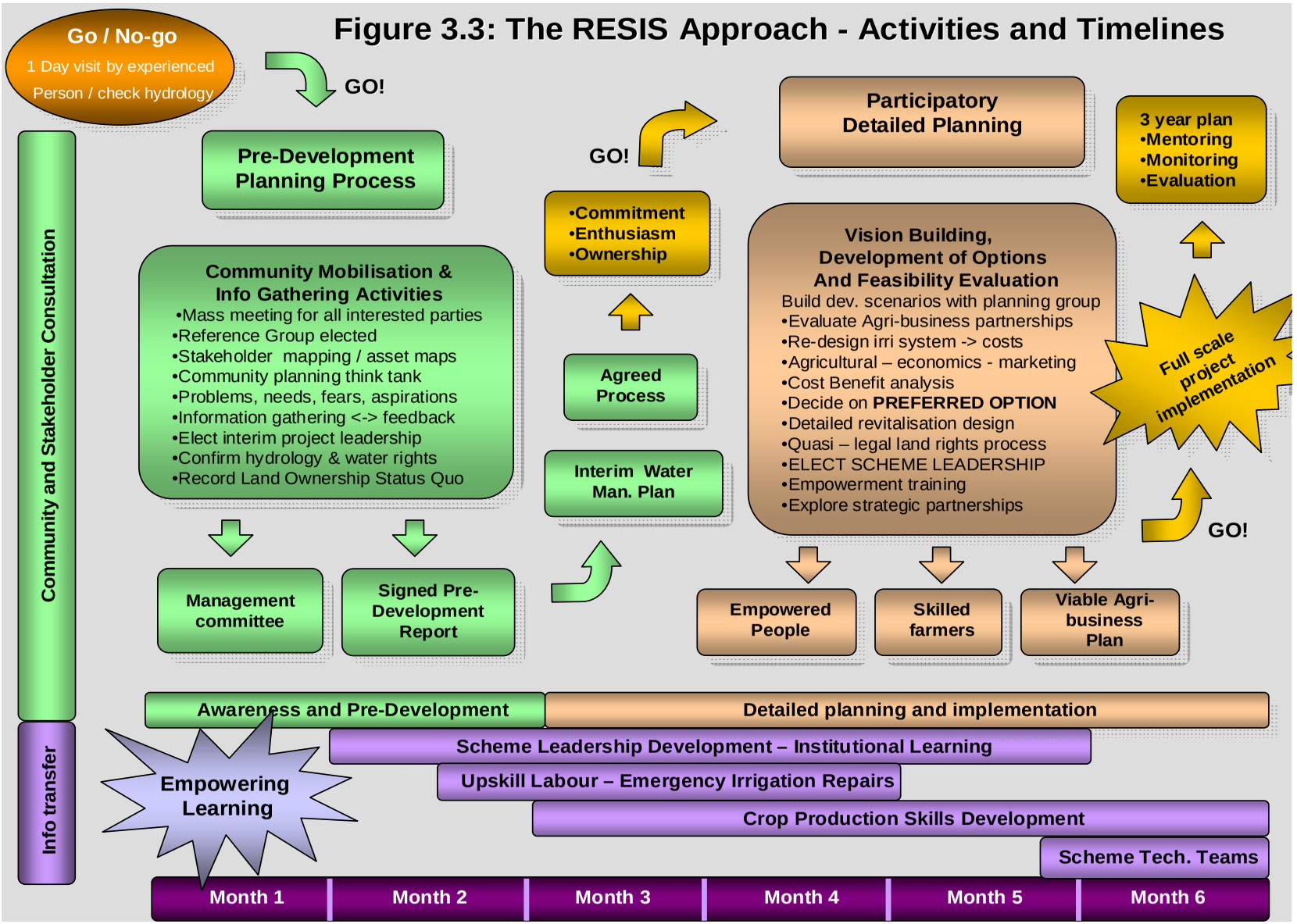
Figure 3.2: Components of the RESIS Intervention Strategy at Scheme Level



Source: M de Lange (unpublished, 2004)

The diagram in Figure 3.3 overleaf presents an overview of the RESIS intervention activities with emphasis on the timing and shows the synergy between the planning, emergency repair, training and crop production takes place. The express intention is that the more immediate and concrete activities (repairs and crop training) coincide and energise the longer term and more ephemeral activities of organisational development, scheme planning and full scale re-construction process.

Figure 3.3: The RESIS Approach - Activities and Timelines



4 RESIS PROGRAMME STRUCTURE

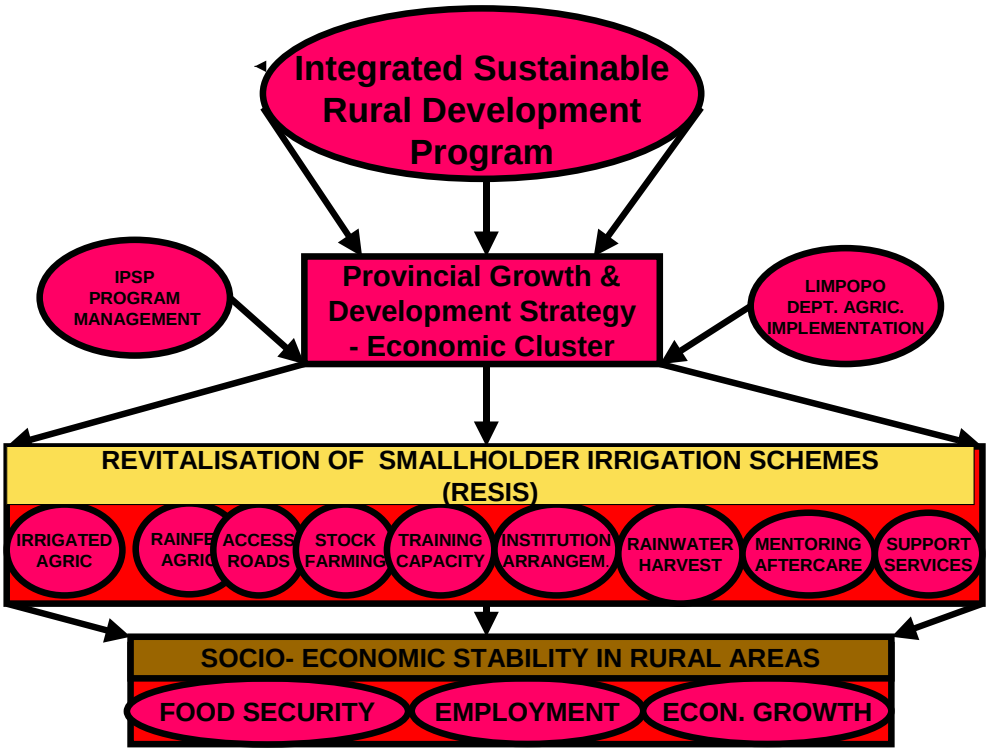
4.1 Integration at Provincial and Program Levels

4.1.1 Rural Development Objectives

RESIS is a high profile flagship programme in the Limpopo Province built on principles of integrated sustainable rural development. This overlap of objectives means that the RESIS organisational structure is linked into the provincial development structures and a high degree of coordination is required to ensure "integrated" implementation across departments. This critical aspect of provincial level coordination ties into the RESIS objective of 'transformation of government service', as reflected in the Integrated Provincial Support Programme (IPSP).

The common broad-based rural development and local economic development objectives have important implications for the choices of organisational structure in the implementation of RESIS at provincial, district and scheme levels. The relationship of the RESIS Programme objectives and the Provincial rural development objectives is presented in Figure 4.1, which is followed by institutional relationships in Figure 4.2 overleaf.

Figure 4.1: RESIS and Limpopo Province Rural Development Objectives



Source: M de Lange (unpublished, 2004)

4.1.2 Institutional Structures and Linkages

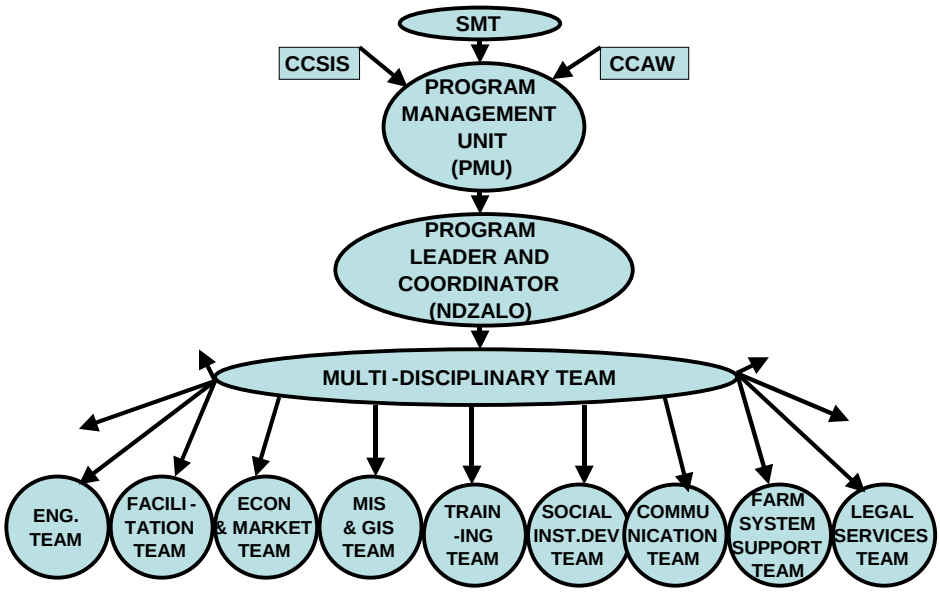
The RESIS project is firmly placed under the responsibility of the Limpopo Department of Agriculture, but with active links to advisory bodies and other departments as outlined below and shown in Figure 4.2.

Senior Management Team: Overall **political and financial responsibility** for RESIS rests with the Senior Management Team of the Limpopo Department of Agriculture who provide direction at a policy and financing level.

RESIS Project Management Unit: Execution of the project takes place at the level of the Programme Management Unit (PMU), which is chaired by the LDA General Manager: Projects & Infrastructure.

RESIS Project Coordinator: Day-to-day management of the project rests with the Program Coordinator (PC) who are project management consultants appointed for an initial period of 2 years.

Figure 4.2: RESIS Organisational Structure at Provincial and Program Levels



Source: M de Lange (unpublished, 2004)

SMT : Senior Management Team of the Limpopo Dept. of Agriculture
PMU : RESIS Project Management Unit
PC : RESIS Program Coordinator (Ndzalo Agri-business Solutions)
MDT : RESIS Multi-disciplinary Team

The Multi Disciplinary Team (MDT) is the team of experts with specialist sectoral knowledge which includes seconded government staff and appointed consultants. These experts address the detailed content at both project level and ensure alignment with program level activities and timelines. The MDT and all other RESIS team members report directly to the RESIS Program Coordinator (Ndzalo Agri-business Solutions).

Advisory and provincial coordinating bodies are linked into the program structure and these include the Co-ordinating Committee on Agricultural Water Use (CCAW). It consists of members from the LDA, the Department of Water Affairs and Forestry (DWAF) and the National Department of Agriculture. It has task teams that work on sustainability, Water Users' Associations, water availability, Geographic Information Systems and research coordination. As such operational and policy issues for the RESIS programme are discussed here. The research co-ordinator for RESIS chairs one of the CCAW task teams.

The **CCSIS** is the National Co-ordinating Committee for Smallholder Irrigation Support which coordinates the provincial CCAW activities.

It is understood that the institutions included in the network of relationships will need to extend beyond those established at the time of writing. Similarly, the detailing of responsibilities of the institutions already within the RESIS network are also still in progress.

4.2 Detailed RESIS Organisational Composition

4.2.1 Project Management Unit

The detailed composition of the RESIS Program Management Unit (PMU) is presented below. The PMU is the executive decision making body on RESIS activities which reports to the political leadership of the Limpopo Department of Agriculture.

Programme Management Unit	
Chair: General Manager: Projects & Infrastructure :	Dr M Shaker
General Manager District Services :	Dr T Ngomane
General Manager Land, Agrarian Reform:	J. Thupana
General Manager Farmer support and dev:	M Mannya
LDA Senior Managers, incl. District Heads	
Chief Financial Officer:	I van der Merwe
District Managers	
Vhembe:	Mr Malepfane
Mopani:	Ms Netshirembe
Sekhukhune:	Mr Ramaboea
Capricorn:	Ms Kganyago
Bohlabela:	Mr Mboweni
Waterberg:	Ms Bornman
Tombi Seleka:	S Sitholimela
Madzivandila:	C Tshisikule
RESIS Project Managers (Ndzalo Agribusiness Solutions)	
RESIS Programme Manager:	M de Lange
Ndzalo Managing Director	L Thembe

4.2.2 The Multi-Disciplinary Team

The day to day management and implementation of RESIS is carried out under the control of the Program Coordinator supported by the Multi-Disciplinary Team (MDT). The MDT has been set up to maximise the use of available skills and to augment these through capacity building of government staff through the RESIS programme.

The overall objectives of the MDT are as follows:

- To provide specialist services for the revitalisation of smallholder irrigation schemes in Limpopo Province.
- To promote rural development and job creation on the irrigation schemes and in adjacent communities.
- To build the capacity of LDA staff to ensure a phased withdrawal of external specialists.
- To investigate feasible options for the revitalisation of individual irrigation schemes, and recommend how to proceed to ensure economic and financial viability.
- To do business modelling for various commodities.
- To solicit support for proposed interventions among political and other stakeholders.
- To conduct community mobilisation/information gathering exercises with a view to maximising beneficiary participation in planning and implementation.
- To ensure election of management representatives from among beneficiaries to represent people from across the spectrum of poverty within the village.
- To facilitate transformation of government services as needed to improve service delivery mechanisms.
- Other professional services as may be required.

The RESIS programme and the MDT in particular, will act within LDA policy and procedures and will build on learnings and experience from previous phases, such as the WaterCare Programme and other departmental programmes, such as the “Participatory Extension Approach” (PEA) and “Participatory Development Approach” (PDA).

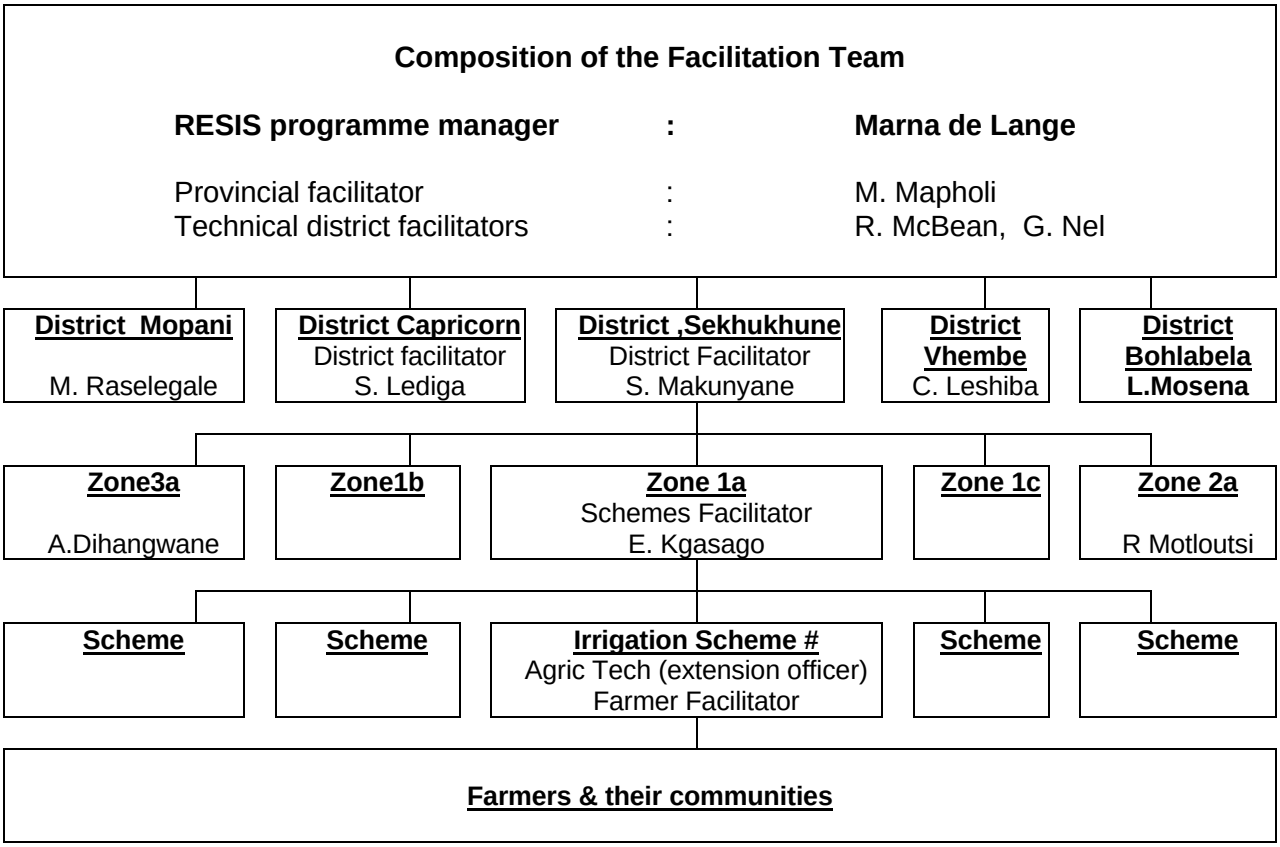
The MDT will help achieve the programme objectives by supporting the four-year implementation cycle on each scheme. The composition of the MDT is shown overleaf.

Detailed Terms of Reference outlining the specific roles and responsibilities for each individual in the MDT were prepared. Additional information on the MDT roles and responsibilities for the other positions can be obtained on the RESIS website at www.RESIS.org.

Composition of the Multi-Disciplinary Team

RESIS programme manager : Marna de Lange
Administrative and Financial Support : Project Administrator

Discipline	Team Members From Private Sector	Team Members From The Department
Social & Institutional Development	**Specialist**	Not presently assigned
Agricultural & Rural Engineering	**Senior Engineering Manager**: **Mr DJ van Rensburg** Design Engineers: 5 Firms Control Technicians Construction Technicians	**Coordinator:** **Rex Mtileni** Technician: Vhembe: W van der Linde Technician: Sekhukhune & Capricorn: D. Malepa Technician: Bohlabela & Mopani: R Smith Engineers: K. Enslin
Agricultural Economics, Marketing & Credit	**Specialist/Mentor** *As required:* Credit Officers	Head economist: **Dr Baba** Agricultural Economist: viability Agricultural Economist: markets Agricultural Economist: credit
Farm Systems Support	**Specialist** *As required:* Agricultural Assistants	**General Manager: Agrarian Reform and Development** **Co-ordinator:** Mr Sefara
MIS & GIS	Specialist (not assigned) *As required:* Data Technicians	Senior Manager
Training, Media & Communications	Mentor: crop training: **J. Adendorff** Mentor: scheme training: **C. du Plessis** *From the community*: Farmer Trainer Farmer Trainer Assistant Trainer Assistant Trainer	General Manager: Farmer Support and Development Services : Farmer Trainer Coordinator, Provincial: **M. Moabela** Farmer Trainer Co-ordinator (Vhembe/Mopani): **L. Muthapuli** Farmer Trainer: **K. Mokwevhu** Farmer Trainer: **A. Montjane** Farmer Trainer: **C. Khorommbi** Farmer Trainer: **R Ndlovu** Other college lecturers Presently also 2 Extension Officers, 2 district level leading farmers and 4 scheme level leading farmers. *As required:* Understudy Trainers
Legal & Institutional Services	Specialist	General Manager: Transversal Services Senior Manager Legal Services
Procurement Services, Financial and contracts management	Specialist/Mentor	Finance clerk Finance clerk
Research, monitoring and evaluation	Specialist/Mentor	General Manager: Farmer Support and Development Services : Research Co-ordinator



4.2.3 RESIS Team Structure and Capacity building Objectives

In terms of LDA staff and more specifically the MDT, the primary capacity building approach is that of counterparts working together. The programme will have to ensure that people with similar functions and operational responsibilities (from the private sector and from LDA) work as counterparts.

The organisational details and reporting lines of how these counterparts will link to the MDT both in the districts and at scheme level is currently being defined, specifically for engineering and facilitation aspects. The challenge lies in building team cohesion across the parallel and distinctly separate lines of reporting responsibility between counterpart staff and consultancy team members. Where secondment to the program is 100% of time, this is more easily achieved than when part time secondment is provided for.

Some of the RESIS capacity building activities have included:

- **LDA farmer training team;** two, one week courses for LDA College and Extension staff in Participatory training methodologies, training in the drafting of unit standards, on the job practical training as farmer trainers and training and experience in conducting pre-development surveys.
- **LDA engineering staff;** a program of capacity building that will include internships in the engineering firms appointed through RESIS and attendance of some courses, to enable them to do their professional registration, has been stipulated. It also includes a training course in Expanded Public Works methodologies and on the job orientation in the Two-Envelope tendering method.

- **LDA Economists;** training in risk assessment in Canada. Also training in the use of the SMILE methodology, mentorship by Prof S. Perret (University of Pretoria) and presentation of a paper at an international conference.
- **Extension staff and crop scientists;** two, one week orientation courses on the RESIS approach and methodology.
- **Farmer facilitators (5 in Vhembe district);** One week orientation course on RESIS two day workshop for farmer facilitators, ongoing mentorship.

4.3 Overview of RESIS Scheme Numbers and Size

The RESIS Program is being implemented in three phases over 4 years covering the total of 123 schemes to undergo revitalisation. A full list of schemes, their location, size and plotholder data is presented in Annex 1. A summary is presented in Table 4.1.

Table 4.1: RESIS Irrigation Schemes Data Summary

Description	Unit	Quantity
TOTAL DATA		
Number of schemes	no.	123
Total size of all schemes	ha	19,730
Total no. of plotholders	no.	12,432
SCHEME AREA STATISTICS		
Minimum scheme size	ha	3
Maximum scheme size	ha	1730
Median scheme size	ha	82
Average scheme size	ha	160.4
Standard deviation	ha	248.5

The total number of 123 schemes covers 19,730 hectares which are occupied by 12,432 plotholders.

The range of scheme size is substantial from the smallest at 3 ha (Canyon scheme in Capricorn District) to 1,730 ha (Mid-Letaba in Mopani District) with an average size of 160 ha and a median size of 82 ha.

What is useful in such an analysis of scheme size is that the 13 largest schemes (i.e. less than 10% of the total number of schemes) cover half of the total hectarage that RESIS will engage with in the revitalisation initiative. Similarly but conversely, some 80% of the schemes are smaller than 200ha in size.

What can be seen is that most of the schemes to be engaged with are relatively small (less than 200ha each). This relatively small size makes the intervention on the bulk of the schemes reasonably manageable, given the smaller number of plotholders and

the reduced physical extent of the scheme, which may contribute to increased success rates due to the simplicity afforded by smaller size (ARCUS GIBB, 2004a).

However, in terms of hectarage the 13 schemes greater than 400 ha in size cover approximately half of the total hectarage. The complexity of revitalisation strategies increases with scheme size, given increased diversity, higher numbers of stakeholders, larger bulk infrastructure, higher total intervention costs and often more complex marketing scenarios due to saturation issues, all of which are linked to profitability and scheme sustainability. Additional diversity in the details of scheme infrastructure type (simple flood or more complex pumped sprinklers for example) compound the challenges on larger schemes.

5 DISCUSSION AND CONCLUSIONS

5.1 Scheme Level Development Approach

5.1.1 Profitability and Sustainability

Financial profitability (with links to cost effective farming strategies, financing flows and effective marketing responsive to the rapidly changing market reality) is widely considered to be a critical factor for the success of schemes. Backeberg (1994) evaluated the history of South African irrigation schemes and found that the success of irrigation development in the past can be related to marketing potential of produce and the level of profitability of farming. In a similar vein an analysis of the national database of smallholder schemes established as part of this project (ARCUS GIBB, 2004a) showed clearly that commercialisation (as opposed to subsistence farming) and the production of higher-value crops (notably bulk and specialist vegetables) were common denominators in schemes which had high levels of activity or success. The Du Roi Group in Limpopo Province is one of the prominent companies with experience and some success in working with groups of smallholder farmers in partnership arrangements (citrus, bananas, mangoes) and have as one of their sustainability tenets, commercial viability and financial profitability (Denison, 2005).

If market forces and profitability are accepted as key drivers to ongoing crop production and irrigation sustainability, then this forces a commercialisation agenda. This in turn presents political challenges linked to food production and nutritional security for marginalised South Africans, often women, who are struggling with poverty but who do not necessarily wish, or are often not equipped for the risks of a more commercial orientation. Van Averbeke et al (2005) shows clearly the increased risks linked to a more commercialised orientation on Dzindi Scheme and such risks are contrary to poverty linked livelihood strategies which are low-risk by necessity.

5.1.2 Diversity on schemes and between Schemes

The schemes identified for revitalisation under RESIS are characterised with great diversity (in terms of size, technical complexity, marketing options etc.) which requires specific solutions for each scheme. Similarly, the reality on any single smallholder scheme is that plotholders are characterised by substantial diversity in farming skills, motivations and farming styles. Many plotholders are not farmers nor do they engage in farming, but are still unwilling to lease their land, either formally or informally, for fear of losing access in the future. (The land issue and the emphasis afforded it under RESIS is discussed overleaf.)

The RESIS approach clearly intends to develop scheme specific solutions in response to the diversity (on schemes and between schemes). However the sheer size of the program means that delegation of strategic planning responsibility is necessarily reduced down numerous layers within the hierarchy of expertise. The possible result is that scheme level strategic planning will potentially be carried out by personnel or consultants with insufficient skills or exposure to deal with the range of interlinking issues, development timelines and market realities. These will include for example, the identification and brokering of strategic partnerships with aggressively commercial entities which are unlikely to be identified firstly, or secured with

favourable outcomes for the farmers without substantial experience in commercial contracts.

Thus while the RESIS approach may stand the test of robust development critique in abstract, the implementation at the large scale now attempted, with the limited personnel who are currently available suggests complexity and diversity may fall foul to the efficiency of a more generalised strategy and the need for rapid delivery. This risk and substantial challenge is one that falls to the Programme Management Team to address in creative ways.

5.1.3 Farming styles in contrast with a linear farmer development trajectory

The diversity on schemes and the link between profitability and sustainability relate also to the differing farming styles on any scheme. A generic training approach, based on the RESIS assumption that those farmers with a more subsistence orientation can shift steadily towards a commercialisation orientation may not be sufficiently flexible to achieve the stated objectives.

In RESIS there is a stated perception that the **development of commercial farmers** from a starting point of subsistence agriculture is **a linear transition** that can be achieved in a small step process given sufficient investment in training, support and time. RESIS envisages a 3 step progression from subsistence, to semi-subsistence to commercial as part of the outcomes of the intervention. There is risk implicit in this concept which underpins the farmer training approach and the commercialisation agenda.

Any strategy is dependent on the "concept package" that underlies it. A logical and justified thought process based on critical evaluation, experiences and research can be invalidated because the concepts that underpin it are insufficiently defined or misunderstood. (De Bono, 1972, paraphrased). The concept of positive, **"emergent" growth on a steadily rising trajectory** from the unfavourable status quo to a desired commercialised (and profitable) paradigm is looked at from a different perspective by some (Hebink, 2004; van Averbeke et al, 2005). Van Averbeke suggests an alternative concept from the linear development trajectory where a number of significantly different subsistence-oriented and commercially-oriented **farming styles** are characterised by**:**

- different farming strategies linked to their differing objectives of food production or profit generation,
- different exposure to risk influenced by crop selection, land area planted, service providers used and social networks maintained,
- different strategies for marketing produce, nature of labour hired and farming requisites purchased and utilised.

"Contemporary agricultural and related policy aimed at empowering smallholders and at assisting their transformation from subsistence to commercial farmers is unlikely to have a uniform impact on farmers. Instead, the response by farmers to improvements in the external environment in which smallholder agriculture occurs is likely to differ among farming styles, dampening the desired impact of policy measures" (van Averbeke et al, 2005)

This leads to a different view of how commercialisation might be achieved in terms of the process that underlies farmer development. The gradual, small-step upgrading of current low-risk, subsistence oriented approaches using a generic farmer training strategy may be unlikely to achieve the transformation from subsistence orientation to commercial orientation so desired.

An intervention approach that is linked more directly to the range of farming styles (existing as well as aspired) on any one scheme is an alternative that the RESIS program now has opportunity to explore. What recent research suggests is that the intervention approach that is responsive to farming styles will be different from the current approaches based on a linear development trajectory.

The implications on the role of commercial partnerships, content of farmer learning programs, technology intervention, organisational building, marketing strategies, and very importantly risk and land tenure initiatives (collateral and size) will be substantial. Those plotholders aiming at diversified low-risk subsistence oriented production (either on-scheme in small plots, or through rainwater harvesting in-field and in homestead gardens) would require a different set of farming support systems, skills levels, insurance, financial support and training from those targeting profit-oriented commercialised farming aiming at medium to high returns.

5.1.4 Farm Size and Land Leasing Market

While the debate on viable farm size is unlikely to be agreed given diversity of needs, expectations, market variations and value-adding post processing possibilities it is generally agreed that small plot sizes (0.5 to 1.5 ha) make financially feasible production in the medium term challenging. The cotton partnerships from the WaterCare program and the irrigation feasibility studies in the Eastern Cape (ARCUS GIBB, 2004b) are testament to the need for much larger landholdings per farmer for extensive crops (Denison, 2005).

A recent review of the irrigated sector in the Amathole District in the Eastern Cape (Umhlaba, 2005), showed a 10 times difference in landholding size between successful irrigated ventures of white commercial farmers (21ha) and black smallholder farmers (2.2 ha). While these averages do not fully represent the landholding variations on any given smallholder scheme (which often range from 0.2 ha to 5 ha on any one scheme) it shows a marked disparity which impacts on efficiencies of scale and has near-directly proportional influence in financial returns per farmer (as opposed to per ha). The reality of direct competition between black smallholders and white commercial farmers is also affected by this.

Regardless of the farming style (along the spectrum from subsistence orientation to commercialised orientation (Andrew et al, 2003)) cash income to cover water charges, ongoing maintenance, farmer organisational costs and net profit is essential. This is all the more so where scheme running costs are linked to pumping with high monthly costs when cash flow is critical.

The Eastern Cape studies showed a clear rejection of total annual incomes of some R10 000 per annum by participant farmers (based on a landholding size of 1ha) given their experiences of production risk and marketing risk. (This amount was estimated after all farming costs, labour, inputs etc. but excluded management time of the farmer). Land-leasing to consolidate larger portions of farmed area were seen to be centrally important for financial feasibility and scheme sustainability.

Similarly, recent discussions with leadership on Makuleke Scheme in Limpopo indicates that the present marginal returns from cotton given low international prices is unlikely to ensure continuity along this cropping path in future. This is even though risk has previously de-facto been carried by Noordelike Sentrale Katoen for crop losses, though the strategic partnership contract intention is that farmers carry the risk.

In both the cases of Makuleke and the Eastern Cape schemes, facilitating larger farm sizes will result in greater cash returns for the individual farmer who is taking the risk and is likely to improve sustainability.

The implication of this argument is that many plotholders, especially those who are relatively capable or successful, are keen to expand their irrigated areas. This means that if commercialisation is an objective then promotion of a land-leasing market to increase landholding size should be a high priority. There is research which looks at ways in which landholding size could be increased in communal areas (Van Averbeke, 2002; Manona, 2004). Furthermore, this land-leasing aspect links directly to the opportunities for a range of farming-style based intervention strategies as discussed above.

The WaterCare program identified the need for consolidation and attempted to achieve this, but the challenges are significant and success was limited (pers comms; J. Rutherford). The current RESIS strategy similarly recognises the need, but the emphasis to promote land-leasing and strategies to achieve this are not evident in the plan at present. It would seem that there is both need and scope to expand on this aspect within RESIS, given the high priority of sustainability.

5.2 Challenges and Risks of the Organisational Strategy

The LDA has a significant level of control of the project and is directly providing human resources needed for the RESIS implementation. This involves secondment of staff to the RESIS programme from the MDT down to scheme level. It is intended to minimise the involvement of consultancy based expertise particularly in the MDT that will manage the programme. This is in keeping with national policy and trends in other provinces where outsourcing of strategic policy positions is preferably maintained within the ambit of government employees.

The scope of RESIS is however substantial in terms of the financial and operational requirements (simultaneous activity on 126 schemes) and the program demands a level of project management sophistication and bulk data collection and review capacity that is possibly not readily available within government structures without major internal transformation.

These potential limitations include:

- The LDA is not equipped with staff to operationalise large programmes in short time frames. If RESIS fails, similar bold initiatives with major potential for poverty alleviation can be negatively impacted.
- The procurement system of government demands extended time frames which are incongruent with the need to plan and implement more than 200 construction and consultancy assignments simultaneously. A year into the programme the procurement system continues to present serious challenges to the meeting the timelines. The present arrangement is that the RESIS Program Co-ordinator and the Departmental Chief Financial Officer need to sign every single invoice generated through the RESIS implementation. There is no dedicated Trust fund to handle finances or accounting firm to manage expenditure, budgets and reporting. For a budget of R1,08 billion that needs now to be spent in 5 years, this would appear to be somewhat inadequate.
- The broad spectrum of interventions required (from household food production, water harvesting, environmental aspects, grazing and cattle management, road repair, institutional development, marketing which includes Joint Ventures etc). The linkages and co-ordination needed between the different sections of the department, and with other departments responsible for these interventions is broad, multi-sectoral and developmentally complex and is arguably a process that personnel are not well used to, potentially resulting in poor linkages and loss of the primary objective “Integrated Rural Development”.
- LDA extension officers are to be assigned to the schemes. This in itself is a new process. They will then be expected to work in a team with the RESIS facilitators to effect the broad scope of development mentioned in the point above. They do not however have any experience in this regard and also have other responsibilities and programmes that they need to be implementing and giving attention to. The time commitments on these personnel seem to be demanding and their unavailability for RESIS tasks presents a significant risk.
- Two large infrastructural development programmes for smallholders, namely RESIS and CASP, are being operationalised at the same time. The demands on the LDA are substantial and possibly beyond current capacity.
- Capacity Building for LDA staff on all levels of RESIS is being seen primarily as co-working agreements with RESIS counterparts. There is not much precedent for capacity building of this nature and if not well handled, the learning opportunities can pass unrealised. For some staff technical courses and qualifications exist as an opportunity, but not for all. There is a question as to whether the performance assessment system used for staff of the LDA can accommodate this system of capacity building.

5.3 Conclusions

RESIS is the most ambitious attempt at revitalising smallholder irrigation activity in South Africa at present targeting 126 schemes, covering more than 19,720 ha and 12,432 plotholders and farmers. The total project value over the 6 year program is 1.08 Billion Rand.

The programmatic scale of RESIS is bold in the total number of schemes with which it engages. The 126 schemes are almost half of the smallholder schemes in South Africa (ARCUS GIBB, 2004a). This presents a unique opportunity for informing the provincial and district strategies of the other provinces starting out on revitalisation initiatives.

The RESIS strategy is based on a wholly participative planning process, allocation of responsibility for financial decision-making to plot-holders and farmers, emphasis on farmer learnerships, organisational development and empowerment of individuals. All of this is in parallel with the essential physical rehabilitation of scheme infrastructure. Priority is placed on a business orientation for smallholder irrigated agriculture and RESIS attempts to address need for financial viability, profitability and the market reality through building partnerships with agri-business and market oriented thinking in crop selection, training and farm systems support. In addition to this, RESIS is focussing beyond the scheme boundaries and including poverty alleviation activities linked to small livestock and homestead food production in surrounding villages, thereby maximising the number of people who benefit from the initiative.

The intervention strategy has been developed over a period of 6 years in the WaterCare Program by an experienced group of Government officials, consultants, planners and has been informed by farmers. The Limpopo Farmer Training Team, based at the Agricultural Colleges are playing a key role in the implementation of the RESIS programme and are using, refining and expanding the Facilitators' Guide (Botha et al, forthcoming).

RESIS has expanded and revised the WaterCare learnings, both in content and in the substantially enlarged scale of the program. RESIS has embraced the need to flexibility respond to a wider range of community priorities, resource diversity and development opportunities. The interventions that result through the consultative planning process meet needs linked to homestead food production, dryland production, multiple use of water, livestock - scheme interrelationships and rain-water harvesting. This is now in addition to the well established on-scheme strategies linked to food production and the development of agri-enterprises and marketing relationships with a more mainstream commercial orientation.

The project level thinking that underlies the RESIS strategy is based on learning through practice. The RESIS program and implementation team has an attitude of ongoing self-review and modification of their strategy and approach. Their slogan "Boseka Boeja" which in the RESIS context means "we fine-tune as we go" clearly states this. This ability to review in an ongoing process is a considerable point of strength in the program.

The Achilles heel of RESIS program success in the medium term (beyond the intervention timeline of 4 years) is the fundamental need for profitable farming activity. This activity is in the context of free-market competition with the established commercial farming sector. The existing cotton-partnerships for example, with high market dependency given a single buyer and nominal margins has shown how successful revitalisation efforts (at organisational, technical, training and empowerment levels) are at risk when significant profit margins for the participant farmers are not realised.

If market forces and profitability are accepted as key drivers to ongoing crop production and irrigation sustainability, then this forces a commercialisation agenda. This in turn presents political challenges linked to food production and nutritional security for marginalised South Africans, often women, who are struggling with poverty but who do not necessarily wish, or are often not equipped for the risks of a more commercial orientation. Van Averbeke et al (2005) shows clearly the increased risks linked to a more commercialised orientation on Dzindi Scheme and such risks are contrary to poverty linked livelihood strategies which are low-risk by necessity.

This potential tension in commercialisation vs poverty alleviation objectives can to some extent be offset by a mix of strategies including:

- Homestead food production initiatives linked to rainwater harvesting and tank-building which have already been prioritised under RESIS as activities to run in parallel with the on-scheme activities.

- Value adding on-farm processing or packaging as well as a shift to high value crops, where possible, is also identified as a new priority under RESIS. The stimulation of more diverse local economic development activities through the RESIS initiative presents other opportunities for direct employment as labour of both existing plotholders and people from the surrounding community.

- Land – leasing initiatives, planned to support the commercialisation process by securing larger landholdings for capable individual farmers are recognised as important. At the same time this process allows those who are unable to use their access to irrigation land (through age, lack of interest or poverty related risk aversion) to gain some financial return through leasing. The strategies to promote land-leasing are not well established nationally, though take place widely in an informal way. While informal and formal precedent exists, there is opportunity for RESIS to expand on these through an action research approach. Possibilities for collaboration with PLAAS at the University of the Western Cape, who have shown interest in the irrigated context specifically as a result of this WRC project, could be explored.

The RESIS strategy is based to some extent on the perception that the development of farmers moves from a starting point of subsistence oriented production in a roughly linear transition to a commercialised farmer, given sufficient investment in training, development support and time. A farming styles perspective presents a different view of how commercialisation might be achieved in terms of the process that underlies farmer development. The gradual, small-step upgrading of current low-risk, subsistence oriented approaches using a generic farmer training strategy (such as RESIS has adopted) may be unlikely to achieve the transformation from subsistence orientation to commercial orientation so desired.

An intervention approach that is linked more directly to the range of farming styles (existing as well as aspired) on any one scheme is an alternative that the RESIS program now has opportunity to explore. The implications on the role of commercial partnerships, content of farmer learning programs, technology intervention, organisational building, marketing strategies, and very importantly risk and land tenure initiatives (collateral and size) will be substantial for each farming style that is identified on any scheme.

Any critique of the RESIS strategy and development approach at a concept and theoretical level is dwarfed by the sheer magnitude of the program and the challenges posed by the government bureaucracy and legalities of procurement. The reality is that the risk of success or failure is probably more directly related to the provincial program design, available personnel resource within the public sector and practicalities of implementation and monitoring, rather than the scheme level RESIS development strategy. The program demands a level of project management sophistication and bulk data collection and review capacity that is not easily available within under-resourced government structures without major internal transformation.

There is a clear tension in the need for delivery of RESIS outcomes at scheme level and the objective of transformation of government service. The need to build organisational and human resource capability within an existing bureaucracy requires investment and time which can not but detract from the element of delivery, both in terms of the urgent need to address poverty on the schemes and in terms of the high-level political need for delivery on a high profile provincial and national “flagship” project.

One of the major challenges that RESIS faces, along with the human resource and transformation objectives, is working within the legalities of a deeply bureaucratic procurement system, designed for ensuring due process and transparency not speed and efficiency. The program design is one which minimises outsourcing of major project components as single contracts and instead has resulted in an unavoidable recourse to multiple smaller contracts which the procurement system struggles to process effectively. An unfortunate secondary outcome is that the required treasury contract format for outsourcing these multiple small contracts to individuals or small companies often eliminates them from the bidding process due to omissions or mistakes on compiling bids.

The key to the future successful outcomes of RESIS lies perhaps in their slogan (“Boseka Boeja” – we fine tune as we go). The learnings and ideas from experience and ongoing research nationally can relatively easily be brought into revised scheme level strategies, using farming styles and stressing land-leasing for example. The real challenge to RESIS success possibly rests not with the scheme level approaches but with the scale of the programmatic elements. Particularly important is the ability of government with it’s necessary financial systems and bureaucracy to respond quickly to self-evaluation based on learnings to date and make the political level changes that allow itself to meet the political and developmental objectives it has set.

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ANNEX 1

LIST OF RESIS IRRIGATION SCHEMES

(Source: RESIS Program Files)

Zone	name	district	hectares	farmers
1a	Adriaansdraai	Capricorn	80	20
1a	Badfontein	Capricorn	80	92
1a	Coetzeesdraai/Mogalatjane	Sekhukhune	131	98
1a	Elandskraal	Sekhukhune	197	97
1a	Hindustan/Petwane	Sekhukhune	52	43
1a	Krokodilheuwel	Sekhukhune	243	202
1a	Vogelstruiskoppie/Setlaboswana	Sekhukhune	119	99
1b	De Paarl	Sekhukhune	66	54
1b	Gaataan	Sekhukhune	155	129
1b	Goedverwacht	Sekhukhune	90	75
1b	Haakdoorndraai	Sekhukhune	102	84
1b	Nooitgesien	Sekhukhune	110	91
1b	Veeplaas	Sekhukhune	463	385
1b	Vlakplaas	Sekhukhune	74	62
1b	Wonderboom	Sekhukhune	117	23
1c	Brakfontein	Sekhukhune	11	13
1c	Goedvertrouend	Sekhukhune	123	102
1c	Montivideo	Sekhukhune	90	31
1c	Platklip	Sekhukhune	68	56
1c	Vlakspruit	Sekhukhune	120	100
2a	Lepellane	Sekhukhune	342	68
2a	Mooiplaas	Sekhukhune	100	83
2a	Strydkraal	Sekhukhune	338	281
2a	Tsatane	Sekhukhune	40	8
2b	Canyon	Capricorn	3	3
2b	Fertilies	Capricorn	137	96
2b	Gompies	Capricorn	115	46
2b	Grootfontein	Capricorn	103	58
2b	Grootfontein B	Capricorn	5	20
2b	Koedoeskop	Capricorn	85	71
2b	Lucern	Capricorn	48	40
2b	Success	Capricorn	135	135
2b	Vallies	Capricorn	37	33
2c	Haffendon Heights	Capricorn	35	35
3a	Tswelopele: Praktiseer	Sekhukhune	1020	312
3a	Tswelopele: Steelpoortdrift	Sekhukhune		
3a	Makopi	Sekhukhune		
3b	Boschkloof	Sekhukhune	200	200
3b	Mecklenburg	Sekhukhune	65	54
3b	Steelpoortdrift	Sekhukhune	72	72
4a	Beaconsfield	Vhembe	35	25
4a	Cordon a + b	Vhembe	73	60
4a	Diepkloof/Mavhunga	Vhembe	40	39
4a	Luvhada	Vhembe	28	79
4a	Mamuhohi	Vhembe	78	60
4a	Mandiwana	Vhembe	67	55
4a	Mphaila	Vhembe	71	76
4a	Mphephu	Vhembe	114	89
4a	Phadzima/Mpesema	Vhembe	82	65

Zone	name	district	hectares	farmers
4a	Rabali	Vhembe	87	73
4a	Ralipaswa	Vhembe	15	13
4a	Vhutuwangadzebu	Vhembe	18	60
4b	Dopeni	Vhembe	170	150
4b	Folovodwe	Vhembe	55	45
4b	Garside	Vhembe	52	40
4b	Joubertstroom	Vhembe	70	60
4b	Khumbe/Rebanda	Vhembe	145	145
4b	Klein Tshipise	Vhembe	9	18
4b	Mauluma	Vhembe	50	40
4b	Sanari	Vhembe	39	6
5a	Homu	Mopani	165	22
5a	Makuleke	Vhembe	239	243
5a	Matsika	Vhembe	102	47
5b	Mangondi	Vhembe	17	59
5b	Morgan	Vhembe	75	24
5b	Tshaulu	Vhembe	150	69
5b	Tshikonelo	Vhembe	27	3
6a	Rambuda	Vhembe	102	85
6a	Tshiombo	Vhembe	1100	930
6b	Mabunda	Mopani	300	10
6b	Molototsi Mango	Mopani	940	783
6b	Selwane	Mopani	72	6
6b	Britz	Vhembe	70	7
6b	Lambani	Vhembe	44	50
6b	Makonde	Vhembe	200	11
6b	Malavuwe	Vhembe	26	24
6b	Manunswa	Vhembe	255	1
6b	Mhinga/Xikundu	Vhembe	229	28
6b	Muledane	Vhembe	48	5
6b	Mutele	Vhembe	33	7
6b	Phaswana	Vhembe	235	15
7a	Allandale/Athol	Bohlabela	90	18
7a	Sabie Hoxane	Bohlabela	656	131
7b	Dingleydale	Bohlabela	937	780
7b	New Forest	Bohlabela	713	420
7c	Champagne	Bohlabela	134	111
7c	Dumphries	Bohlabela	53	8
7c	Lorraine B	Bohlabela	40	33
7c	Madeira	Bohlabela	240	108
7c	Makgaung	Bohlabela	71	59
7c	Metz	Bohlabela	265	148
7c	Salique 1	Bohlabela	150	30
7c	Sekororo	Bohlabela	113	94
7c	Waterval	Bohlabela	450	60
7c	Zoeknog Rice	Bohlabela	35	29
8a	Dzindi	Vhembe	137	105
8a	Hamutsha	Vhembe	7	31
8a	Murara	Vhembe	37	7
8a	Nesengani	Vhembe	71	34

Zone	name	district	hectares	farmers
8a	Palmaryville	Vhembe	93	80
8a	Tshimbupfe	Vhembe	12	24
8a	Tshwinga	Vhembe	50	50
8b	Lemondokop	Mopani	5	22
8b	Maemetja	Mopani	6	5
8b	Sekgopo	Mopani	253	210
8b	Thabina	Mopani	228	153
8b	Mashamba 1	Vhembe	27	6
9a	Julesburg	Mopani	86	71
9a	Lephepane	Mopani	42	40
9a	Solani	Mopani	96	63
9a	Tours	Mopani	140	140
9b	Blyde 800	Mopani	800	160
10a	Mid-Letaba	Mopani	1730	1441
11a	Capesthorne	Vhembe	99	77
11a	Gogobole	Vhembe	16	16
12a	Devonia	Capricorn	130	120
12a	My Darling vegetable	Capricorn	5	14
13a	Galakwena	Waterberg	38	8
13a	Mapela	Waterberg	72	57
13b	Praque	Waterberg	30	6
13b	Sekgakgapeng	Waterberg	28	14
13b	Zeekoeigat	Waterberg	14	11
14a	Maandagshoek	Sekhukhune	23	19
14a	Rietfontein	Sekhukhune	50	41
14a	Sterkspruit	Sekhukhune	360	280
	Total		**19730**	**12432**

Appendix D

The ICON Methodology

WATER RESEARCH COMMISSION

WRC Project No. K//5/1463/4 : Principles, Approaches and Guidelines for the Participatory Revitalisation of Smallholder Irrigation Schemes

TITLE: ICON - An Iterative-Consultative Approach for the Feasibility Planning of Revitalisation Initiatives on Smallholder Irrigation Schemes

Jonathan Denison and Erna Kruger

ARCUS GIBB

An Iterative-Consultative Approach for the Feasibility Planning of Revitalisation Initiatives on Smallholder Irrigation Schemes, September 2004

CONTENTS

1 INTRODUCTION

1.1 Field Testing of a Consultative Planning Approach

This report describes a consultative planning approach that was used with participants of ten irrigation schemes in the Eastern Cape. The assignment was carried out for the Department of Water Affairs and Forestry and the Eastern Cape Department of Agriculture (ECDA) by ARCUS GIBB Consulting Engineers.

The approach used by the consultants was developed by a Water Research Commission team, led by J.Denison, and was made available for field proofing to the consultant team undertaking the study for ECDA. The practical application of the approach on schemes with widely varying size and nature, and the ongoing review and adjustment thereof has resulted in the development of a useful guideline for consultative planning of revitalisation initiatives. The approach, experiences learned in the application on the ten schemes and a critique thereof, are presented in this paper.

1.2 Overview of the Iterative-Consultative Approach (ICON)

1.2.1 A mix of methodologies

The Iterative-Consultative approach (ICON) is a flexible combination of familiar methodologies including Participatory Rural Appraisal (PRA), Sustainable Livelihoods, Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) and Farmer Typologies.

These are used in an attempt to grasp the very complex and diverse sets of social, political, agricultural and natural resource information that are necessary to enable sensible planning of initiatives, both on existing schemes and on new schemes.

The ICON approach is carried out in three stages which are summarised schematically in Figure 1.1 overleaf.

1.2.2 Theoretical Framework

ICON has its core principles in the development concepts of:

- The social construction of knowledge (Thomas, 1995).
- The iterative development planning process (White, 2004).

It intends to maximise the two-way transfer of “expert technical knowledge” from the intervention team to the community members, who are considered to be “user experts” (Veldwisch, 2004) to allow jointly formulated scenarios for development.

It presumes that the best solutions will be arrived at by allowing the community members (scheme participants / surrounding villagers) to fully understand the implications of a range of choices that they may wish to make and that the role of the “expert team” is to inform their choices.

Thus the **development planning process is as an iterative one** where opportunities are identified through discussions and learning processes and interventions are conceptualised (White, 2004). These interventions are then evaluated quantitatively (i.e. costs, timelines etc.) and the implications are considered in the light of policy, funding and subsidies.

The evaluation of practical agricultural operations, water sharing, marketing, costs, financing etc. are then communicated back to the community members in an ongoing refining process. Through this **iterative process of dream-building and reality checking**, the community members arrive at a realistic plan, with a real sense of the technical and agricultural components that will be involved and the intervention timelines and costs.

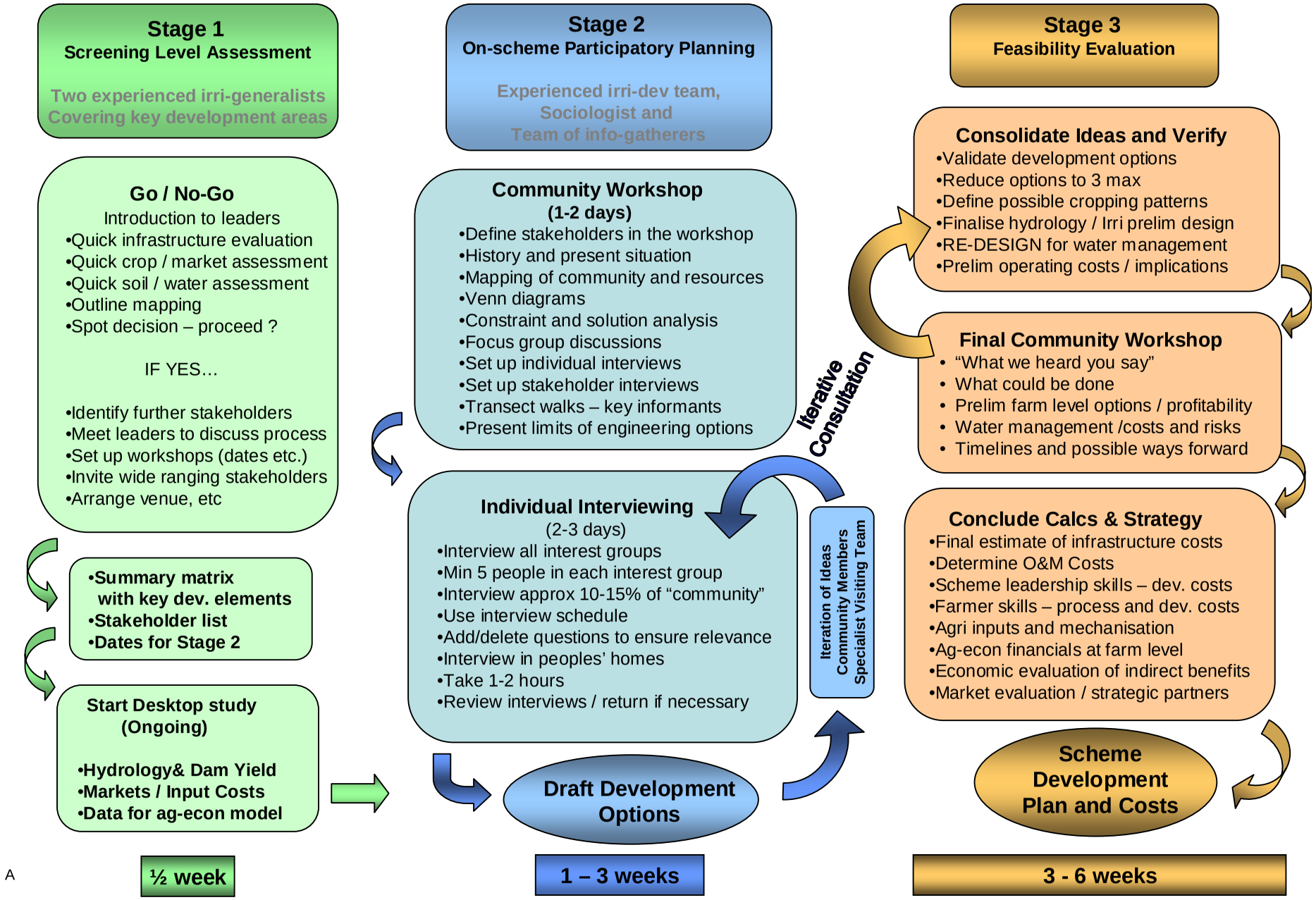
1.2.3 Focus on Feasibility Level Evaluation

The ICON approach is **intended for feasibility evaluations**, and the level of detail is therefore consciously limited, given time and cost constraints of the intervention team, and also to manage time demands and expectations of the community members who are a key part of the planning process.

The methods and guidelines relating to the technical engineering and irrigation design aspects are covered to some extent by earlier WRC Guidelines (see Crosby, 2000). While additional technical and financial evaluation methods were developed in this study, these are not reported here and will be addressed in subsequent reports as part of this WRC project.

This report focuses on the **participatory planning process**, rather than on the detail of the technical and financial methods that are essential to the quantification of the planned scenarios for development.

The Iterative-Consultative Feasibility Approach



A

2 PRINCIPLES OF ENGAGEMENT

Development principles that are central to this approach are discussed below. In addition to these, further explanation is given within the guidelines and approaches that for each stage of the consultative planning process, described in the sections that follow.

2.1 An Expanded View of "Scheme Boundaries"

Scheme boundaries were not seen as the delineation of the irrigated areas only, but included a broader view of what constitutes the "irrigation scheme" such as:

- The usual target group, i.e. those with land rights to the irrigated lands and the irrigation farmers themselves, who may be leasing, and

- A broader target group which is the associated community as a whole, including surrounding villages with social, religious and economic links to, or interests in the scheme,

This is specifically to recognise the context within which a given initiative is situated and explores issues of resource access, institutional and power relationships, and de-facto resource allocation. It also provides an overview of the role of the scheme in its region.

2.2 Diversity

Recognition was given to the fact the communities are rarely homogenous entities and that conflicting interests and goals are very likely to be present. The underlying value is that **diversity is good**, needs to be clearly stated and dealt with in transparent and accommodating ways; both within a community and around it.

2.3 Inclusion

Everyone's voice is important. Reference is not given to community leadership *per se*, but the opinions and needs of a wide range of people

are elicited. The **consultation process attempts to identify those who are marginalised** and will not usually raise their voices in public gatherings or group discussions where local leadership (in whatever form) is present (Chancellor, 2003).

This withdrawal of the marginalised from the process before it commences is either from hopelessness (linked to many reasons including poverty), lack of interest given the history of interventions that have lead to little improvement, or from powerlessness implicit in the social structures and forums. Thus the voice of women, and the old for example, is actively sought and the consultation strategies specifically include the less vocal and marginalised.

2.4 Community Control

Local structures and teams of community members are involved. Group discussions and local meetings are critical and enable people to assume responsibility for the process conducted on their terms. The process leads to increased horizontal and vertical dialogue and linkages.

2.5 Transformation

The **underlying context of poverty needs to be transformed**, rather than merely alleviating the effects. This means that the planned scheme intervention (food production and agri-business opportunities) are part of a wider mix of local economic development initiatives that are welcomed into the planning process.

The need to address poverty by a broad range of initiatives is undertaken with full cognisance of the inherent conflict in separating the commercial agri-business objectives (i.e. financial sustainability) from the need for food production and food security (Chancellor, 2003). Implicit in the ICON approach is the presentation of possibilities to meet these diverse needs, both on the irrigated lands and in the adjacent villages (e.g. home-gardens for food production) as part of the overall intervention.

2.6 Community Participation

Participation is the fundamental principle of engagement in the methodology. During the entire process, from the formulation of the problem to the discussion of how to seek solutions, the intention is to listen, inform on consequences of choices, and assist in the interpretation of findings.

2.7 Learning Process

The learning process is presented as one that all people, both on the part of the planning team and the various groups and individuals in the community are a part of. This includes the facilitators and the technical team members. There are no experts who can develop solutions from an outside perspective and the best solutions are explicitly stated to be those that are developed together.

2.8 Managing Expectations

As the feasibility evaluation precedes any real intervention, it is often not known who will intervene, when, how and with what funding. There is therefore a need to limit the time commitment and involvement on the part of the people from the scheme (and surrounding villages) so as to limit unrealistic expectations about the planned intervention actually becoming a reality.

Thus detailed planning, scenario development, organisation building and group formation are consciously limited to a minimum. This is simply because the demands on time and commitment to a process unavoidably lead to high expectations of the process attracting the necessary funding for the project to proceed.

In situations where funding is committed and is available to implement the revitalisation plan (i.e. re-construction, training, organisation building, marketing etc.), the ICON approach may be unnecessarily brief. Other approaches such as the Pre-Development Survey (Botha, 2004) which is part of the RESIS Approach (Denison, 2004) may be more appropriate.

The ICON approach is ideally suited to feasibility level planning where expectations need to be managed, or where a quicker, less costly planning process is desired.

3 STAGE 1 – PRELIMINARY EVALUATION AND FATAL FLAW ASSESSMENT

3.1 Guidelines for Stage 1

3.1.1 Stakeholder Interaction

The Stage 1 interaction is basically an intensive networking process. It presumes that any approach / methodology should aim more at facilitation than control to achieve the objectives of sensible planning. This means that full control is impossible. It accepts that **innovation-building processes are largely self-guiding**, although *affected* by opportunities and constraints inherent in the way stakeholders interact. It also presumes that no single actor can develop a fully comprehensive view of all the relevant processes.

It is important to take into account the structural forms that emerge from the consultation process and their influence on the situation needs to be probed. This requires ways to strategize beyond the level of actions by individual actors and ways to assess the consequences of these strategies.

3.1.2 Define the Innovation Strategies

The methodology needs to remain manageable. Process, inputs, outputs and procedures need to be defined.

One needs to assume that “the best means to an end” does not exist in these complex situations. Numerous possible combinations of ends and means compete. Innovation strategies are therefore *highly judgemental* and have to “make do’ with high level of uncertainty about what stakeholders actually want, think and will require if they are to actually commit themselves. In Stage 2 of the ICON process, intervention methodologies / scenarios / suggestions will seek to decrease such uncertainties.

3.1.3 Learning in Practice

Learning–in–action and making of choices are central elements. The choices are appreciative and need to be made explicit. The aim of this approach is to stimulate an interactive learning process among participants, facilitating the creation of new perspectives, different interpretations and hence new propositions and accommodations among stakeholders. Care must be taken to specify the conditions under which people will work together, so that relevant actors will be able to participate effectively.

The aim of the learning is to generate and achieve accommodations among relevant actors to *improve organised human performance*. Probing meticulously the constraining influences that stand in the way of those searching for alternative developments is a viable and useful contribution (Engel, 1997).

3.1.4 Knowledge is Socially Constructed

In agricultural interventions we are interested in the organisational forms that enable and or constrain knowledge processes such as generation, transformation and use of knowledge and information. Knowledge is *socially constructed* as people actively make sense of their experiences in the world (paraphrased, Thomas, 1995). A basic assumption in a knowledge system intervention is that innovation / change is the desired outcome.

3.2 Approach for Stage 1

3.2.1 Stage 1 Objective

The objective of the initial visit is to introduce the study, broadly verify what information is available, establish who the stakeholders are and decide whether further engagement with the scheme is warranted.

Stage 1 is essentially a quick one-day or two-day visit to the scheme, to collect and overview information that is available. It is the first opportunity to obtain an understanding of the deeper issues that may impact on the planning of the Stage 2 consultations.

Introductory meetings are held with as many different stakeholders and actors as possible, such as the municipalities, government departments, commercial concerns and marketing bodies as well as farmers and farmer organisations. The presence of **fatal flaws in any component** (water availability, political will, soils etc.) will lead to a **conclusion that the study should not proceed any further**.

3.2.2 Team Composition

In Stage 1 it is important for the intervention team to initially create a checklist defining the topics, actors and potential fields of intervention. To allow this broad and cursory evaluation to take place it is important to have the first visit carried out by:

- a diverse team covering multiple disciplines, and to ensure team coherence prior to interacting with the stakeholders; **OR**
- one or two experienced senior team members who have substantial understanding of numerous subject areas relating to smallholder irrigation planning.

The actors that need to be visited are usually numerous and could include farmers' organisations, co-operatives, specialized services, informal groups / study clubs, agro-industries, public services (Government Departments; Local Municipalities, District Municipalities, Agriculture, Land Affairs, Water Affairs), extension and training institutions, agricultural press and information services, policy units and formal and informal networks of many kinds.

3.2.3 Rapid Appraisal of Agricultural Knowledge Systems

A number of windows and tools within the **RAAKS** (Rapid Appraisal of Agricultural Knowledge Systems) framework are useful at **both Stage 1 and at Stage 2** (Salomon, 1997). A few are listed briefly below:

- Problem definition exercise; generation of a rich picture around the problem statement.
- Identifying relevant actors; generation of a general list of system actors and their relative importance.
- Actor objective exercise; tracing diversity in mission statements, objectives, agendas, activities and outcomes of stakeholders.
- Environmental diagnosis; actors and factors that influence the performance of the system.
- Impact, actor and integration analysis; traces achievement of goals/outputs, and linkages between actors. It assesses the impact of the current system on the outputs listed.
- Prime mover analysis and basic configurations; Analyses the patterns of relationships between important stakeholders and what sorts of co-ordination mechanisms occur.

3.2.4 Fatal Flaw Assessment

The term "fatal flaw" is taken from environmental impact assessments and in this context means that an element of critical importance to the success of the future intervention is fundamentally flawed.

There are a number of international checklists available (Crosby, 2000; Field, 1998) that summarise the key elements pertaining to the future of the irrigation development. While these are useful in highlighting the

range of issues that need to be considered in a feasibility evaluation, they are excessively detailed for the purpose of a fatal flaw evaluation and a simple ICON checklist was designed.

In addition to evaluating the availability of key physical resources (soil, water, climate, markets, willingness etc.), issues and themes that “pop out of the woodwork” are of particular interest. These can be added to the list as appropriate.

Two examples of the checklists that were developed after the Stage 1 evaluations are shown in Table 2.1 and 2.2 overleaf. The second of the two schemes has not been named due to the political tensions that exist and are subject to other processes at the time of writing, but illustrate the value of the Stage 1 evaluation in deciding on the appropriateness of further consultative planning at a scheme.

Figure 2.1: Example of Stage 1 Checklist (Zanyoke Irrigation Scheme, Eastern Cape)

Water availability	✓	Sandile Dam. Hydrology review to confirm availability, but understanding is that Sandile is under-utilised.
Practicable water supply	?	Wolf River sub-component would require pumping. Kama Furrow sub-component is currently pumped from the Keiskamma River and has the option to be connected by gravity to the main of Zanyokwe scheme.
Land tenure issues	✓	Border Rural Committee is busy with a title adjustment process to be completed in 2004. There seem to be no major land tenure issues on Kama Furrow and Wolf River. Land holding is a mixture of quitrent, individual leased and also Trust leased land.
Irrigable soils	✓	Soils are well drained, medium textured with good irrigation potential. Kama Furrow = 60 ha and Wolf River estimated at 12 ha.
Agricultural knowledge and initiative	✓	There are active commercially oriented farmers on Zanyokwe who provide a reasonably skilled core around which newer farmers can draw on. The current irrigated activity at provides a positive basis for revitalisation and possibly expansion. The proximity of Fort Cox agricultural college has potential benefits if linkages are improved.
Financial and management ability	✓	At Kama Furrow, four farmers indicated that they have covered unpaid ESKOM bills on behalf of the other five farmers who are less capable. Some financial capability is thus evident. Pumping costs are a threat to sustainability (WRC 98).
Willingness to participate	✓	There is a positive intent for the scheme revitalisation and possible extension to proceed.
Farmer organisations	✓	Ownership is vested in the Zanyokwe Agric. Trust. Each village has a Farmer's Association and a process is in place to transform these into Co-ops. Tractor Association for mechanisation. WUA is in process but not active.
Labour availability	✓	Readily available. Skills assessment (2001) shows agric and construction skills. Lack of business skills but sense that farmer's have initiative at Zanyokwe.
Market potential	✓	Markets of Alice, King Williams Town and East London are all accessible. Current sale mechanism is direct from land. Need for quality improvement, substantial scope for improvement of linkages, info transfer, and possibly packaging.

Legend: ***✓= OK ? = uncertainty*** ***X = fatal flaw***

THIS DECISION ⇨ Yes, *Proceed to Stage 2.*
No fatal flaws.

Figure 2.2: Example of Stage 1 Checklist ("Notnamed" Irrigation Scheme, Eastern Cape)

Water availability	✓	"Notnamed" Dam, water available under current scheme utilization. Historically, when scheme fully operational, water resource was periodically stressed and rationed. No limitation to revitalisation, but may limit planned extension.
Practicable water supply	✓	Gravity supply to leidams. Furrows infield or pumped to pivots on sub-section.
Land tenure issues	✓	There does not appear to be any land conflict on Section 6, other than both "Notnamed 1" Trust and "Notnamed 2" Trust claim to have all with PTO's behind them, but do not formally discuss issues due to acute political differences.
Irrigable soils	✓	Portions of impeded drainage, and evidence of shallow soils (300mm) from recent augering at new centre pivot. Irri extension of some 500ha in addition to revitalisation of scheme a possibility.
Agricultural knowledge and initiative	**?**	Food gardens seem to be the only area of sustainable activity. Other activity on Section 6 is largely donated by outside agencies. There are examples of productivity on other Sections (Farm Africa) with some successful independent commercially oriented farmers.
Financial and management ability	**?**	The multiple and confusing interventions of a large number of "outside" agencies, coupled with the current low levels of farming activity from "Notnamed" residents themselves, raises major concerns.
Willingness to participate	**X**	The impression is that participant farmers (i.e. those with PTO's) are marginalised by existing "representative structures" (i.e. the 2 Trusts). The lack of representation makes this item difficult to assess without more detailed interaction with farmers. Dependency precedent appears to be a major constraint to future intervention.
Farmer organisations	**X**	Two main institutional structures are in conflict. Notnamed Trust 1 (is also the WUA) and Notnamed Trust 2 is linked to Tribal Authority. Inability to address differences is serious. Attempts by outside political forces to mediate fruitless to date. Representation of land holders questionable. No AGM for 5 years of Scheme Trust and WUA.
Labor availability	✓	High unemployment and poverty. Labour likely to be available.
Market potential	✓	Major towns in district accessible with substantial market. Distance of concern. Cannery option is nearby – approximately 80kms distant. Opportunity exists for niche crops (oils), contract farming (cotton) and food production for food security (low-cost flood irrigation makes lower return options more reasonable).

Legend: ***✓= OK ? = uncertainty*** ***X = fatal flaw***

THIS DECISION ⇨ NO. *Participatory planning not suitable. Need to resolve critical political differences* ***prior to*** *consultative planning.*

4 STAGE 2: CONSULTATIVE PLANNING – OPPORTUNITIES AND CONSTRAINTS

4.1 Guidelines

4.1.1 Open minds

The stages of revitalisation planning cannot be separated strictly. There is a need for an iterative approach wherein similar themes can be explored from different perspectives, using different methods with different groups of stakeholders throughout the whole process.

An open mind is fundamental, both in terms of using the framework of the ICON approach and in how the information obtained is structured and processed. The formulation of the intervention concept is one which is initially broad, even disconcertingly undefined, but then narrows as the "reality checking" information is brought to bear, as if progressing down the defining limits of a narrowing V, the endpoint being the conceptualised development project (Van der Ploeg, 2003, paraphrased).

Stage 2 provides an in-depth focus on the community itself and the relationships and interactions that directly affect the community. This is within an understanding that a community is a diverse grouping of stakeholders and actors in and of itself. Again the principles of setting of boundaries, recognition of diversity and full community participation are critical.

4.1.2 Information Categories Covered

Broadly these include the following:

- Baseline of livelihoods of community members; including livelihood strategies, outcomes, vulnerabilities, recourses, institutions and policies.
- Baseline of farming activities; including farming systems, inputs, costs, income, marketing avenues, irrigation, training needs, constraints and future plans.
- Farmers' perceptions on cropping systems, marketing, management options.
- Analysis of existing land tenure practices and exploration of alternatives to promote a land-leasing market
- Exploration of food security needs, and clarification of the aspirations of scheme irrigators, and adjacent role players with respect to

commercial agri-business vs the need for food security (achievable to a large extent in homestead gardens, (Minkley (2003)).

- Generation and analysis of ideas for sustainability of schemes in their present form and potential changes needed.
- Further analysis of stakeholders and actors involved in the system.

4.1.3 A Case for Separation: Food Security and Commercial Agri-business

There is convincing South African research (Minkley et al., 2003) which shows that many people in rural areas, both with access to irrigated plots, and without, simply want food security and have no desire to be commercial farmers. The implicit financial risk and committed lifestyle that goes with commercial farming is not attractive.

Minkley goes further, and argues that any revitalisation of rural agriculture must necessarily start in homestead gardens (including small livestock), where the locus of control is small, strong and manageable with low financial investments and a substantially lower risk and consequences of failure (paraphrased).

In a complementary vein, The Water for Food Movement (2004) promotes rainwater harvesting strategies and deep trench gardening methods, and has demonstrated that high net returns are realistic and sustainable from intensive home food gardens.

Chancellor (2003) also reinforces the case for treating food security and commercial agri-business separately, and argues for different strategies linked to the two components, given the fundamentally different motivational forces, risk levels and farming styles that go with these.

4.1.4 Unlikely Partners: Food Gardens and a Land-Leasing Market

In the ICON approach, it proposed that there is a link between the above debate (food-security strategies vs commercialised agriculture initiatives on-scheme), and the opportunities to promote a land-leasing market.

It is postulated, but not yet quantified in this research, that one of the many reasons that people find it difficult to enter into lease agreements, is the desire and often the urgent need to grow food for home consumption. Other reasons are linked to fear of losing land, cultural beliefs, family pride about farming capability (Manona, 2004) amongst others. Providing for this basic need through the promotion of intensive home food gardens as part of the mix of strategies that forms the intervention (see example of Water for Food Movement as one of many successful cases), has potential to unlock one of the key constraints to promoting a land-leasing market.

Intensive homestead food garden initiatives (either water harvesting, or by piped supply as part of the infrastructure development) need to be complemented with parallel land-leasing promotion activities, which define plots of land by a GPS mapping process, and formalise simple lease agreements to stimulate the land market (Manona, 2004).

This combination of home-garden and land-leasing interventions has potential to improve access to larger portions of land, for those who do want to farm commercially on schemes, and have the skill and financial capability. Contrary to the findings of Minkley (2003) where land tenure was not found to limit agricultural production, it is expected that the opportunity to increase land farmed under irrigation, to more than the 1 or 2 hectares each, significantly improves the financial sustainability of the individual irrigation farmer.

The reality of very low to modest net returns under irrigation (e.g. Cotton approximately R2 500 – R4 400/ha/annum, mixed vegetable production with a range of R12 000/ha/annum to R16 000/ha/annum, see ARCUS GIBB, 2004) and the need for a minimum individual income to justify the effort and risk of farming means that land access needs to be substantial.

For extensive, low return farming such as cotton, this probably needs to be in excess of 10 ha per farmer, while with higher value horticultural crops, a minimum of 2 ha per farmer may provide sufficient average returns to justify ongoing effort. Further research is needed to justify this argument and is currently underway as part of this WRC Project.

The ICON approach does however build on these presuppositions, and brings the concepts of food security, agri-business and land-leasing consciously into the arena of discussion with participants. The role of the team is encouraged to be both facilitative and also gently and respectfully manipulative, to challenge perceptions that are present. Veldwisch (2004) uses the term “facipulative” to describe this balance of facilitation and the challenging pressure that can be brought to bear on beliefs that may not stand up to gently probing self-critique.

4.1.5 Multi-Disciplinary Team Interaction and Information Exchange

A team with a range of professional expertise and orientation is crucial for this stage. The team needs to have all the skills and interests that the project is likely to need to explore and face in the community situations.

The core of this team is **facilitation-focussed professionals** within the general agricultural field. The general knowledge of this team is **supplemented by specialists** in complementary fields (typically engineering, agronomy and agricultural economics), who make a quick (and cost effective) visit to assist in the concept definition.

At least two main facilitators are required to provide a balance of gender and local language expertise. Co–facilitators help in the workshop settings in the group exercises and also record these. They also assist in conducting individual interviews.

It is cost effective and practical to use students in the development or agriculture field of study, or interested youth from the area as co-facilitators. English literacy and a high level of interest in people are prerequisites. The whole team and the co-facilitators need to have an introductory training session into the work to be done, what is expected and the methodologies and methods to be used. This training session will take 2-5 days depending on scheme size.

4.1.6 Planning and debriefing

Pre-planning of the Stage 2 intervention is of central importance. The whole team needs to think through and discuss likely issues based on the findings from Stage 1, prior to going into the field. This will allow them to prepare some of the engineering, cropping, marketing information that they might need in the iterative planning process.

Debriefing in the evenings during the planning process is essential and leads to a chaotic but rapid learning in practise. The dynamic (often fiery) interaction between the facilitators (i.e. the generalist agricultural planners interacting with the community) and the visiting “expert team” who spend just one day on site, is key to the approach.

Four to five days at one stretch is about the most that the group of facilitators can manage such an intensive process and intervals need to be planned to prevent saturation where multiple schemes are part of the project.

4.2 Stage 2 Approach

4.2.1 Consultative Planning – Opportunities and Constraints

The relevant social actors are identified and named, diversity is traced, environmental diagnosis is carried out, the current positive activities and trends are noted, constraints and opportunities are identified and interactive planning is undertaken.

This is basically a **soft-systems multiple-perspective way** of analysing a complex environment and helping stakeholders to understand their role within that complexity.

The process is consciously **non-deterministic** (Bronfenbrenner's Theory of Ecological Development as described by Hook (2002)) and is set in a workshop mode with all of the different stakeholders involved. Information collection methods, while conventional, are used flexibly and in response to the day-to-day dynamics of the visit and vary between schemes.

The principle objective is to feed information into the consultation process, thereby informing the participants of the real implications of lines of thought about how the future development of the scheme and surrounds might proceed. This allows consideration of future options by the participants, but in an informed manner, whereby **options begin to crystallise in the bounds of reality and practicality**.

The primary role of the team is to **engage in a listening manner** but to **consistently feed information** on the engineering / soils / market / financial possibilities, thus allowing the "conceptualisation of the future intervention" to be grounded in the participants reality (not the consultants) but also in the constraints of resource, agri-production system, institutional and financial reality.

4.2.2 Organising the Stage 2 Fieldwork

- Community meetings should not be arranged over the phone, or by letter only, but the community needs to be visited in person and logistics discussed. Issues to include are the venue, time of meetings, meals and contacting of community members. Some indications of stakeholders and their relationships are obtained.

- Potential people to interview are selected from the workshops themselves. This could be a challenging process if there is conflict in the community, but it is crucial for the community to hold and guide this process, rather than it being driven by the team of outsiders. Many unforeseen complications can be avoided in this way.

- One or two people will need to be responsible for the overall Stage 2 process and make decisions about what is to be done when the unexpected happens – which is inevitable. It will be necessary to continually make judgement calls about which exercises to prioritise, which discussions to allow, when to steer back to the main themes under discussion and where to place the boundaries and so on.

4.2.3 Useful Methodological Tools

Rapid Appraisal of Agricultural Knowledge Systems

The RAAKs methodologies listed in Stage 1 have direct relevance to the process of Stage 2 and information is gathered within this framework along the same lines as described in Section 3 but in greater detail.

Participatory Irrigation Planning (PIP) Methodologies

Participatory Irrigation Planning (PIP) methodologies, such as the "Bussing method", the SAPFACT method and the "National Geographic Method" (Crosby et. al., 2000) may be useful and can be used complete or in parts as appropriate as part of the mix of approaches that ICON presents.

The ICON approach goes further than the overview of PIP approaches provided by Crosby et al. in that ICON describes in detail the information gathering process, consultative methods and the iterative planning approach that an intervening agent can use.

A key element of ICON, taken from Crosby et al. is the Sondeo Approach, which is the short duration but carefully timed input of "external experts" to feed information into the participatory planning process.

The "Pre-Development Survey" methodology developed by J. Adendorff and used in the Limpopo Revitalisation of Smallholder Irrigation Schemes Project is described in detail by Botha (2004). This has close similarities to the consultative methods that have evolved into the ICON approach (independently), though they draw on different theoretical frameworks.

The main difference is that ICON consciously limits expectations (does not assume funded intervention will follow) while the Pre-Development Survey is part of a funded intervention process, and thus does not need the short timelines, or the actively limited expectations that are demanded by a feasibility study.

In addition to the difference in application, ICON gathers specific information on farmer typologies, livelihoods, land issues and potential initiatives (such as household food production) on the scheme periphery that are not covered by the Pre-Development Survey approach.

4.2.4 Participatory Methodologies and Sustainable Livelihoods

A mix of well-known Participatory Rural Appraisal (PRA) (Salomon, 1998) and Sustainable Livelihoods (Kruger, 2003) exercises and methods is proposed for use in ICON. These methods include:

- village and resource mapping,
- time lines and time trends,
- venn diagrams,
- transect walks,
- past- present and future analysis (including constraints and possible solutions),
- semi-structured interviewing,
- focus group discussions and
- formal questionnaire surveys.

PRA is designed to allow communities to analyse their own complex situation in a visual and oral way that they can own. It is in essence not an information gathering technique, although it is easy to use it extractively.

Sustainable Livelihoods is a more recent framework designed to build a more inclusive picture of peoples' situations; understanding that creating a livelihood as a poor person is a complex and multi-faceted activity. It also changes and is affected by unforeseen circumstances, sometimes with alarming rapidity. The framework provides a way to analyse resilience and the combination of "best bet options" likely to have a positive impact.

Below, some explanation is given of some of the themes and issues that will need to be explored in a community situation.

4.2.5 Estimating a Baseline of Farmers' Livelihoods

Livelihoods Workshop

A workshop setting, run along PRA lines is potentially the most efficient to obtain baseline livelihoods information. A detailed program for the workshop is presented in Appendix 1 and a general overview below. Themes that give a good livelihoods overview include:

- vulnerabilities,
- livelihood resources,
- policies,
- institution and processes,
- livelihood strategies,
- livelihood outcomes.

This can work for smaller and larger schemes: A general rule of thumb is a workshop of around 30 people representing around 250-300 people.

Visual exercises (low literacy need) are best used for identifying who the community is, what resources they have, what their issues are, and an analysis of issues such as sources of income, cropping patterns, labour availability, health issues, etc. This need to be well planned and the focus areas for the PRA need to be well defined with the team beforehand.

- A venue and time that will suit participant's needs to be set up (e.g. Maize harvesting season, pension days etc. are limiting).
- Need to clearly identify a return date for reporting back and for future action that is part of the planning process.
- Catering needs to be organised as this encourages attendance – but lunch if it is substantial, might be kept until later in the day (say 2-3pm) and continue after that with individual interviews – as participation tends to tail off significantly after lunch).

It is possible to do a PRA exercise like this in 2 days – generally there will be a tailing off in participation; so potentially leave the listing of needs or discussion on their farming practices *per se* etc for the second day to encourage attendance.

Livelihoods and Semi-structured Interviews

The workshop needs to be augmented by personal semi-structured interviews with individuals; a few (2-3) should be chosen from each different community grouping. Detailed questionnaire's that were used are presented in Appendix 2. The process of individual interviews needs to be introduced through the traditional structures, committees, extension officers etc. to ensure the purpose is well understood.

Topics to be covered in the semi-structured interview will include: map of families, and what resources exist in the village (water, electricity, gardens, clinics, churches, roads etc, distance to fields, size of fields, ownership, organisations and committees, farmer groups, other stakeholders).

One person can do at most 5 interviews in a day and again one wants a minimum of 10%, preferably 15% of the community as a sample to get sufficient representation.

On larger schemes where one is potentially dealing with around 2 000 prospective participants it would be difficult to interview 200 people

(requiring 15-20 co-facilitators taking 4-5 days). In these situations grouping would be appropriate with 5-10 households placed in each group. This gives an overall number of 50 interviews which is more appropriate to the nature of the feasibility evaluation.

Two options for selecting community groupings are:

- Either run a wealth ranking exercise with a few key informants; they will assist with selection of criteria and grouping individuals they know into 3-4 wealth based rankings.
- Or use one of the many methodologies for establishing farmer typologies (Perret, 2002; Merle et al., 2000) – this can be started in a workshop situation, which will identify the potential individual interviewees, who will provide more detailed information.

4.2.6 Farmers' Perceptions

Focus group discussions were used to obtain information on cropping systems, marketing and management options.

Here individuals who have a particular interest and some experience of the topic to be discussed, were selected from previous exercises, PRA and individual interviewing. The focus group was run in a semi-formal way by leading discussions through thematic areas, usually with around 10-15 people. It generates a substantial amount of information. It is important to ensure these discussions are not dominated by officials and authority figures from the community, i.e. average villagers are specifically selected and the more **dominant people actively excluded at times**.

One can include irrigation methods here, profit potential per unit of farming, marketing strategies and possibilities, cropping options, cattle management, water management among other subject areas.

4.2.7 Farmer's needs for training, inputs and credit

PRA in workshop style is used, and information is obtained from individual interviews. The process must tie in the needs with the particular group's or individual's vision or goal and with what they are presently doing. This minimises the "shopping list syndrome" which in some instances in the proofing of the ICON methodology on the 10 Eastern Cape schemes, have even included airports.

Farmer's needs are best evaluated in a session of its own, rather than done with the baseline survey, as it is not a standard needs exercise. It can go together with an exercise of identifying skills and resources

already present in the community, or can be tagged onto the previous two processes if need be.

4.2.8 Generation of Ideas from Stakeholders Regarding Revitalization Options

RAAKS is useful in generating ideas for revitalisation, and for investigating marketing options in the region for the scheme.

> *The question would be: Are irrigation schemes sustainable in the present form and if not how can we change that?*

Exercises could include: identifying relevant social actors, tracing diversity, environmental diagnosis, redefining the problem situation, analysis of constraints and opportunities and action planning. This is set in workshop mode, with all different actors involved.

It is an efficient method of exchanging knowledge in complex situations and makes problems understandable. It needs a high level of facilitator proficiency and assumes a reasonably high level of participant literacy. **It is primarily an analysis of relationships and consequent action.**

A process outline is provided in Appendix 1 for the workshops designed for this study and is meant to be an example of how processes can be run, rather than a prescription of what is to be included.

5 STAGE 3 – FEASIBILITY PLANNING AND REPORT BACKS

5.1 Detailed intervention planning – Feedback – Iteration

The third and final planning stage includes the preliminary design of the proposed intervention covering engineering design, agricultural systems planning, definition of marketing strategies and an economic and financial evaluation. The analysis highlights **gaps of information and additional visits** are then undertaken to the scheme locations to collect or verify missing information. This includes technical data collection and also usually requires additional meetings and discussions on adjusted future scenarios that have been conceptualised in Stage 2.

Once scenarios or possible options have been put together and outline costs and profitability have been evaluated, these are **reported back to communities** and stakeholders that have been drawn into the process. This is a process of verification of the participant's ideas, now quantified, and includes a limited analysis by the group prior to completion of the feasibility report.

5.2 Scenarios for Development

The conceptual planning process of Stage 2 concludes with one, two or three development scenarios, arrived at jointly with the visiting team and the participants of group workshops and individual interviews. The concepts will not be neatly or fully defined after the intense, somewhat chaotic fieldwork of Stage 2 but should at this point be conceptually outlined with clarity and sensibility. These scenarios for development will include:

- Planned cropping patterns,
- Farmer training requirements,
- Outline marketing plans and a range of possible financial returns,
- Engineering re-design and rehabilitation opportunities,
- Institutional and organisational development needs,
- Land-leasing possibilities and possibilities for increased farm sizes,
- Possible partnerships with commercial agri-business entities (e.g. Cotton, canneries),
- Water apportionment strategies and re-organisation at scheme level,

- Funding requirements and minimum farmer incomes for financial sustainability,
- Food security projects linked to homestead gardening initiatives, rainwater harvesting,
- Possibilities for expansion of the irrigation development,
- Agri-processing initiatives (e.g. maize hulling and milling),
- Phasing of initiatives and implications of timelines.

and potentially many more components. Definition and quantification of these concepts is the task of Stage 3, followed by a report-back to the community and verification of financial and operational findings (both practicalities and costs).

5.3 Technical and Financial Evaluation

The technical evaluation is conducted using conventional irrigation engineering and financial evaluation techniques (Gittinger, 1982) at a level of detail appropriate to a feasibility study. This is done in parallel to, and part of the iterative (ICON) planning process in Stage 2 (tentatively) and Stage 3 (in more detail).

These evaluations are not primarily consultative in nature, but must remain pragmatic and rooted in the reality of the starting point of the scheme development, farmer capability and strengthening of collective irrigator action. This is particularly true in the case of:

- potential growth rates in farmer proficiency and consequently profitability,
- farmer capability and likely responsiveness to the dynamic nature of market opportunities and subsequent exploitation thereof,
- target yields should be based on researched smallholder reality not on theoretically achievable yields in the mainstream commercial sector (i.e. COMBUD is generally inappropriate as an agricultural economic database),
- reduced crop water requirements that result from lower yields (Bennie, date unknown) can make a significant reduction in capital investment costs or water allocation changes resulting from reduced size of the bulk water and infield irrigation system design.

These technical and financial aspects form a critical part of the iterative-consultative planning process and the recommended stance is one which provides a realistic evaluation framework, in regard to the above points. More detail on these aspects is forthcoming in future project papers.

As a general rule, accuracy of 15 – 25% would be targeted for determining costs and benefits related to the planned scenarios feasibility and pre-feasibility stage. The technical subject focus areas of interest would include:

- soils,
- hydrology,
- agronomy,
- crop water requirements,
- engineering infrastructure and the need for re-design to facilitate better water management by farmer groups,
- market research and quantification,
- agricultural economics data collection,
- evaluation of economic multipliers from the income shock to the economy.

The quantitative information obtained from these parallel studies is used to evaluate the financial viability (from the farmer's perspective) and the economic viability from the funder's perspective (often Government).

The calculated financial results (capital costs, subsidies, operational costs, profitability) are then summarised for each of the development options, and report-back sessions are held with the communities.

5.4 Final Report Back Sessions

5.4.1 Clarity on What To Report back to the Community

The report-back session to the community is usually a half-day meeting to:

- Ratify the information received from community members. Summary information is presented on livelihoods, needs and opportunities as obtained through the consultation process.
- Present the proposed concept development options and scenarios for comment and discussion, after these have necessarily been modified through the engineering, agri-economics and financial quantification process.

- Present the tentative capital and operational costs and the implications of subsidies on these costs.
- Discuss the likelihood of funding being secured and the implications of that on preferences that the group may have on some of the scenarios (e.g. may wish to eliminate those with excessive costs).
- Present the financial evaluation, from the perspective of the farmer's "bank account", in terms of cash flows, investment required, net returns and overall profitability.
- Discuss the risk that is related to the options for development, in terms of financial sustainability and possible annual variations, and the implications of market dependency on agri-system design (Van der Ploeg, 2003).

The report back sessions need to be planned so that the information that is presented is well thought out and is clear, prior to the meeting. There is potential at this stage to generate a situation of confusion as the financial reality of some of the options becomes better understood, in terms of capital investment required, commitment of time and labour, cash flow reality, operational costs and sometimes marginal net returns. The complex background to the financial evaluation must be patiently explained to the satisfaction of the gathering, thus allowing the ratification process to have validity and that adds value to the final amendments of the plan.

5.4.2 Contradictions of Feasibility Level Planning and Ownership of Process

Participation is a central tenet of the ICON approach, along with ownership of the concepts and ideas that emerge from the process. However, there is an inherent contradiction when planning at feasibility level given the need to limit expectations because future funding for implementation is uncertain. In the context of the feasibility process, real ownership which is borne out of a detailed, committing, longer process would be irresponsible unless future funding were certain.

The ICON approach can readily be extended in time and detail to achieve ownership. However, at feasibility stage the development process as a whole has not reached a point where there can be an expectation of commitment and a real sense of ownership from the community. All that is possible is an indication of acceptance of the development concept plans and outline costs that have been presented to the community and will be submitted on their behalf to the funding agent who has requested the study.

6 ASSESSMENT OF THE ICON APPROACH

6.1 Political Forces and Localised Planning

The initial Stage 1 investigation in some cases provided a positive picture for revitalisation of an irrigation scheme, albeit with a proviso that technical and business skill levels of farmers are low. It was only during the detailed planning process of Stage 2, with more in-depth analysis through interviewing a number of stakeholders, some expected and some "opportunistic", that the issue of the social construction of knowledge emerged as a primary point of conflict in the system.

A number of different actors in some of the schemes were working from their own, independent positions, with their own understanding and agendas. Actions and intent were not coordinated.

Mantusini scheme close to Port St Johns is discussed further here to illustrate. At Mantusini, these stakeholders include the Manutsini Agricultural Co-operative, the Port St Johns Department of Agriculture extension officials, the Co-ordinating Office of the MEC, the Port St Johns Local Municipality, the OR Tambo District Municipality, Ntinga Development Agency, the Department of Water Affairs and the consultant team from ARCUS GIBB (field proofing the ICON approach).

All of these actors and presumably some others who are still not well identified in the system, have been working within small conglomerates of relationships, knowing of each other, but not working with each other. This has led to misunderstandings in the assessment of renewed irrigation potential for Mantusini on the part of the community and the planning team, and is likely still to cause confusion and conflict.

A situation of rapport between these organisations to clarify their missions, agendas, activities and outcomes would ease the situation and lead to an innovation process acceptable to all, but this has so-far proved impossible for a range of political reasons not fully understood by the research team.

Regardless of the inability to achieve coordinated action, there is clearly a need to jointly appraise constraints and opportunities and provide a social intervention that can lead to a joint definition of useful strategies.

Where multiple actors are engaging with a scheme in an uncoordinated manner as is the case on many schemes nationally, with the possible exception of Limpopo Province, given the major RESIS initiative. Community consultations and planning processes as described in the ICON approach are not alone sufficient to address the political forces that

have the power to influence outcomes far more significantly than the localised planning process.

6.2 Learnings from the Field Proofing of the ICON Approach

The opportunity to develop and apply a consultative planning approach on ten irrigation schemes over a 1 year period on a consultancy assignment, has led to significant learnings of the approach and modifications in its application. Some of these are listed below.

1. The workshop process design for mass meetings used for this study was found to be over ambitious when limited to one day. This restriction was due to the limited resources, budget and focus within the team that did not allow for a two-day process. It is recommended that a two day workshop process is used.

2. On some of the schemes, the community and resource mapping exercises were started, but did not get further than the initial stages of mapping. The mapping process helped the groups to focus on the history and present situation of the community and to define all stakeholders that should be interviewed further. Further mapping was not found to be useful or necessary but the early mapping was found to be a catalyst to the information gathering process.

3. In only a few instances was the relationship mapping (venn diagram) in the community possible, as well as a constraints and solution analysis. It should be used with flexibility and not as part of a recipe.

4. Transect walks were found to be very important in all cases.

5. Seasonality analysis, crop matrices, training and information needs and visioning (past-present and future analysis) were not used as exercises.

6. Focus group discussions were also not used much.

7. The information that the team did gather from the exercises did manage to provide a good picture of the overall community situation, the stakeholder and interest groups in the community, the livelihoods baseline of community members, training needs, development requests and some analysis of relationships within and around the community.

8. Topics of mechanisation, input supplies and marketing were not well covered, possible due to limited knowledge of options on the part of

participants themselves. Additional technical on these aspects input (additional to that provided) from the team was possibly required.

9. Provision of food at meetings was important in terms of community expectations. In a few cases, where lunches were not provided this infringed on the information gathering and analysis process.

10. Key informants could have played a more important role, if it was possible for the team members to be more flexible in their questioning and interactions. The formal questionnaire available was often not that appropriate for these individuals, as the depth of information they *volunteered* far outweighed that asked for in the questionnaire. Here facilitators skilled in Semi Structured Interviewing (SSI) are needed to keep the flow of the discussion going and to record the valuable detail *offered* by the key informant.

11. It was not possible to train the (matric and diploma level) co-facilitators in SSI in the 2-3 days set aside for their training. There was a general attitude that they needed to be told *exactly* what to do, and were unable or unprepared to deviate from their briefs. It would have been preferable to use co-facilitators with agricultural and/or development experience in the SSI's. Additional training or selection of co-facilitators with this experience would be preferable and was found to be important.

12. The return of the consultant's planning team to the community was appreciated in all cases. It was seen as a commitment by the outsiders to the development needs of the community. It served to create a strong level of initial trust between the community members and the outsiders.

13. The team has no control over the implementation phase that will follow the ICON planning process. This can be seen as a **major shortcoming of separating feasibility studies and the implementation of projects**. It would be much preferred if a financial commitment could be made to engage with the community, but that the level of engagement would be defined in the course of the study. This approach of funding commitment prior to engagement with communities has been used in the Limpopo RESIS program (Revitalisation of Smallholder Irrigation Schemes). Committed funding prior to the planning process has a significant advantage avoiding a disjointed 2 phase process, in which the detailed implementation may well be done by another team of consultants or initiators, with substantial trust and continuity issues.

14. The ICON information gathering and interactive planning processes were found to have worked well in terms of engaging different stakeholders in the community and dealing with issues arising out of

conversations with community members. A reasonably accurate picture of the baseline situation and the realistic options for future development were obtained using the approach.

15. The proposed development plan that emerged from the ICON process, including the concept design, the estimated investment costs, the financial returns, farmer learnership strategies, agri-business plans etc. are considered to represent a thorough combination of the best skills of both the external subject specialists and the local participants. The ICON planning process is worth replicating and using in similar scheme revitalisation initiatives, at feasibility planning level.

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APPENDIX 1: Process Outline for Pre-feasibility Irrigation Scheme Assessment Workshops and Interviews

Introduction

Workshops should be able to accommodate between 10-50 people with ease. They are designed to run over 2 consecutive days; the first day to deal with more general socio-economic issues and the second to deal with the vision, issues, needs (including training) and community structures in the area.

It is assumed that workshops will start around 10h00 and continue until 15h30. Lunch needs to be provided by the facilitation team.

Household interviews will be conducted after the workshops, or instead of the workshops in areas where bringing people together is difficult or inappropriate. These will continue for another 2 days; with 4-6 interviewers each conducting 4-6 interviews per day. Care will be taken (if possible) to select interviewees from a range of target groups within the community; to include both the poorest and most well off sectors.

Workshop Outline

DAY 1

1.	**BACKGROUND**: Introduction by the facilitation team about the purpose of the workshop, duration and broad outline. Set a few house-rules (timing, participation, questions lunch etc) *Introduced by main facilitator – deal with queries and expectations upfront.*	**30 min** *1 fac*
2.	**INTRODUCTIONS**: Individual introductions: My names is ? and I bring ? (knowledge or a skill) and I need to learn / know ? Continue around the "circle" and each person needs to say his / her name and he / she brings, before talking about themselves. *This information is to be carefully recorded on flipcharts and transcribed (for later use in training and skills assessments*	**1 hour** *1 fac* *1 rec* *flipchart pens*
3.	**GENERAL QUESTIONS**: These will be posed to the whole group. People will respond individually, or by show of 1. Where do we live? (List of villages/sections) Are all represented?	**45 min**

2. What basic services are available in each village? (water, phones, electricity, post, roads, clinics, shops, schools) *1 rec flipchart*
3. Age distribution (20-29 / 30-39 / 40-49 / 50-59 / 60-69)
4. Educational level (no school / primary / high school / more) *2 rec for groups*
5. Reading and writing (isiXhosa and English)
6. Men and women (*head count)*
7. Specific interest groups (e.g. community gardens, farmers' associations, church groups, youth, savings clubs)

The idea is for the facilitation team to gauge the distribution and interest groups, to assist in small group formation later on, potentially according to village level, or interest group level, or age. Also to spread the people that can read and write to assist with recording.

TIME LINES AND VILLAGE MAPS - TIME: 1.5 hours

Main facilitator to be in charge of group formation, with assistance from co-facilitators.

Time lines; 1 *group, incl older people or people who have been in the area for a long time (7-8)* *1 fac, 1 recorder* *- Loose cards to be displayed on the ground*	**Village maps**: *Depends on number of villages / section represented* *1 fac, per group, also to record* • *On flipcharts – put a few together to make it large enough – ensure participation and use group members to write – not just one, rotate them* • *Record also discussion between the group members as background to their map.*
Significant events; social, political, natural, financial and human. Then discuss changes and trends in the events- stresses and shocks Ownership and how it has changed and the consequences. Economic situation and change. Farming practices and change. What is happening in the outside world that is affecting the community?	• Layout of village, fields, grazing, roads, rivers, mountains etc…. • Add in where participants live; home garden, h/h head, size of h/h, who lives around, ownership of livestock (kraals), draft oxen, tractors…. • Add in plots/fields for each participant; size, tenure, distance from home, use • Water; access…. • Add in where inputs and market are (how far away) • Any other features the group would like to use.

LUNCH – 45 minutes

Facilitators need to bring pre-packed food; suggested as appropriate for the first day and or organise with a small group of people to cater. Food can be provided to the catering group early on the second day for them to prepare a nice cooked meal for the participants – someone needs to organise this on day 1. And make sure people are clear who is catering, what they need to provide, e.g. plates, forks, pots, stoves, a place to prepare) and what we will provide (food, fuel, paper plates????) Arrange with them what we will bring.

SEASONALITY AND SOURCES OF INCOME - TIME: 1.5 hours

SEASONALITY DIAGRAMS: 2 different groups (age or sex or diff villages or wealth) of 7-8 people 1 fac and 2 co-facilitators – 1 to rec	**SOURCES OF INCOME MATRIX**: 2 different groups of 7-8 people 1 fac and 2 co-facilitators – 1 to rec
Month-by-month calendar of rainfall and irrigation Activities of men and women Labour need (vs availability) Cash flow (incl. Income from farming) Food availability Health status, stress times	Sources of income (for ea participant, incl. their names) related to amount (% of h/h income), reliability (throughout year 1-12 months or no of times in a year – specify…)

TRANSECT WALK (2 facilitators + 4 key informants)

DAY 2

RECAP – 15 min *1 facilitator*

HISTORY – PRESENT – FUTURE - 2.5 hours

This needs to be discussed specifically with reference to agriculture and irrigation. Initially this will be a plenary discussion.

HISTORY
- What happened
- What you did
- What others did
- Government support
- Constraints

PRESENT
- What is happening now
- What you are doing
- What others are doing
- Government support
- Constraints*

FUTURE
- What you will do
- What you will know/or would like to know^
- What others will do
- Government support

* Break into groups (4 – 5) to brainstorm *1-2fac, 4 co-facilitators* **45 min**
Constraints – list and rank by a show of hands. Start with the most important ones and do an exercise of

- Problems
- Causes
- Possible solutions

^ Break into groups (4-5) to brainstorm *1-2 fac, 4 co-facilitators* **30 min**

- List of information people feel they need (knowledge and skills)
- Rank in terms of importance
- Explore how they will get these

LUNCH - 45 minutes

VENN DIAGRAMS, SERVICES AND CROPS MATRICES

VENN DIAGRAM: 2 groups, interest groups and individuals 1fac, 2 co-fac	**SERVICES MATRIX**: Any…1 group 1 co-fac	**CROPS MATRIX**: 1 group; good farmers 1 fac, 1 co-fac
Who do you (or your group) associate with? How important is each relationship? How good? What is the direction of information flow and type of flow? (Incl here the Water Users" Associations, trusts, Local Council, Dept of Agric, Church groups, traditional leaders etc…)	Services in the community rated against cost, reliability, distance (and any other criteria people use to rate services) (Services include: basic services, input supplies, ploughing services, credit, savings, food, information, extension, irrigation, farming implements	Crops grown rated against; food, income/profit, inputs (what and costs), yields, labour, diseases, suitability to local climate, soils, water, markets, theft, ease of cultivation (Ask farmers what criteria they use to decide which crops they will grow.. use these and add suggestions from the above list)

APPENDIX 2 – Questionnaire Survey

Introduction to Interviewee: Objectives of the Survey, Confidentiality

A request through the Department of Agriculture (DoA) for support in irrigation. A study has now been commissioned through the Irrigation Action Committee (joint committee of DoA and Department of Water Affairs and Forestry) to conduct a pre-feasibility study. This means getting as much detailed information about what is requested and how possible it is. It includes issues of infrastructure, but also about people themselves, what the constraints and possibilities are and peoples' plans. This information will be put together with a draft budget and recommendation for continuation into a feasibility study. Only after that will you know whether the request will be processed by the Government.

This is a slow process and we understand other people have already conducted surveys in this area. We are therefore specifically interested in plans for the future and specific activities at the moment.

HOUSEHOLD SURVEY QUESTIONNAIRE

Name of interviewer.....

Previous interviews ( ), by whom and when .....

Date .....

Village.....

Scheme.....

Ward/group.....

Respondent's name..... Gender ( ) Male/ Female ( )

Name of Head of Household .....

Household Composition

	Age	Gender	Education level (specify) None, read + write, Grade 1-7, 7-12, post school	Main Occupation – details
Head				
Spouse				
Children				
Other (e.g. grand parents, grand children, brothers, sisters)				

1- Male
2- Female

1. Retired (pension/ no pension)
2. Unemployed (never employed/ employed before specify)
3. Full time farmer/ part time farmer
4. Regular/salaried employee
5. Self employed (Specify how and when)
6. School/ pre-school

Have you got other sources of income in the household? (including doing jobs for local people, buying and selling, craft)

If yes, which? (specify) .....

If more than one source of income per household, estimate the contribution of each activity (percentage)

.....

Give a rough indication of overall household income per month or per year.....

Land Tenure

Type of plot 1.Homestead (Water source – eg tap at home, communal tap, borehole spring etc) 2.Irrigated land (fields) (Water source, reliability, quantity, timing) 3.Dry land	Size and number (Hectares, acres, square meters…..)	Tenure system 1.PTO (communal) 2.Freehold 3.Quitrent 4.Lease 5.Other (e.g. share-cropping) (Specify whether written agreements) (Specify time for which tenure has been held)	Fees (For water, for land. Specify how much and to whom)	Ploughing 1.Own tractor (specify whether hire it out, price, average income) 2.Hire tractor, price, 3.Hand tools 4.Employ labour (specify times, number of people and rates)

Cropping System

Crop name and dates of planting (specify the month!) 1 or more plantings/year	Area Planted (ha, square metres, acres…..)	Quantity harvested (Specify unit; tons, kg, bags-size, boxes – size, cobs, bowls –size, bundles – size…)	Quantity sold (Specify unit	Price/Unit	Quantity consumed, bartered or donated – specify which	Market outlet (local, shop, neighbours, hawkers, contractor, other – specify

NOTES: Include also what was grown in the home garden. Show with a (G) in front

a. What is your favourite or main marketing outlet? Why? .....

b. Which crops are grown mainly for family consumption? How much food is produced for the family? E.g. enough for 2,3,4…months, whole year, (specify somehow) .....

.....

c. When is food scarce in your household? Specify the months? .....

d. What problems do you have with crop production in the scheme? .....

.....

Expenditure

Household expenditure

Please provide information about how much you spend on the following items:

Type	R/month	R/year
Groceries		
Fuel (heat, cooking, lighting)		
Educational (fees, uniforms, books…..)		
Clothing		
Medical		
Transport		
Entertainment (tobacco, liquor etc)		
Home (furniture, maintenance…)		
Services (telephone, water…….)		
Interest on loans (non –agric),specify for what the loan was used, and source or loan		
Other (Specify)		

Farm expenditure/production costs

Crop Name	Input type 1.Fertilizer 2.Seeds 3.Herbicides 4.Pesticides 5.Tillage 6.Labour 7.Other	Supplier (Specify) 1.Local shop 2.Store in town 3.Co-operative 4. Individual (friend, neighbour…) 5.Donation	Quantity purchased and used	Cost per unit (specify unit… kg, tons, bags – size……)	Harvesting and marketing costs 1.Labour 2.Transport 3.Other
1.					
2.					
3.					
5.					

Crop Name	Input type 1.Fertilizer 2.Seeds 3.Herbicides 4.Pesticides 5.Tillage 6.Labour 7.Other	Supplier (Specify) 1.Local shop 2.Store in town 3.Co-operative 4. Individual (friend, neighbour…) 5.Donation	Quantity purchased and used	Cost per unit (specify unit… kg, tons, bags – size……)	Harvesting and marketing costs 1.Labour 2.Transport 3.Other
6.					

What problems do you have with input supply? .....

.....

Livestock description

Livestock type	Number currently owned	Number sold and amount per unit	Number slaughtered (meat, ceremonies…)	Number or deaths	Money spent on feed, chemicals, herding, vet…… etc
Cattle					
Goats					
Sheep					
Chickens					
Pigs					
Other					

Please specify products obtained from livestock (e.g., milk, wool, eggs, skins, other) .....

Estimate amount of product sold in the last year and the amount of income generated .....

.....

Where are animals grazing? On the scheme? .....

Grazing system? (herding, camps, none) .....

Problems with livestock? .....

.....

Finances

◊ What farming assets do you own (e.g. tractor, plough, trailer, crop sprayers, cutters, balers, wheelbarrows, spades, forks, hoes, **irrigation equipment,** knapsack sprayer, vehicle, other…) Specify quantities .....

.....

◊ Are you using credit facilities for farming? Please specify source (e.g. money lender, stokvel, financial institution, other) and quantity in Rands .....

.....

◊ Are you managing to pay back the loans? Explain. (Mention all loans separately e.g. Ulimacor 1999, DoA 2002 etc)

.....

◊ Do you have any savings? Please specify how and quantity if possible .....

.....

Water and scheme management

◊ Explain type of irrigation used (not for dryland) (e.g. sprinkles, flood etc .....

◊ Do you experience any problems with irrigation method? Explain .....

.....

◊ Do you experience problems of conflicts about water sharing:? Explain (timing, shortages….) .....

.....

◊ How is the sharing of water managed? Are you involved in any way? What is expected of farmers? .....

.....

◊ Is there a Water Users' Association? What activities/services? .....

.....

◊ In your opinion, if farmers have to pay for irrigation water, who should pay for the services? (everyone, the ones making money, ones who are irrigating, those irrigating a lot, none) .....

◊ How much would you be prepared to pay for the supply of irrigation water? (a given amount/ha/year, or an amount depending on your farm income (e.g. percentage) .....

◊ What other structures or institutions are involved in water management and farming? Specify.....

.....

◊ Any opinion on that? .....

.....

Concluding the interview

What are your major problems as a beneficiary of the scheme?.....

.....

.....

.....

As a member of the community?.....

.....

.....

.....

What training would you require? (what you feel you need to learn about.....

.....

.....

.....

What specific requests do you have for intervention by the Government or other outsiders? Prioritize and explain. .....

.....

.....

.....

Prospects for the future????? (new ideas, farming practices, projects). Include what needs to be done to enhance/ improve your current farming practices, also access to support services, and what you would do differently if resources were available to you .....

.....

.....

.....

.....

Scenarios to be tested: If you had the opportunity to try out something different, what would you do. Give specific examples e.g. *I would plant another 0.5ha of cabbage and also include 0.1ha of tomatoes, because there is still a demand for cabbage and tomatoes are sold at a very high price.*

.....

.....

.....

Appendix E

International Review of Revitalisation Approaches

WATER RESEARCH COMMISSION

WRC Project No. K//5/1463/4 : Principles, Approaches and Guidelines for the Participatory Revitalisation of Smallholder Irrigation Schemes

A Review of Selected East-African Irrigation Revitalisation Approaches in the Context of Irrigation Management Transfer and Integrated Water Resource Management Experiences

CONTENTS

ACRONYMS

AgriBEE	Agricultural Black Economic Empowerment
APPIA	*Amélioration des Performances des Périmètres Irrigués en Afrique (or Improving Irrigation Performance in Africa)*
IMT	Irrigation Management Transfer
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
MAFS	Tanzanian Ministry of Agriculture and Food Security
MOWL	Tanzanian Ministry of Water and Livestock
RBM	River Basin Management
RBMSIIP	River Basin Management and Smallholder Irrigation Improvement Program (World Bank and Tanzanian Government)
WRC	Water Research Commission
WRM	Water Resources Management
SIIP	Small Irrigation Improvement Project (of the RBMSIIP)

1 INTRODUCTION

A review of published information on irrigation revitalisation and rehabilitation shows that these initiatives tend to originate from three different agendas. While there is substantial overlap in the objectives and implementing processes there is a different emphasis on how the planning and implementation work is carried out. The groupings that have become apparent through this review are:

- **River Basin Management Programs** originating from allocation and water efficiency issues. The Rufiji and Pangani basins in Tanzania have been and are subject to major research initiatives, particularly the Usangu plains in the Rufiji basin. The Olifants Basin in Limpopo is a similar case in South Africa.

  This review looks at the major World Bank River Basin Management and Small Irrigation Improvement Program in Tanzania that took place from 1996 to 2004, in the light of reports and published critique. The author of this report was also the Project Leader of the consultant's technical design team in support of the Small Irrigation Improvement component undertaken by the Tanzanian Ministry of Irrigation. The relevance and differences to other approaches is commented on.

- **Scheme Level Interventions** targeting improved irrigation system performance and agricultural productivity. There are a number of project specific interventions and the most recent and relevant of these is the French funded "Improving Irrigation Performance Project" (APPIA – the French acronym is adopted). The core elements and emphasis of this approach are outlined and discussed.

- **Irrigation Management Transfer** originates from asset transfer with a focus on institutional aspects and handover of previously government controlled schemes to local structures. Much has been written on IMT internationally and a substantive review of international IMT experience has been made by the International Water Management Institute Report No. 60 (IWMI, 2002). Other perspectives on IMT and the implications on revitalisation are discussed in the context of the two program case studies in this paper.

2 THE RIVER BASIN MANAGEMENT AND SMALL IRRIGATION IMPROVEMENT PROGRAM (RBMSIIP) – TANZANIA

2.1 Integrated catchment planning and river basin management programs

Governments in East and Southern Africa are increasingly faced with the reality of reduced water availability and conflict between sectors of water users within catchments. Notable examples which have been and are currently subject to concerted research effort are the Usangu Plains in Tanzania and the Olifants River basin in Limpopo Province, South Africa. Water users include irrigation, hydro-power, pastoralists, industry and urban centres all competing for a limited resource.

Water resources management (WRM) at catchment level is of central importance to address these conflicting water demands and provides a rational basis for water allocations to competing sectors on the basis of social and economic good. In the same vein integrated planning, with appropriate cost recovery structures, emphasises efficient water use and efficiency based interventions are a natural result of this starting point in stressed catchments.

The revitalisation of irrigation schemes on River Basin Management (RBM) Programs are thus addressed very much in the broader context of water demands by competing sectors. In many cases, irrigation scheme productivity is addressed alongside efficiency concerns, and broader "revitalisation" issues such as farmer training, institutional reform, farming system linkages, market improvement are also addressed. However, the **emphasis on water efficiency and cross-sectoral allocation** issues for maximum social and economic good remains the prime concern.

2.2 RBMSIIP Program Overview

The World Bank funded RBMSIIP program in Tanzania commenced in 1996 and was active through design and construction phases until 2004. The project arose from the need to manage scarce water resources and conflicting water demands on the two major catchments in the country. Agriculture and hydropower accounted for 99% of all abstractions and importantly, irrigation schemes are located upstream of hydropower dams which makes their water consumption subtractable from hydropower requirements. These developments took place in the years following the liberalisation of Tanzania's economy which saw substantial growth in the important agricultural sector, which accounts for half of the GDP. (World Bank, 2004).

The direct conflict between the two major users and called for a basin management approach. A key motivating factor for the project was the World Bank's Policy on Water Resources Management which called for a more comprehensive approach to WRM and the RBMSIIP was designed accordingly. (World Bank, 2004).

The project had two components and two clear aims, one focussed on River Basin Management with an emphasis on water management and policy and the second on Smallholder Irrigation Improvement with an emphasis on water use efficiency.

- **River Basin Management (RBM):** This component sought to improve the national framework for comprehensive WRM, and strengthen WRM in the two major basins of Tanzania, the Pangani in the north and the larger Rufiji in the South. The specific aim was to strengthen government's capacity to manage water resources and address water-related environmental concerns both at national and basin level (the river basin management component under the Ministry of Water and Livestock Development) (Lankford, 2002).

- **Smallholder Irrigation Improvement Project (SIIP):** The component directly relevant to this review explicitly aimed to improve the irrigation efficiency of selected smallholder schemes in the two basins, principally by construction of concrete weirs and intake structures with control gates (this was the SIIP component under the Ministry of Agriculture and Food Security) (Lankford, 2002). The idea was that better water conveyance infrastructure and better water management through the development of Water User Associations would increase efficiency and reduce water consumption leading to a reduction in conflicting demands within the catchments.

Table 2.1 : Scheme Data for SIIP Component

Pangani Basin		**2904**	
Mombo	Korogwe	220	Paddy
Lekitatu	Arumeru	464	Paddy, Maize, Beans, Tomatoes, Water melon
Soko (R)	Moshi	370	Paddy, Maize, vegetables
Mahenge	Korogwe	300	Paddy, Maize
Kambi ya Tanga	Arumeru	410	Maize, Cassava, Tomatoes, Beans
Lemkuna	Simanjiro	430	Paddy, Maize, Water melon
Kivulini	Mwanga	410	Paddy, Maize, Tomatoes, Beans, Water melon
Longoi A	Hai	300	Maize, onions, Beans, groundnuts, Tomatoes
Rufiji Basin		**2155**	
Luganga	Iringa	300	Paddy, Maize, Tomatoes, groundnuts, Paprika
Ipatagwa	Mbarali	542	Paddy, Maize, Beans
Igomelo	Mbarali	300	Paddy, Maize, Onions, Tomatoes
Ruanda Majenje	Mbarali	450	Paddy, Maize, Beans, Onions, Tomatoes
Mangalali	Iringa	104	Maize, Onions, Beans, Tomatoes, Paprika
Nyamahana	Iringa	109	Paddy, Maize, Tomatoes, Paprika, Sweet potatoes
Mapogoro	Iringa	350	Paddy, Maize, Chickpeas, Beans, Onions, Tomats
TOTAL		**5059**	

Source: World Bank, 2004

The implementation strategies of the SIIP component are outlined and then the outcomes as reported by the World Bank and other observers are noted. The RBM component is not discussed in any detail, other than where it relates to the irrigation intervention which is the focus of this larger research assignment.

2.3 The SIIP Approach

2.3.1 Scheme Selection of Functional "Traditional" Irrigation Schemes

The project targeted low-income smallholders within selected traditional irrigation schemes to improve scheme management and infrastructure. Thirty schemes were selected from 735 schemes that were listed in the two basins (World Bank, 2004). The selected schemes were all flood irrigated using gravity canals supplied by diversion weirs on local rivers.

These were largely functional in terms of irrigated agricultural production but in most cases had rudimentary farmer-built water related infrastructure in place. Diversion weirs were typically made of brushwood placed across the rivers, or of "gabions" constructed out of wooden baskets filled with rocks. The temporary diversion weirs were subject to regular washout from high river flows, often more regularly than the annual flood. In some cases very old, undersized diversion weirs were in place, but were damaged or eroded with dysfunctional or no gated structures.

Main, secondary and tertiary canals were in all cases earth canals, generally unsurveyed and constructed by farmers themselves. Layouts were haphazard when viewed from an engineering perspective but were in many cases completely functional from a water allocation and social organisation point of view.

A common factor in all but one scheme (Mombo in the Pangani Basin) is that the schemes were already reasonably productive from an agricultural perspective and were growing mainly rice in paddies, with a mix of vegetable crops using a range of flood irrigation methods, mainly basins and furrows.

Levels of organisation were typically functional on issues of water allocation, weir and canal maintenance and with informal but effective conflict resolution on water allocation issues (Lankford, 2001). Active irrigators were often second or third generation of irrigation families (author's notes).

2.3.2 Primary Intervention - Engineering Infrastructure Upgrading

The SIIP team was led by the Ministry of Agriculture and Food Security and comprised internationally educated Tanzanian irrigation specialists, supported by an international consultant (GIBB Eastern Africa). The designs that were adopted largely formalised the water distribution network of these generally functioning irrigation schemes, with a stated design objective to improve water use efficiency. These improvements were expected to be achieved through improved conveyance system efficiencies (lining, improved earth construction, distribution structures) and reduced tailwater losses through better on-scheme water management systems.

The engineering work largely comprised diversion weirs, gated flow control into lined main canals, lined or earth secondary canal distribution up to tertiary canal level and necessary irrigation structures (drops, checks, division boxes, chutes and culverts). Substantial effort, time and money was invested in the design of the major engineering infrastructure, particularly as many of the schemes were located in lowlands with highly mobile rivers and subsequent erosion challenges to diversion structures.

The engineering team attempted as far as possible to minimise changes to the current water allocation arrangements, particularly the groupings and organisational relationships linked to tertiary and secondary canals. Necessary changes to system layouts were discussed with farmer leadership in an attempt to minimise disruption of existing, functioning operational systems.

2.3.3 Secondary Intervention – Development of Water User Associations and Training in Farm Production

The SIIP component allocated funds and supported activities related to the scheme operation and maintenance and the agricultural production system. Courses were formulated with an emphasis on crop production, scheme and water management, leadership, marketing, financial management and the formation of Irrigation Associations into legal entities (World Bank, 2004). The World Bank report states that 1,674 people received training in the various elements listed above and this was a highly successful element of the program, as viewed by their own evaluation and as reported by farmers themselves. **Crop production technology, selection of varieties and water management were listed as the most important by farmers.**

2.4 Project Development Costs

The investment in all components of the SIIP component amounted to USD 16.29 Million with a major component invested into the engineering rehabilitation and upgrading. The breakdown is shown below.

Table 2.2 : Smallholder Irrigation Improvement Project Financing by Component

SIIP Component	USD Million	% of Total
Participatory Scheme Selection and SIIP Project Management	2.16	13.3 %
Engineering Works on Schemes	11.73	72.0 %
Mitigation of Negative Environmental Effects	0.6	3.6 %
Irrigation Sector Capacity Building	1.8	11.1 %
Total	**16.29**	**100%**

Budget allocation for construction of each scheme was initially limited to USD 500,000 by the requirement to tender for local contractors (National Competitive Bidding Process), regardless of scheme size. This ceiling led to inconsistent levels of engineering infrastructure on the initial schemes, with the larger schemes only achieving primary infrastructure, while smaller schemes obtained tertiary level infrastructure at a considerably higher construction cost / ha.

Notwithstanding this inconsistency in scheme investment, the average construction investment was:

- USD 1,977 per ha (World Bank, 2004) excluding design and supervision fees
- USD 2,318 per ha all inclusive of design and supervision fees.

The average capital costs are relatively low when compared with capital costs internationally and with sub-Saharan Africa in particular. Kikuchi et al (2005) evaluated World Bank investments in irrigation globally and showed that capital costs range from a minimum of USD 1,370 per ha in India (with other Asian countries ranking similarly) to USD 18,269 per ha for new projects in sub-Saharan Africa. Global average capital costs for rehabilitation projects were estimated at USD 1,633 per ha and for new projects USD 7,740 per ha.

This shows that the capital investment costs on the SIIP projects, which were effectively new infrastructure developments rather than rehabilitation (given the existing largely non-engineered starting point on schemes) **were generally at the lower end of the investment spectrum**. It must be qualified that the extent of engineering was varied but largely focused on the bulk water and distribution elements and largely did not engage in infrastructure at tertiary level. Construction did, however, in some cases include for access roads, culverts and small bridges in critical situations, but again was focussed on primary levels of service.

2.5 Reported Outcomes of RBMSIIP – SIIP Component

2.5.1 Improvement in Efficiency

Substantial improvements in both summer and winter irrigation efficiencies are reported. These are largely attributed to improved transmission efficiency in the main and secondary systems. Efficiency reportedly more than doubled on all schemes which is a substantial achievement. Average efficiency increased from 8% to 19% in the wet season and from 11% to 27% in the dry season. (World Bank, 2004).

Given the emphasis on efficiency in the design process, particularly the investment in lining of main and secondary canals, and the attention to layout to encourage proper water management and minimise tailwater losses, these estimates appear reasonable from an engineering perspective. Due to the increased efficiency, it is reported that downstream water users have benefited substantially from the re-establishment of base flows in several of the rivers which had dried up (World Bank, 2004).

2.5.2 Yield and Socio-economic Improvements

The reported success is reflected in the quantified measures of impact of the intervention. These include:

- Average increase in farm incomes of some 340% (USD 382 to USD 1,300 per annum) although this is not linked to hectarage in available reports.

- Increased rice production of some 270 % per ha (1.72 to 4.67 tons / ha)

- Increased maize production of some 383 % per ha (1.07 to 4.1 tons / ha)

These reported outcomes are impressive by any standards simply in terms of yields in a smallholder situation (both rice and maize) let alone the percentage increase attributed to the intervention.

2.5.3 Farmer and Institutional Training

The formation of Irrigation Organisations was carried out with community meetings and training courses being run to create and strengthen Water User Associations, Farmer Cooperatives and Farmer Associations.

The institutional development processes were carried out infrequently by MAFS officials who were given little external support and with limited internal skills and material (author's notes). Meetings were typically poorly attended and training methodologies seemed inconsistent with levels of skills and literacy of those present. The process was acknowledged within the SIIP project team to be problematic and lacking the drive and content to achieve effective organisational and institutional change. These observations are corroborated by Lankford (2002) who notes that in field visits to the Usangu wetlands (location of two of the SIIP schemes) that few farmers rarely knew if their association even possessed a water right.

Similarly, the training of farmers was largely conducted in large groups at the Kilimanjaro Agricultural Training Centre over short intervals. While there is every likelihood that these short bursts of training achieved some benefit in terms of improved farming methods, it is unlikely that the wide range of training subjects including financial management, marketing, production approaches, planting times, irrigation methods, pest control, water management and record keeping could have been dealt with in any depth. Most of the farmers are not literate and the courses were conventional in their structure and presentation and were not adequately geared to non-literate learners.

2.6 Contested Viewpoint on Project Outcomes

2.6.1 Engineering Design and Water Efficiency

The improvements stated in the World Bank report do not concur with those reported by Lankford (2001). He argues that the SIIP program (amongst other similar infrastructure centred initiatives) did not necessarily result in improved water control, greater equity and reduced user conflict. A strong case is presented against "externally modified" irrigation scheme programs, a term considered by him to more appropriate than "improved" schemes. The "improvement" initiatives in his view often worsen the conditions of many farmers and for the environment.

He suggests that the provision of concrete intakes reduces downstream compensation flows through the weir and enable upstream farmers to abstract water throughout the year. The downstream irrigators are thus deprived of water and so it can be seen that the introduction of engineered diversion structures significantly alters the power balance that was in place before modernisation of the traditional schemes. Lankford further argues that even if you can raise the efficiency, the

outcome of water savings are not necessarily transferred to downstream users because of the social costs and because local irrigators may recapture “saved” water.

The argument has significant implications on the rationale behind the River Basin Management component, which assumes that savings through efficiency are translated into economic gain from hydropower generation. The whole economic evaluation is based on this premise and is challenged by Lankford’s analysis.

In terms of intervention strategy, he argues for a livelihoods / pro-poor approach which does not place downstream irrigators at substantial disadvantage and does not position traditional irrigation production methods as the source of the problem. Alternative, more equitable and less costly solutions are available, such as multiple local water source development using boreholes, stock watering dams combined with improved management practice for downstream users (in this case the hydro-power operational management which is substantially inefficient and accounts for greater inefficiencies than the irrigators).

2.6.2 Yields

Again Lankford’s work (2001) on a number of the SIIP schemes suggests the opposite to the World Bank reported yields. He states that rice production does not appear to have increased and in the middle and lower reaches has remained at 1.5 to 3 tons / ha. Top end yields do seem to have increased to the values of the World Bank reported quantities. The key point, according to Lankford, is that over-optimistic yield projections of 4 to 5 tons / ha should not have been used to justify interventions as these are not realistic in a smallholder context.

In addition to increased yield and incomes, the research undertaken at the project completion stage has concluded that there have also been substantial socio-economic improvements as a result. These include improved schooling, health care, transport, housing and agricultural input supply as a result of the project (ERC, 2004). Lankford (2001) once again provides a different perspective and suggests that the interventions are largely disempowering to the middle and downstream users, potentially lead to increased water conflict, increased management complexity, and reduced overall benefit in terms of socio-economic outcomes.

2.6.3 Farmer Management and Institutional Change

Lankford states that programs like the SIIP result in considerably more complex, time consuming and expensive management processes than the traditional system. This includes the need for more formal scheduling and contributions for maintenance and water guards which need to be collected from farmers. This additional complexity and requirement for increased levels of organisational skills was addressed through training in the SIIP program, but this was a weak element of the program.

2.6.4 Engineered Irrigation Layout Design

Lankford (2001) argues that the engineering designs adhered to the conventional engineering design principles resulting in designs that altered layouts and rendered systems impractical from a farmer’s perspective. The schemes that are cited to illustrate this were Kimani and Kilosa (not RBMSIIP) but his comments extend to the RBMSIIP program and others. These observations on the negative impact of applying conventional engineering design principles without due regard for existing water practice are justified and agreed with.

However, the MAFS SIIP design team shared these concerns on the strict application of design and the criticism seems inappropriate to the actual practice of infield design and layout on the program. The MAFS designers were very sensitive to layout considerations and implications on changed water management practice. In almost all cases, the existing traditional main and secondary layout was adhered to even when these were not the most efficient in cost, to minimise disruption to infield water management.

In a similar vein, Lankford (2001) has criticised those schemes which shifted from plot to plot trickle irrigation (continuous flow systems) to systems which required rotational irrigation at secondary canal level. Once again the MAFS SIIP team was very aware and without exception, the schemes under the RBMSIIP program are designed as continuous flow systems in the main and secondary canals to minimise negative impact on the irrigator's water practice due to changed system design.

2.6.5 Weir Design and Upstream Power Imbalance

The main criticism of the RBMSIIP irrigation program relates to the fact that weir designs and the abstraction quantities that they facilitated, were not made in the context of an integrated river-basin approach. The increased abstractions that resulted, both dry season and wet season have had a major impact on planting dates, water use patterns, extended seasons upstream, and most importantly altering the power balance by reducing the access to water of downstream users. This has led to a worsened situation at basin level which the greater RBMSIIP initiative was designed to minimise (Lankford (2001), paraphrased).

This criticism that the designed intake flows were made outside of the RBM context appears to be valid as the designs were based on the legal water rights that were applicable to each scheme, as provided by MAFS officials. There was no attempt to expand the design brief and undertake an evaluation of downstream needs in a river basin perspective. Lankford notes that there were substantial resources, international consultancy, MAFS and World Bank which should well have addressed this. While this view is justified it places these groupings in one collective when they are in fact disconnected entities active under the common sphere of interest of the RBMSIIP program.

What is omitted in the evaluation and needs to be addressed in future, is that the very nature of internationally funded consultancies is that they are defined by a limited and strictly controlled terms of reference, reporting to different Client bodies within the umbrella program. The SIIP component reported to a separate project office which reported to MAFS, while the RBM component reported to the MOWL. There was no interaction at project design level and no exposure of the engineering team to the larger RBM program and its implications on SIIP (author's notes), a notable failure in institutional design of the project. Sweeping assumptions of collective responsibility and ability to act collectively deny the fractured operational reality of program teams on the ground, created by rigid inter-national tendering systems with detailed and inflexible briefs.

The key issue, as Lankford notes, is that the institutional frameworks that are created in-country to house multi-sectoral projects such as RBMSIIP need to be structured to ensure that compartmentalisation of sub-programs does not take place. Consultant advisors with a narrow defined task (such as technical design brief) are not well placed to be influencing integrated catchment planning under one Ministry (MOWL),

particularly when the legal position on design abstractions is presented factually by the client Ministry (MAFS).

Notwithstanding this, the outcomes of the project seem to have had a substantially negative impact on downstream users in Lankfords analysis. The abstraction authorisations used by MAFS SIIP design team was not coordinated with larger catchment needs and priorities, which is an unacceptable outcome given the RBM emphasis of the greater initiative.

2.7 Lessons of Experience from the RBMSIIP

There are substantially different reported views on the process that was undertaken and on the outcomes of the World Bank RBMSIIP component. The World Bank completion report (2004) presents a positive and satisfactory picture, while Lankford (2001, 2002) presents a substantiated case to the contrary. While elements of truth are no doubt reflected in both perspectives, a summary of lessons has been drawn based on the author's four year involvement in the RBMSIIP as the project leader of the engineering consultancy team reviewing the engineering designs completed by the Tanzanian MAFS design team. It needs to be stated that the design brief was explicitly technical, was limited to the engineering design elements and commenced after the planning and design phase had been completed by MAFS. The SIIP element of the work at Government level had very little interaction with the RBM component. In the 4 years that the design consultant was involved in the program there was no formal interaction between the design team and the RBM component. This programmatic disconnectedness underlies the strongest criticism of Lankford in regard to inappropriate weir design and the basin implications. The following lessons of experience are drawn:

- The scheme selection process specifically targeted existing, **mainly functional irrigation schemes, which had few formal engineering structures** and targeted these for infrastructure upgrading. Thus, the irrigated farm production systems were largely in place and functioning to a degree and the project built on this momentum, rather than starting with totally collapsed schemes and trying to "revitalise" them.

- Participatory approaches are supposed to deliver locally appropriate solutions. It seems, from Lankford (2001) and from the author's involvement in later project stages that **farmer participation was not meaningful at the project planning and design stage**. This has resulted in systems which are arguably inappropriate to their needs and may have further entrenched power imbalances linked to water access and control, particularly the top-end / tail-end user imbalance.

- There are different kinds of participation and while farmers' were largely kept informed, they were **not actively involved in decision making**. Lankford suggests that had they been more involved they may have preferred non-engineered intervention linked to labour saving, credit facilities, marketing or other livelihood concerns.

- Engineering improvements are needed and agreed with farmers should be **planned according to farmer's current water management practices** and not solely according to theoretical engineering principles. This process was in fact adopted on many RBMSIIP schemes and included adherence to existing canal layouts, continuous flow non-gated system design to avoid rotational systems, and farmer's involvement in the spacing and location of division boxes, turnouts and check structures.

- The improvement project introduced new institutions for managing the schemes and **did not learn from and build on pre-existing institutions** and practices for managing the irrigation systems. New institutions demand additional time and cost to operate and alter or undermine delicate local power balances for decision-making and access to limited resources.

- There was felt to be a **lack of ownership of the new infrastructure**, which Lankford attributes to the fact that it was built and paid for by somebody else (Lankford, 2001). While the observation may be valid, with negative implications for maintenance, the reason does not seem to be justified. One of key elements of ownership is not simply sweat or cash involvement, but is **tied to decision-making power over the very content of the development**. Thus projects paid and built for by outsiders readily have ownership entrenched where the planning and decision-making processes fully inform beneficiary farmers of likely implications and ensure that **farmers guide the content of the design and implementation**.

- The **abstraction authorisations** on specific irrigation schemes must be **coordinated with larger catchment needs and priorities**. Program institutional frameworks need to actively create information corridors to ensure that irrigation planning takes place within a basin-wide water allocation framework.

- The overall role that **"modernisation" of traditional irrigation systems** through infrastructure centred interventions **needs to be questioned.** The complexity and risks of unexpected outcomes on-scheme and to downstream users raise caution for future program implementation. Catchment wide planning is a critical starting point.

- Optimistic yield projections, such as those adopted for the RBMSIIP program appear not to have been met at all locations on schemes, with top-end users achieving significant gains at the cost of tail-end users. **Planners need to adopt realistic yield estimates** and base investment decisions on these.

- Irrigation is a highly complex mix of social, agricultural, market and technical parameters, which are in a state of ongoing flux and interconnectedness. Irrigation planners and **advisors must, as a critical priority, embrace the multiple sectoral interests and dynamics in planning thinking**. Narrow sectorally isolated, engineering and infrastructure driven programs are destined to fail in their objectives.

- Support should be geared towards a **livelihood constraint, conflict-resolution and catchment-wide approach** more suited to the current intensities of water use today (Lankford, (2001).

"The thinking underpinning irrigation has to be categorically different from that which addresses other rural development interventions such as roads, domestic water supply and schools. ***Smallholder irrigation is a highly case-specific, potentially complex, dynamic socio-biophysical entity…"*** *(Bruce Lankford, 2001).*

3 IMPROVING PERFORMANCE IN IRRIGATED AGRICULTURE PROJECT (APPIA) - KENYA AND ETHIOPIA

3.1 Project Description

The APPIA project, *Amélioration des Performances des Périmètres Irrigués en Afrique* is a French Government funded initiative for Improving Irrigation Performance in Africa. The initiative is active in both West Africa and East Africa (Kenya and Ethiopia) on a total of 15 existing schemes. The International Water Management Institute (IWMI) is responsible for the design and implementation of the project which is coordinated from Addis Ababa.

A key part of the project is the training of project partners to **rapidly diagnose irrigation systems and propose solutions** by:

- Diagnostic processes to assessing their performance.
- Developing solutions to improve the scheme including technical, farm production training, marketing and institutional interventions.
- Implementing agreed solutions, and
- Monitoring in following years to see whether the performance is actually improved by the implemented solutions.

The idea is to carry out the diagnosis "in a relatively short period (max. 2 months)" by local and in-country technicians and extension staff. Results of the diagnosis are shared between different irrigation schemes and can also be used to identify topics for complementary studies, develop other training materials, experiment new practices and technology. The APPIA project also aims to develop irrigation professional networks that share information to improve irrigation performance (van der Schans, 2005).

3.2 Participatory Rapid Diagnosis and Action (PRDA)

PRDA is "an approach for analyzing and improving the performance of an irrigation scheme together with farmers" (van der Schans, 2005). It relies heavily on an array of conventional PRA tools and stresses "farmer ownership of action plans".

It is essentially a consultative planning process involving a range of specialist disciplines who engage with farmers on schemes. The diagnosis generates an action plan to improve the scheme situation which could include capital investment, organisational improvement and farmer production skills development. The process intends to obtain a general picture of problems in the irrigation scheme and is an opportunity for boosting lively communication and discussion amongst farmers (van der Schans, 2005).

3.2.1 Partner Organisations and Interdisciplinary Communication

These include irrigation professionals, extension officers, irrigation authorities, Water User Associations (WUA's), NGO's and other organisations engaging with farmers to improve irrigation productivity. The Participatory Rapid Diagnosis and Action planning is done by groups of 3 to 4 professionals from different disciplinary backgrounds.

> *The aim is to improve the weak communication links that often prevails between disciplines in irrigation planning.*

The PRDA team typically comprises a team which is conventional in its makeup as follows:

- Irrigation engineer
- Agronomist
- Economist
- Specialist of farmers' organisations

It is further suggested that a senior person be involved in coordinating and disseminating information and possibly to even attract funding.

3.2.2 Principles of PRDA

The PRDA manual highlights the following principles for engaging with farmers on irrigation schemes:

- **Participation** – farmers and the PRDA team work together to collect and analyse data. Information should be shared with farmers.

- **Flexibility –** Selection of tools and planning may be adjusted according to findings and work schedules of farmers.

- **Teamwork** – between farmers and outside experts, men and women, mix of disciplines.

- **"Optimal Ignorance"** – which is understood to mean optimal level of detail and process guided by time and cost efficiency

- **Systematic** – try to get complete picture of important topics and crosscheck perspectives.

The approach that evolves from these principles is one that collects a myriad of information in a responsive and somewhat chaotic process at first, but leads to a reasonable picture of current status and a way forward.

The approach stresses consultation, interaction between disciplines but the **core element of analysis revolves around the identification of constraints**, the causes thereof, and solutions to remedy these.

3.2.3 Analysis Framework

The irrigation enterprise is split into four main constituents that inform the process of constraint evaluation and development of solutions described briefly in the section that follows. These are:

- The **irrigation scheme infrastructure** and the technical constraints determined by the design and scheme layout

- The **farm production system** (termed plot use in the APPIA guideline) and its elements of crop selection, agricultural techniques, allocation of labour and financial resources.

- **Organisational elements** linked to water allocation, operations and maintenance. This is ranked as a high priority for sustainability of schemes.

- **The socio-economic environment** which are the links of the on-scheme organisational and production elements with external players, such as markets, extension, input providers etc.

The PRDA guideline then categorises, quite extensively each of these main constituents to guide the information gathering and the analysis that follows in the diagnosis and action planning stages. The analysis of constraints seems to draw on actor-network theory although this is not stated explicitly in the guidelines but is evident in the emphasis on inter-relationships and agencies.

3.3 PRDA Procedure for Diagnosis, Planning and Design

3.3.1 Step 1 – Introduction and Stakeholder Consultation

Permission and Trust of Process
PRDA is strongly directed at empowering decision-making of farmers on schemes which are being studied and supported. **Trust by the farmers of the team and of the process** is thus placed as a high priority. Time is taken initially to ensure that all participants fully understand, and give permission to the process of diagnosis and subsequent planning. Expectations and the uncertain outcomes of the process (in terms of a later funded intervention project) are addressed explicitly.

Use of existing institutions
Introductions are made at existing institution meetings (WUA's, etc.) and individuals or organisations which are interested are invited to join in and support the diagnosis process.

Initial Information Gathering - PRA Tools
The conventional array of PRA tools is used in the initial stakeholder consultation process, with emphasis on establishing a baseline of current scheme layout, operation, levels of production and initial sense of limitations and problems. This included literature review and preparation of maps for later use by the team and informs the methodology for the diagnosis which follows.

General assemblies of the farmers' organisations are recommended throughout the process. On large schemes, this can be facilitated through grouping of farmers according to their type of action.

3.3.2 Step 2 – Diagnosis

The PRDA manual presents checklists and guidelines for this data collection process. A process of detailed **data collection and a performance assessment** is conducted with scheme farmers. Data is analysed in a structured way and where possible is analysed through physical cross checking (flow measurements etc.).

Constraints are identified and prioritised and these form the basis of the **action plan**. The prioritisation of constraints is one of the most important steps of the PRDA and the approach stresses the collection of views from a wide-ranging audience with attention to gender, social status, income, position on the scheme.

Feedback to farmers of the findings, particularly the **constraints** to progress is made through meetings and report-back sessions. The action plan is linked to only those constraints linked to irrigated production. Where constraints relate to other issues (social, educational, micro-enterprise, animal husbandry etc.) these are referred to other departments or bodies to deal with.

A **constraint identification report** prepared in detail and then analysed to fully understand and identify the underlying causes. The elements that need to be changed in order to resolve these constraints are then identified.

3.3.3 Step 3 – Action Planning

Solution identification follows the identification of constraints. It is noted that local knowledge alone is often not be sufficient to address this and input is necessary from the team in the process of developing solutions.

Impact analysis is the logical evaluation of proposed solutions and the extension of the consultation process of proposed plans to the wider irrigator community. It is stressed that farmers must understand and accept solutions and must be involved in the assessment process. Demonstration of suggested ideas through trials and pilots on scheme, or **visits to other schemes** is seen to be an important part of this process.

The end of the rapid diagnosis is the **formulation of the action plan** with feedback again to the group to validate the way forward, expected outcomes and collective action needed. Ideally a log-frame should be compiled to assist in the clarity. Action lists are drawn up to clearly define who is responsible for which components.

Maintenance and operations are discussed and compiled into a M&E Plan. Assessment indicators for monitoring and evaluation of the impact of the proposed plan are established.

3.4 Timing and Duration of PRDA Process

The PRDA process allocates substantial time to the information gathering, constraints analysis and solution process. It seems that the PRA's themselves are conducted by the discipline experts who then meet daily and consolidate their information through the process as described in Steps 1 to 3 above.

Typically a multidisciplinary team of five would require the following time inputs for varying scheme sizes:

- 10 ha 11 days
- 100 ha 15 days
- 1000 ha 25 days

This is the time input required to go through the analysis and arrive at a defined action plan to address the constraints to improved irrigated production.

Long term follow-up and implementation is expected to extended over periods of years, particularly addressing the specific constraints identified through the planning process. The implementation support is not necessarily continuous, but is linked to important active periods, such as planting preparation, harvesting and marketing among others.

3.5 Lessons from the Participatory Rapid Diagnosis and Action Planning Approach (PRDA)

The PRDA is a **principles-based planning approach** that is based on a concerted effort to inform (external) sectoral specialists on the detail of irrigation operations as viewed by the scheme users themselves.

At the same time, the **farmers actively engage** with their key issues, both within their group and **through information exchange with the specialists**. Participation and ownership, underpinned by extensive time involvement of the planning team with farmers is stressed.

The PRDA stresses **participation of farmers at all stages of the evaluation**, the constraints analysis and in the development of solutions to improved production. Respect for local knowledge and full acceptance by farmers of proposed solutions is seen to be critical for successful intervention.

The irrigation production system is seen as a complex activity, with all of the elements interacting and influencing other elements. These inter-relationships are outlined in the guideline and stress the need to fully consider the complexity and possible outcomes of each action that is planned. The **resultant action plan therefore tends to address a wide range of sectoral issues** (technical, production, marketing, organisational etc.) and **avoids simplistic or single-sector interventions** such as infrastructure only.

While the APPIA project stresses a participative planning process and allows a wide range of activities to evolve into the implementation phase it is apparent from this review that the focus on scheme level enterprise seems to under-emphasise engagement with three key areas:

- A livelihoods approach including off-scheme activities, alternative sources of income, land-leasing, animal – crop interrelationships, other productive uses of water, is not touched on in the methodology.

- Catchment level planning (IWRM), so important to management of a scarce resource is missed in the focus on localised scheme issues.

- Marketing is addressed in a broad-brush way by a team with relatively modest skills in this dynamic and challenging area, but at the same time is listed in most of the ten case study schemes as a significant constraint. But there seems to be limited experience and innovation in the teams engaging with the farmers to identify and develop new opportunities, either in the form of markets or post-processing and value adding initiatives.

Thus while the APPIA project arguably engages with much of the needed complexity, participation, ownership and diversity at scheme level it does not attempt to integrate this with livelihoods strategies outside of the irrigated context and then even broader to integrated water resource management strategies at a macro level.

A further limitation is that the arguably pragmatic approach (in terms of cost and capacity building) of using district department and extension staff who are likely to have relatively limited exposure to national and global market opportunities, may be counter-productive to embracing opportunities linked to marginal advantage of local agro-climatic or market factors.

The methodology and approach itself seems sound within the delimited and fundamentally important area of the irrigated enterprise, but needs the broader concepts of livelihoods and IWRM to be actively incorporated.

4 AFRICAN IMT EXPERIENCE AND REVITALISATION APPROACHES

The history of Irrigation Management Transfer (IMT) or irrigation management reform goes back 50 years (Merrey et al, 2002). However, it is in the last 2 decades that a rapidly increasing number of countries have been turning over management authority for irrigation systems from government agencies to farmer or other local, non-governmental organisations (Vermillion, 1997).

Extensive literature is available on IMT and its various elements including guidelines for implementation such as those by the UN Food and Agriculture Organisation (FAO, 1999). The intention of this brief review of experience of IMT in Africa does not attempt to re-write these comprehensive works, but extracts those lessons and principles which can be applied to the development of intervention approaches which is the subject of this paper and larger WRC research assignment.

4.1 Summary of IMT Review

4.1.1 Key Issues in IMT

A comprehensive review of IMT (Shah et al, 2002) highlights the following key issues that impact on successful outcomes of interventions.

- **Dependency History** – many schemes in Africa, including most in South Africa, originated with an estate-mode of management and operation which left "farmers" simply as workers on their own land. Parastatal agencies managed inputs and marketing and made all decisions on the farming operations. This has left behind a legacy of dependency and an impoverished group of farmers.

- **High Risk Production Paradigms** – most of the irrigation schemes have operated in the past under highly mechanised and capital intensive production approaches. These production approaches are attempted by current farmers but without the substantial financial and collective organisational support of former management agencies (e.g. parastatals) and result in excessively high costs. This has eroded margins, increases input capital needs and sharply increases risk.

- **Finance and Markets** – Many schemes are located in remote areas with poor linkages to input supply markets and to produce markets. Transportation costs become significant due to the reduced economy of scale that results from individual rather than collection action. The absence of, or difficult access to markets is a key issue and is repeated in other parts of Africa including South Africa.

- **Land tenure issues** – IMT research suggests that for farmer management of schemes to work, insecure tenure must be addressed as these limit incentive to make long-term investment and provides no room for a land-leasing market.

- **Irrigated Holding Size** – most successful farmers derive a substantial portion of their livelihoods from irrigated farming and underlies their need to engage in management of the scheme. Farmers who work small plots are forced to pursue a number of income and livelihood activities. Thus plot size modifies the incentives and behaviour of farmers. In addition, the large number of farmers increases invisible "transaction costs" linked to collective self-management which can require excessive time as well as financial cost to address.

- **High costs of pump schemes** – An aspect of successful IMT experience worldwide is that operation and maintenance costs need to be an insignificant proportion of total farming income (less than 5% of gross). Sustainability is also linked to the levels of technical expertise required to maintain and renew major infrastructure on large schemes. In an apparent paradox, pump schemes are not always problematic because they may in some cases have lower transaction costs to more complex gravity schemes.

- **Comprehensive Intervention Strategies** – piecemeal interventions, which address only one of the complex of activities that make up the irrigation enterprise are unlikely to succeed. There is a need to launch the enterprise into a higher trajectory of productivity and profitability. Farmers in smallholder schemes need and want support systems that go far beyond just irrigation if they are to improve their livelihoods significantly.

- **Lift strategy** – In addition to getting the process right, and addressing the complex of activities, there is a need to devise a lift strategy which deals with the whole host of constraints to profitable production. This implies favourable natural resources, knowledge, motivation, management and the essential independent support services (Crosby, 2000 in Merrey et al, 2002).

4.1.2 General patterns of success in African IMT

In a review of African and international IMT experiences Merrey et al (2002) present the overarching patterns that emerge. IMT has been relatively successful where:

- Irrigation is central to dynamic, high-performance agriculture where average farm size is large enough for a significant portion of farmers … to operate like agri-businessmen (sic);

- where backward and forward linkages with input supply systems and forward linkages with output marketing systems are strong and well-developed; and

- where the costs of self-managed irrigation are an insignificant part of the gross value of product farming.

- Individual stakes are high and the irrigation community has been able to take the additional burden of self management

Thus it can be seen that institutional reform alone (IMT) has been relatively successful where there is significant production momentum coupled with favourable farm sizes and market dynamics. The corollary is that IMT alone is not sufficient where these favourable pre-dispositions do not exist and that in these (most) cases a broader strategy which addresses the "entire complex of constraints" is essential (Merrey et al, 2002).

5 DISCUSSION AND CONCLUSIONS

This review of East African irrigation revitalisation and IMT experiences shows that interventions on smallholder schemes usually emanate from one of three frameworks; integrated water resource management (IWRM), scheme specific "project improvement interventions" or Irrigation Management Transfer (IMT) needs. The recommendations for success in revitalisation are strikingly similar from all three perspectives.

5.1 Complexity and Integration

Intervention to achieve improved water use efficiency on the scheme in the **context of catchment planning and basin management** is necessarily tied to macro-level inter-sectoral water allocation issues (hydro / irrigation / industry / domestic) as well as on-scheme water and production issues. However, the on-scheme production and profitability is usually a second level priority. The RBMSIIP is an example of an intervention that originates from a basin-management approach and the critique illustrates the difficulty in managing the substantial inertia of government hierarchies which are at play at basin level and the need for meaningful participation by farmers at scheme level whose interests are at a micro-level with a significantly smaller locus of interest and control. IWRM has become the dominant paradigm and largely fails to place people at the centre of the discourse (Merrey et al, 2003).

The RBMSIIP projects may have been reasonably successful at achieving the targets of improved water use efficiency on schemes with a reported doubling of scheme efficiencies (World Bank, 2004). However, they are criticised as having failed at meeting the core objectives of improved livelihoods for all farmers, as the primary intervention targeted infrastructure development (weirs, lined canals etc) and these favoured top-end users to the substantial detriment of tail-end users. Thus inequity of benefit and polarisation of the already marginalised groupings (tail-enders) was exacerbated by the infrastructure centred, water efficiency oriented intervention (Lankford, 2001). Similarly, the program is criticised as providing limited increased water for downstream use by other sectors such as hydro-power, one of the key motivations for the program and basis for the economic evaluation thereof. Water savings were often taken up by adjacent irrigators or resulted in new irrigation practices which were environmentally destructive, such as extended season or year-round irrigation not practised prior to the rehabilitation efforts. Integration from scheme to catchment seems to be limited.

The key point emerging from the RBMSIIP program review and critique (Lankford, 2001) is that meaningful improvement in the well-being of farmers cannot be achieved simply through improved water use efficiency, which inevitably has a focus on irrigation technology and on-scheme water practices. Even though the RBMSIIP attempted to include farmer training, institutional development and improved marketing, these seem unlikely to have achieved the reported gains for most farmers given the increased power imbalance between top and tail end users as a direct result of the infrastructure focus of the initiative.

Merrey et al (2003) argue that IWRM policies are too narrow to achieve improved livelihoods of people and that given the focus on "water resources" fails to take a holistic view of "natural resources" which are of critical importance to poor people. It is suggested that **improved livelihoods of poor people must be placed at the centre of IWRM** and even more broadly, of Integrated Natural Resources Management. It is contended that the diversity of the socio-economic context of farmers is at least as diverse as their biophysical environment. The emphasis on complexity in developing sustainable practices to address poverty at all levels of the irrigated production enterprise is echoed by other writers.

"Integration will be key in this new approach: ***integration across scales, components, stakeholders and disciplines****" (Sayer and Campbell in Merrey et al, 2003).*

*"****Smallholder irrigation is a highly case-specific, potentially complex, dynamic socio-biophysical entity*** *influenced by a considerable number of internal characteristics and external driving forces and factors, and is a driver of considerable change on downstream sectors and users. Have we recognised this special nature of irrigation within livelihoods, food and cash production, river basins and the environment?" (Lankford, 2001).*

"Focussing more emphasis on the improvement of physical infrastructure is not sufficient. There is a ***need for a more comprehensive approach****, encompassing the development of both physical capital as well as social capital that provide complex systems … to use irrigation water."(Neeraj et al, 1998)*

It is clear that the guiding themes that emerge are the critical need to appreciate and address the full complexity of the collective irrigation enterprise (technical, land tenure, production system, input and output markets, institutions, catchment management etc.) and to plan interventions with farmer's livelihoods at the centre of this analysis.

This fundamentally important guiding theme is not a rule and will not be appropriate to all situations on all schemes. Findings related specifically to water allocation issues on a number of Asian schemes (Moench et al in Merrey et al, 2004), note that "a broad integrated approach to solve many of the water-related problems faced by poor people is unnecessary … and is unlikely to be successful". Thus the approach to be adopted for a scheme needs to first and foremost respond the immediate issues as perceived and diagnosed by the combined intervention team and local farmers, but should be heavily influenced to address the complex nature of collective irrigation farming and agri-business.

5.2 PRA - Public Relations Aid or Farmer Participation and Decision Making

The use of participative methodologies (PRA's) aiming to include farmers in decision-making is de-rigueur in rural development and irrigation revitalisation initiatives generally (Lankford, 2001). However, the actual level of participation, information exchange on these sectorally diverse and very complex "socio-biophysical" entities is addressed by many (Lankford, 2001; Denison, 2004). Methodologies such as Participatory Rapid Diagnosis and Action Planning (PRDA) and the Iterative-Consultative Approach (ICON) (Denison et al, 2004) attempt to engage the

complexity with the both participant farmers and discipline “experts” in an information exchange leading to the development of solutions that are locally appropriate and are fully informed by both formal disciplines and local knowledge.

The recent experiences of the APPIA project in Kenya and Ethiopia reinforce the need for an approach that addresses the wide-ranging constraints covering the full range of issues linked to the irrigated enterprise, while encouraging critique and technical input by sectoral experts. This includes technical, institutional, agricultural production and marketing issues. This consultation process linked with responsibility and power to make the decisions is significantly empowering. Easter (2000) notes that the most successful schemes in IMT are those where the users were more effectively involved in project planning and management and the “key is to give users more control and responsibility for management”.

Methodologies and guidelines using proven PRA methods but applied without a desire to search for avenues through the constraints, and the marginal advantage afforded by opportunities in the very site specific conditions of soil, water, climate, infrastructure, market and organisational limits are unlikely to lead to solutions which are sustainable. There is a significant level of multi-disciplinary expertise that has to be brought to bear on the consultation and planning process with skill and attention to local knowledge.

5.3 Markets and Management Support Systems

The need for profitable irrigation production is widely agreed to be fundamental to sustainability and ongoing farmer interest in production. This has been expanded on in previous project papers (Denison, 2005) and is not presented in detail here, but two key additions from the IMT experience are noted.

There are not many examples of successful broad-based smallholder support systems have proven sustainable in Africa. The successes that are evident suggest that “central to an effective lift strategy is helping to find stable, reliable markets for value added products; once this is ensured, much else follows.” (Merrey et al, paraphrased, 2002). Merrey goes on to say that the potential offered by contract farming institutional arrangements has not been fully explored and that a valuable but underused partner is available to address the critical marketing issue. One of the primary opportunities comes from the observation that the agri-business companies have operated farmer support systems (much needed marketing, extension, input supply) similar to what the former parastatals originally offered (Merrey et al, 2002). IMT experience internationally reflects South African experience to some extent in harnessing the strength of private sector to contribute management and marketing skills to the irrigation enterprise.

5.4 Success factors and guiding notes from selected African and IMT experiences

The key success in irrigation interventions are summarised from the review of two major recent East African revitalisation programs; the RBMSIIP in Tanzania and APPIA in Kenya and Ethiopia as well as IMT experiences in Africa and Asia. These are summarised below:

1. In general the overall performance of interventions in irrigation systems in a **demand-driven mode, with a high level of farmers' involvement** in irrigation projects has been better than those provided with support in a supply-driven mode with moderate or low levels of farmer participation (Neeraj et al, 1998 in a detailed IMT study of a wide range of intervention approaches on 231 schemes in Nepal).

2. Those projects which have paid **equal attention to the physical** (infrastructure) systems as well as the **social and institutional systems** of water user organisation and agricultural production are excellent models of intervention with higher success rates (Neeraj et al, 1998).

3. The interventions which are based on **comprehensive strategies** addressing the **complex of activities** that make up the irrigation enterprise most likely to succeed (markets, finance, inputs, production information). The experience from the review is explicitly clear that **infrastructure development alone or as a dominant part of the intervention are destined to failure**. Farmers in smallholder schemes need support systems that go far beyond just the irrigation system if they are to improve their livelihoods significantly. Irrigation is a highly complex mix of social, agricultural, market and technical parameters, which are in a state of ongoing flux and interconnectedness. Irrigation planners and advisors must, as a critical priority, embrace the multiple sectoral interests and dynamics in planning thinking. Narrow sectorally isolated, engineering and infrastructure driven programs are destined to fail in their objectives.

4. IMT (and in this case the intervention process in general) must hold out the **promise of a significant net improvement in life situations** for a significant proportion of members and the irrigation system must be the central resource to creating an improvement in farmers life situations (Shah et al, 2002).

5. The **economic and financial cost** of sustainable self-management must be an **acceptably small** proportion of improved income and the proposed organisation design must have **low transaction costs** (Shah et al, 2002).

6. **Lift strategy** – In addition to getting the process right, and addressing the complex of activities, there is a need to devise a lift strategy which deals with the whole host of constraints to profitable production. This implies favourable natural resources, knowledge, motivation, management and the critically needed independent agricultural support services (Crosby (2000) in Merrey et al, 2002).

7. The intervention process and design needs to **engage aggressively with the individuality of on-scheme complexity** so as to identify elusive and marginal advantage by deliberately accentuating inter-disciplinary synergy within the intervention team and between the team and the participant farmers. The

approaches cannot rely on vague or routine use of PRA methodologies but have to ensure meaningful transfer of information rooted in time-consuming and expensive processes, leading to fully informed decision-making on the part of participant farmers. **Ownership is rooted in the information transfer and decision-making process**.

8. Participation, ownership and appreciation of diversity at scheme level need to be integrated with **livelihoods strategies outside of the irrigated context**. This means taking account of multiple water needs for personal uses, livestock, fishing, laundry, small business (brick-making) and the like in addition to irrigation.

9. Planners must adopt **realistic yield projections, pricing structures** based on smallholder realities of production and marketing, so that the resultant financial evaluations on which investment decisions are based are realistic. To this end, teams with the thinking driven by engineers and economists need to raise significant internal caution on the information that informs concept planning and evaluation. The socio-economic and agricultural production realities of isolated sites, difficult communication, relatively poor supporting infrastructure must ground financial planning, rather than idealistic or average commercial sector scenarios.

10. Irrigation-related interventions need to be made with full appreciation of the **broader river basin requirements and regional water allocation demands**. While fully justifiable and in keeping with the dominant paradigm of IWRM adopted by most agencies, IWRM needs to be a sub-text to inform a livelihoods-centred approach which considers broad social and environmental realities, on and adjacent to the schemes. Participation at local level is likely in most cases to be subdued by the powerful and vested interests linked to water allocation at catchment / basin level (Merrey et al, 2003) and this disempowering reality must be consciously addressed and mitigated against in both the process and the institutional design.

11. Access to reliable water is an essential, though not sufficient condition for sustainable improvement in irrigated agriculture. In a paraphrase of the IWMI hypothesis (Merrey et al, 2003), it is finally noted that productive use **depends on irrigation technology but will only be successful when market development and information supply to farmers** are made a core priority in the overall intervention design.

5.5 Implications for the formulation of Revitalisation Guidelines

In the unregulated, globally influenced and marginal agricultural market place of South Africa today, these lessons of experience present a major challenge when they are translated meaningfully into project strategies in the context of this WRC research assignment. The South African context is unique for a number of reasons, not least the relatively minor role that agriculture plays in people's livelihoods, even on irrigation schemes. This is stated without undermining the critically important role of food production in many resource poor households, some of which takes place on partially operational former homeland schemes. The necessary emphasis on market by most authors needs to be evaluated in the context of marginal returns for all crops and where profits in the mainstream commercial agricultural sector are increasingly reliant on economy of scale, sophistication of technology, administration and farming systems. Consolidation of farms with a rise in corporate farming, and the reduction of smaller family farms is a pattern across the country which is partly a result of these realities.

Harnessing the potential of partnerships between collectives of scheme farmers and private sector agri-business is one option of embracing the marginal opportunities, so dependent on local advantage afforded by very site specific conditions such as micro-climate, market proximity, labour availability etc.. The financial advantage of capital subsidies for infrastructure afforded by favourable South African legislation (AgriBEE and Land Reform) can be seen as one "lift strategy" that moves financial returns from marginal to feasible. The approach stressing partnerships, which is increasingly prevalent but without wide-ranging success stories, must be done with explicit attention to mitigate against the obvious power imbalance in knowledge and access to resources between scheme land-holders and the commercial sector. Government has a critical role to play as regulator and protector, but must in this process face the unenviable tension of striving for equity, but avoid cutting off the freedom for the commercial partners to act quickly, which is essential for profitability.

A second option moves towards lower-dependency, lower risk crop production paradigms based on conservation agricultural practices (diversified cropping systems, minimum tillage, moisture conservation, relatively low input) with a more localised and livelihoods centred framework. Examples and mainstream research are now emerging (Smith, 2005, forthcoming) how these production paradigms are showing substantial promise in terms of social uptake, profitability and substantial soil and environmental benefit.

In the irrigation revitalisation context, the existing technical bulk water and irrigation system and design (as well as condition) will to some extent dictate which paradigm one can move to as major pumped and piped infrastructure, with high technical and cost implications, call for higher cash returns to cover for their operational and maintenance costs. These higher operational costs and system complexity gravitate to private sector involvement in some or other way, either as an "operator" or as an "operating partner".

The inter-relationship of these approaches which are linked to existing and future farmer typologies, land consolidation interventions, and informed by different production paradigms and infrastructure realities, all in the context of the global market reality and the need for profitability (for sustainability) are the subject of a forthcoming project paper.

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Appendix F

Case Study No.1 – Ezemvelo Farmers Organisation

1 CASE STUDY NO.1 : EZEMVELO FARMERS ORGANISATION – 'ACADEMIC' PARTNERSHIP

1.1 Introduction

The Ezemvelo Farmers Organisation is a collective of 170 farmers working on neighbouring independent farms totalling some 260ha in the Richmond / Eston area of south-eastern KZN. While they are not an irrigation scheme with collective water management and allocation mechanisms and challenges in the formal sense, they are collectively engaged in production programmes as well as rainwater harvesting. The farmers are involved in organic production, mainly of amadumbe (taro) a traditional sweet potato crop, but also other organic vegetable crops such as potatoes and beans. Their long-term relationship with an academic institution (UKZN) and the partnership that has emerged from this is of particular interest to this study and the development of the guidelines.

1.1.1 Climate, rainfall and cropping

The scheme is situated in a sub-tropical environment, which is frost-free and well suited to sugar cane, sub-tropical fruit and nut crops, winter vegetables (including green maize) and field crops in summer. Annual rainfall is 1020 mm received mainly from October to March. Temperatures and humidity are high.

1.1.2 Field research process and interview / data collection methods

The research process has been largely informal consisting of semi-structured interviews with individual role-players in and outside the community. An attempt has been made to refer as much as possible to existing papers and publications, given that an impressive list of studies is being undertaken in the area. Many of these studies have however not as yet been formally published and so access to this information has in fact been rather difficult and limited. The prevalent academic fear of losing the publishing prerogative has been at play.

Semi-structured interviews were held with the following individuals.

Date	Name	Role and Organisation
November 2004	Dr Modi	Senior Lecturer, UKZN, Crop Science. Involved since 2000, founder of project and EFO
Nov 2004	Mrs Lynn Stefano	PhD student for Ford foundation food security programme; action research into information flow
Nov 2004	Mr Joe Mkhize	Chair person of the EFO
Nov 2004	Mrs N Ncele	Active member of EFO and farmer
Nov 2004	Mr Frans Fischer	Farmer Support Group, Action research and training in group certification for EFO
Nov 2004	Mr Duncan Stewart	LIMA, baseline survey for Ford Foundation Research
Nov 2004	Mr James Hartzell	Assagay organics and manager of DEDTproject to assist EFO with infrastructure
Nov 2004	Ms Jeanine Cudmore	Researcher from the veterinary University of Copenhagen, looking at the organic cropping systems of selected EFO members.
March-May 2005	Ms Nelisiwe Gasa and Mr Ewald Viljoen	Service Providers for PAETA in a mentoring programme for EFO
March-May 2005	Ms Georgina. Hawke and Mr Antonio Lobell	PlantBio, Biotech company managing innovation fund and packhouse project for EFO
March-	Minenhle Makhanya	Individual EFO member, youth, member of co-

May 2005		research team re information flows and business plan developer for PlantBio
March-May 2005	EFO	Members meetings and meetings with the executive committee and chair person; introductions, permission to speak to others, draft reports, interviews, presentation to membership…
March-May 2005	Dr Sheryl Hendriks, Prof Mike Lyne	Co-ordinator of Ford Foundation Research Programme at the UKZN
March-May 2005	Mpume Ntshingila	Dept of agriculture, extension officer.

1.2 Description of Role-players

The primary relationships with outsiders have had a research orientation, given the relationship with KZN University and Dr Modi who have introduced a number of research programmes in collaboration with EFO members. Implementation and training funding for the EFO members has been reasonably limited to date, although the good relationship has assisted smooth introduction of new research assignments and other market related initiatives.

1.2.1 Ezemvelo Farmers' Organisation

The Ezemvelo Farmers' Organisation has about 170 members producing and selling organically certified crops (potatoes, sweet potatoes and amadumbe (taro)) to Woolworths. Members of EFO practise rainfed and supplementary irrigation farming around their own homesteads on fields ranging from 0.25 to 8 ha. Increasingly individuals practise rainwater harvesting from surface runoff to underground 30m^3 tanks and supplementary irrigation using hand application methods.

The farmers are drawn from a number of different wards in the Embo Traditional Authority of the Umbumbulu district of KwaZulu-Natal (Ezigeni, Ogagwini, Mahleka, Rhwayi, Eziphambathini, Adams and Nungwane sub wards). Embo falls within the Umbumbulu district, within the Nkhambathi Local Municipality (Camperdown) and the Umgungundlovu (greater Pietermaritzburg) Regional Municipality

The Ezemvelo Farmers' Organisation (EFO) was formed in 2001 by 28 small-scale farmers, with the aim of obtaining collective organic certification and of qualifying for donor funding. They were collaborating with Dr Modi, a senior lecturer in crop science at the University of KwaZulu-Natal who conducts research with farmers to support indigenous crop production (Modi 2003). As these farmers were growing amadumbe (taro), sweet potatoes and potatoes without the use of chemical fertilizers, Dr Modi saw potential for them to supply their produce to the formal high-value organic market.

The organisation was awarded "organic certification in conversion" status by AFRISCO (Africa's Farms Certified Organic). The organisation quickly grew to 54 members, mainly from Ogagwini and Ezigeni, who were fully certified in 2002. People from other areas learned about the organisation and wanted to join. It was then decided to set up sub-committees in these areas, to work under the umbrella of the EFO. This decision was made to strengthen the EFO, for ease of group certification, funding and to take advantage of tonnage (Woolworths for

example can take 900kg of amadumbe a week, an amount that has been very difficult to consistently supply by the smaller, original group)

Many EFO members are people who have returned to their homes or retired, having worked in nearby cities. They now farm to generate an income. The majority of members are women. The EFO members have a strong sense of identity and their own worth. A key characteristic of the members is that they demonstrate a high level of commitment to the various projects the organisation engages in.

The EFO has received extensive coverage both in the popular media as well as within academic circles, because of its success as a resource-poor small-scale farmer group who supplies organic produce for sale through Woolworths. They were the first black small-scale farmer group in South Africa to obtain organic certification.

1.2.2 Organisational structure of the EFO

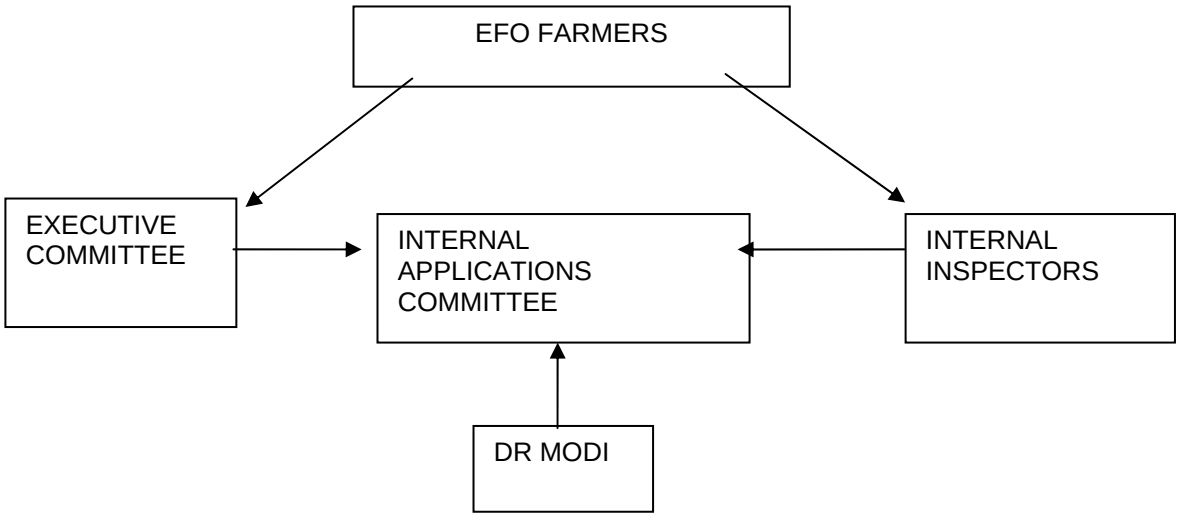
Much of the development of the organisational structure at a community level has been based on specific activities that need to be carried out and then primarily those related to marketing. These have included a strong emphasis on the institutional arrangements and capacities necessary for organic certification as well as the logistical arrangements required for ploughing, harvesting, transport and delivery or produce. The payment of individual farmers for what they have contributed has also been central. The discussions held with key informants showed that the organisational structure of the EFO can be presented as shown in Figure F1.1.

The **Executive Committee** is made up of 5 founding members and one member from each of the new sub-wards who are elected according to the organisation's constitution. The executive committee meets once a month before the general members' meeting. Dr Modi attends these meetings and assists with payments of farmers, by bringing records of sales (and monies deposited into their bank account) from James Hartzell (the packhouse intermediary), so that the executive committee members can pay their "groups". The executive committee is responsible for all logistical arrangements related to EFO, as well as managing relationships with outsiders. They are responsible also to manage any funding for the organisation and for ensuring implementation of projects in the community

As such their responsibilities are numerous and in fact almost full time volunteers of the EFO. The need for strong leadership and social consciousness here is obvious.

The **Internal Applications Committee** comprises 5 executive committee members, 5 internal inspectors, the 4 sub-ward chairpersons and Dr Modi, totalling 16 members. Applications to join EFO are submitted to this committee.

Figure F1.1. The EFO organisational structure



A total of 9 **Internal Inspectors** from all the sub-wards volunteer to work without pay. They are responsible for ensuring that organic controls to secure certification are maintained by farmers. This involves visits to homesteads and an annual submission to AFRISCO-Ecocert: AFRISCO merged with Ecocert, an international organic certification organisation in 2003) specifying farming activities, including crops produced, land size and maps. The same internal inspectors will be used for the new BDCA (Biodynamic Certification Agency) certification.

1.2.3 Processes within the EFO

The constitution: The constitution was drawn up in 2001 under the guidance of Dr Modi and Dr Raymond Auerbach, a trainer in organic certification controls. In early 2004 the Executive Committee worked with mentors from the Mashu Newlands Permaculture Learning Centre to make small adjustments to the constitution, to meet the requirements of the Dept of Social Welfare for registration as a non-profit organisation. These were necessary to access funding through the education and training authorities. These documents have been lodged with the Department for registration.

Members' meetings: Members meet on the first Monday of each month. An agenda is drawn up and followed and minutes are recorded by the secretary.

Youth: The community boasts a relatively high number of educated but unemployed youth. As a result of their parents' success in EFO, the youth have become members of the organisation. They play an increasingly important role in EFO's development: nine youth have been trained as internal inspectors to ensure members maintain standards to secure organic certification; they are becoming active farmers; and they work as translators for various research projects undertaken in the area.

One young EFO member was recently recognized as “a most promising young entrepreneur”. He received prize monies from Kick Start (a South African Breweries development initiative), for a business plan he developed with Umsobomvu Trust to develop his family’s organic farm as a close corporation. He has also recently been employed by the new role-player, PlantBio, to develop a business plan for the Ezemvelo Packhouse Project.

1.2.4 Dr Modi

Dr Modi is a senior lecturer at the School of Agricultural Sciences and Agribusiness at the UKZN (University of KwaZulu Natal). He is a key figure, who in collaboration with Dr Hartzell of Assagay Organics (AO), has sourced funding for various projects and equipment for EFO, encouraged and supported farmers and put EFO on the map. Both men have spent a great deal of time visiting farmers, attending their meetings and facilitating their development. Dr Modi has a strong personal link with the members and the community at large. He is often called in to negotiate on behalf of the farmers, even in their negotiations with Assagay Organics.

Dr Modi started his involvement in the area working with the commercialisation of indigenous vegetables under a SANPAD (South Africa Netherlands Research Programme on Alternatives in Development) grant. This justifies the emphasis on organic production of amadumbe, sweet potatoes and potatoes in the community and some surveys in terms of the potential of other indigenous crops have been done. This includes the potential for the commercial production of mustard spinach. An extensive research programme supported by the Ford Foundation has also supported some work by Dr Modi in the area; the focus here has been on food security. He has most recently entered into a relationship with a group known as PlantBio, where he will provide research support for the plant breeding aspects of this intervention, discussed later.

He mentions that his rewards in his interaction with the EFO have been personal and academic and that he is not involved in any financial relationship, other than a conduit for funding or as an advisor in negotiations. He has continued to support the EFO in a personal capacity through cycles of greater and lesser University involvement. The role of the University and the recognition that is awarded to development efforts is subject to current debate given the different outcomes and priorities associated with community development work undertaken by staff versus the priority of papers published.

1.2.5 The marketing and certification agents

Marketing and certification will be considered together, as the two are almost inseparable in the organic sector. To supply large retailers such as Woolworths organic certification is assumed. Some retailers also reserve the right to be involved in that process and to specify their agents of choice.

Assegay Organics is the marketing agent for EFO. Dr Hartzel, the Managing Director, was an organic farmer who until recently ran the packhouse that prepared produce for delivery to Pick and Pay and Woolworths. He has now moved the operation to Durban and plans to expand the scope of the business to include outlets for the produce that is not A-graded. This ‘rejected produce’ accounts for about 50% of supply and is a well known issue in the organic sector. He has a partner, Mr Kay Naidoo in this new venture called Itheku Organics.

Dr Hartzell managed a grant provided by the DEDT (Department of Economic Development) in 2002-2003, to support the commercialisation of organic farming.

This assisted many EFO members to get fencing and chicken rearing structures as well as water harvesting and spring protection works.

He has worked with the EFO and continued a relationship with them despite initial unprofitability of the packhouse (Dr Hartzell, per coms).

As the manager and owner of one of the only organic packhouses in the area and as an energetic and pro-active marketing agent, Dr Hartzell was placed centrally in terms of sale of produce for EFO. He has been used as the sole agent by both Pick and Pay and Woolworths in the province and did a lot of very active work in promoting both organic produce and the EFO.

1.2.6 Certification

Certification was obtained from AFRISCO (Dianna Callear) and training of the internal inspectors for this group certification was conducted by the Rainman Landcare Foundation (Raymond Auerbach). Some funding was received through PAETA (Primary Agriculture Education and Training Authority) and further training and mentoring for internal inspectors was then carried out in the community by The Farmer Support Group (Frans Fisher). The certification of the EFO has presently been shifted to the BDCA (The Biodynamic Certification Agency), as they are cheaper and record keeping requirements seem less structured.

1.2.7 Woolworths

Woolworths was, in April 2005, buying amadumbe and sweet potatoes from EFO members through Itheku Organics. The price being paid to farmers was negotiated with them and has increased from R3.96/kg and R3.64/kg respectively last year to R5.00/kg this year.

Woolworths does not write down agreements with their suppliers; they form a close verbal relationship and commit to buy exclusively as long as the supplier sells to them exclusively. There is thus some form of guarantee although nothing that is contractually binding in written form.

1.2.8 PlantBio

PlantBio is the national innovation centre for plant biotechnology initiated by the Department of Science and Technology as part of the National Biotechnology Strategy for South Africa. Focus areas include plant breeding, bio-safety, in vitro propagation, food security, bio control and bio fertilization. They are thus a government and non-government alliance and a funding agency/conduit

Their objectives are:

- To improve South Africa's competitive advantage by developing human skills and technology platforms and increasing the amount of Intellectual Property in plant biotechnology
- Facilitating the creation of start-up companies and striving for sustainable and profitable commercialisation
- Development of better products, creation of employment and addressing food security needs
- To make PlantBio a sustainable entity in itself by investing, realising value and re-investing the proceeds.

Primary team members Dr Antonio Llobell and Ms Georgina Hawke have been drawn from the Faculty of Agriculture at the University of Kwa-Zulu Natal. They agreed to collaborate with Dr Modi in Umbumbulu. The proposed process is one of setting up a commercial company to construct a packhouse in Umbumbulu. The following services will be provided to farmers:

- Organic certification for the farmers
- Hiring of tractor and implements to assist farmers in land preparation
- Collection of produce around Umbumbulu
- Providing workshops and training

This will be combined with a research and development section. An amount of R1million is available as loan funding (over a period of 3 years) for the initiative and will be paid back over time to PlantBio. Research will include investigation of indigenous varieties that are grown in the area (led by Dr Modi):

- There are for example 4 varieties of amadumbe grown in the area and one that grows wild along the water courses. Molecular characterisation of the genetic structures of these varieties is planned to determine how closely related they are. This is preliminary research into further breeding possibilities.

- Potatoes; research into the particular strain grown in Umbumbulu. It is different to the varieties seen on the shelves. It is possible to initiate flowering and do breeding.

- Apical tissue culture to produce disease free (virus and bacterium) plants. Then to analyse how these plants differ from the landraces now being grown.

It is envisaged that a research plot for some of the trials will be set up in Umbumbulu and will be overseen by the commercialisation company.

1.2.9 Primary Agriculture Education and Training Authority

This is the Primary Agriculture Education and Training Authority who employed NMPLC (Newlands Mashu Permaculture and Learning Centre) and service providers Nelisiwe Gasa and Ewald Viljoen as mentors for the Ezemvelo Farmers' Organisation and 4 other farmers groups in Ndwedwe.

They were employed on a one year contract for 2004, by Johan Engelbrecht who is the project manager of the National Skills Fund. In the year they engaged in a number of activities with EFO, including:

- Review of EFO constitution and assisted with the submission of an application for non-profit status from the Department of Welfare.
- Purchased and delivered seed potatoes on behalf of members.
- Working with members (youth) to establish a list of potential trainees with bank accounts; for learnerships through Rainman Landcare Foundation.

The brief for the mentorship process was vague and it took time for the mentoring team/facilitators to work out what would be the most appropriate action and support. Twenty six members of EFO (mainly youth) received a two week training programme in organic farming.

1.2.10 Research initiatives

Research is currently being conducted by the University of KwaZulu-Natal, Pietermaritzburg. One of the initiatives consists of the Food Security Research Project funded by the Ford Foundation. The following research is being conducted by seven students (five PhD, two MSc):

- Investigation into EFO's knowledge and information system,
- Post harvest storage of potatoes,
- Supply chain for organic produce,
- The agronomic potential and seed quality of three species of wild mustard.
- Institutional arrangements,
- Productivity,
- Potato crops; investigating the impact of tuber size selected on agronomic performance and quality of seed.

Research is also being conducted by students from the Royal Veterinary and Agricultural University in Copenhagen, Denmark. Jeanine Cudmore, for example is completing a Masters degree related to nutrient flows in the soils of 40 farmers with whom she has been collaborating. Other aspects of her work will include looking at and doing small cover crop trials (sunn hemp, dolichos and cowpeas) and also looking at opportunities and constraints in marketing.

An action research project into the viability and sustainability of group certification for organic farming was conducted in 2004 by the Farmer Support Group. The case study describes various issues and challenges in group certification of organic agriculture, using the experience of the Ezemvelo Farmers Organization (EFO) in the Umbumbulu area southwest of Durban. (Fischer FU, 2004)

Mr Andrew Sheard from the Dept of agriculture (Cedara) is running a trial with one of the farmers, Mr Wanda in the organic production of paw-paws in the area.

The Water Research Commission has an interest in working in the community regarding one of the their projects called "the Participatory Development of Training materials in Household Food Security and Water Management for Improved Livelihoods" and have made the initial contacts to implementation of water harvesting experiments with individual farmers. The Agricultural Research Council has recently had a meeting with the EFO executive committee to request entrance for conducting research there. The committee has requested more information.

1.2.11 Government departments

The provincial Department of Economic Development called for tenders, towards the end of 2004, to test the feasibility of (1) expanding the EFO initiative to remaining parts of the Umbumbulu region and (2) establishing a certified pack-house in the region, linked to a comprehensive outgrower scheme. It is unclear what has happened since although the Rainman Landcare Foundation did put together a document to explore this possibility. PlantBio has entered subsequently with a similar intention.

The DoA has provided support for transport of produce on an ongoing basis to the project but this support has now been withdrawn (2005) and the EFO have made their own arrangements.

The DoA has not provided any significant support in terms of extension and mentorship to date. A new extension officer, Mpume Ntshingila, has recently been introduced to the community and has undertaken to be involved with the EFO. Some support has recently been provided through the funding now offered for fencing and liming. Mr Mkhize (The Chair of EFO for 2004) suggested that the Department should consider a reversal of roles, whereby the EFO members provide the training in traditional and organic farming to extension officers and Departmental staff as he thinks the farmers already know a lot more about this than the Department. There have been negotiations with the DoA to support irrigation expansion but a proposal put together by Dr Modi with EFO has received no response up to the time of writing.

1.2.12 Neighbours

Mr Rob Gurney, a neighbouring commercial farmer has been of assistance to the EFO; specifically in maintenance and renovation of the second-hand tractor bought by the group.

1.3 Roles and Information Flows

Formal institutional arrangements around information flow and decision making are lacking and parties are not held to account in formal ways. Most arrangements have been verbal and based on a level of trust between the parties and stakeholders. Much depends on the integrity of the outsiders involved in terms of ethical developmental behaviour.

The action research conducted by Lynn Stefano of the Ford Foundation funded UKZN project and a co-research team in the community related to these issues. This has served to create awareness in key individuals in EFO about the nature of relationships, formal and informal and options that exist in ensuring more binding arrangements. The Committee is starting to take more control vis-à-vis relationships. They are for example insisting on being given copies of reports and are exercising their right to have more information regarding proposed research and work in the area before they give organisations permission to continue. There are some agreements and processes within the EFO and between the EFO and outsiders, discussed below.

1.3.1 Responsibilities of the EFO committee

The EFO committee has a number of responsibilities which include the following aspects:

- Facilitation and recording of monthly meetings
- Hosting of all outsiders and interested parties in terms of development and research
- Co-ordination of ploughing for the members
- Co-ordination and management of collection of harvested crops, sales and payment of members
- Co-ordination of the EFO activities into the local government agendas.
- Disbursement and management of funding for the EFO on behalf of membership

These duties are assigned within the general ethos that committees do the work for organisations and that whatever needs to be done they will do. Committee members have been exceptionally busy and their responsibilities have increased substantially over time as the membership has increased and the number of wards that the EFO serves has increased from 3-6. They work on a voluntary basis and are elected by their membership.

There are no formal or contractual agreements in these arrangements.

1.3.2 EFO committee and marketing

The (volunteer) committee co-ordinates the harvesting of produce in six different wards according to agreed quantities for each ward as well as transport of this produce to the packhouse and buyer. Payments for packhouse deliveries are made into the EFO's account and they then ensure that each supplying farmer receives their payment. The logistics involved in this work is considerable, given that presently around 140 members are supplying varying quantities.

A process has been put in place for each ward where quantities supplied and weighed for each farmer are recorded at the collection point. The ward collector then goes to the packhouse with the produce and checks the packhouse weights

for each farmer. In some cases representatives do not accompany the vehicles to the packhouse and the weights of produce supplied are then phoned through to Dr Modi who reports to the committee and EFO membership. It is not uncommon (nor surprising perhaps) that discrepancies arise in measurements of delivered weights: An example given showed one case of 16% packhouse weight in favour of the farmer while the other showed a 15% lower weight at the packhouse. The exact process for reconciliation of such discrepancies and how individual suppliers are then paid seems unclear and has led to confusion and unhappiness in the past.

The packhouse quantities provided are then used for payment. In terms of payment each ward co-ordinator receives the sum of money from the committee for their ward and is responsible for distributing it to the farmers. Usually a "pay-day" is organised at the collection point for each ward.

The committee has to organise transport for produce and have done so by setting up the collection points and arranging a day when produce is to be picked up at that point. It means that farmers have to come the afternoon before with their produce and that a few people need to be prepared to volunteer to load the trucks very early on the next morning. Deliveries to the packhouse need to be made before 10:00 in the morning. As people are now paying R300/truck, monies need to be collected from each member. Receipts are issued. These transactions are usually carried out at the monthly meetings.

1.3.3 Evolution of the EFO leadership

The organisation has been led since it's inception in 2001 by one committee. The elected members were prominent figures in the community and well linked into the traditional structures and local government. The committee and especially the chairperson (Mr Joe Mkhize) provided strong leadership for the EFO and managed to keep the organisation coherent and operating. Limited funding has been managed and distributed to members. The relationships with outsiders have not been as strong.

There has been a recent re-election of office bearers. This has been the first election since the inception of the EFO in 2001. Interestingly, the original impetus by EFO members to vote for traditional leadership figures in the community such as the induna was reversed to some extent. Now emphasis was given to having a committee that is bilingual (English and Zulu), literate and able to engage pro-actively with some of the complexities in the institutional and external environment. The chairperson is now a woman (Mrs Makhanya), as is the secretary.

1.3.4 Youth involvement

Some of the younger members in the organisation have also been more active in questioning the processes set up by outsiders. In this way one of the more active youths was instrumental in rearranging the negotiation field in terms of prices paid to farmers. He was able to act incisively on an issue of relevance to most members regarding their relationship with the packhouse and successfully negotiated higher selling prices. He was also able to lever a shift in the power relations as he called in the contact person from Woolworths itself to raise the EFO's concerns and their wish to supply directly to Woolworths at some point, rather than having to work through a third party. These new parameters were accepted by Woolworths on the proviso that they remain the sole client for EFO.

The youth have also been instrumental in questioning (with some help from external role players) the roles and intentions of some of the outside organisations engaging with the EFO. Their questions about the agendas of the groups and their intentions, are in fact vital for the development of an independent and powerful community organisation.

1.3.5 Researchers

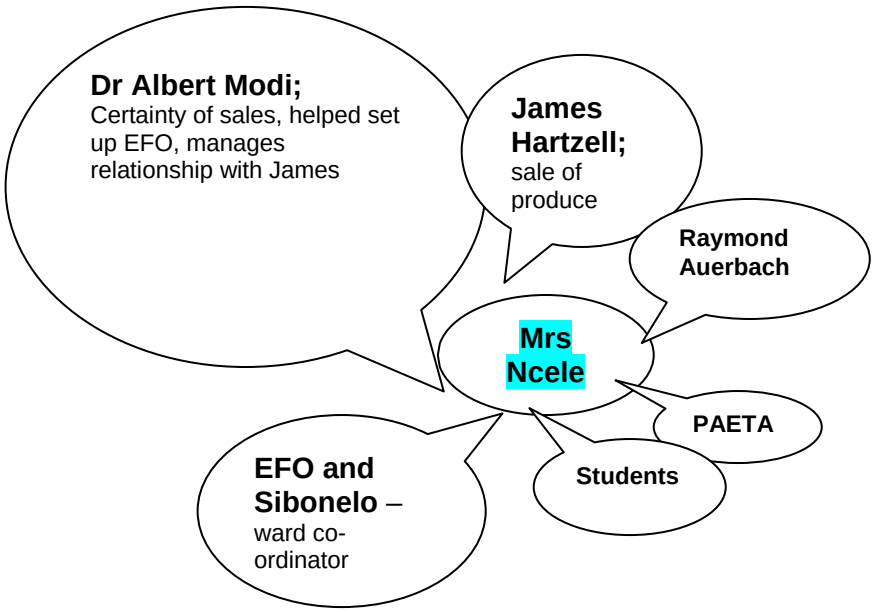
This process of questioning an analysis of roles of various stakeholders has been assisted in a large part by one of the Ford Foundation supported researchers from the University of Kwa-Zulu Natal (UKZN), Mrs Lynn Stefano, who has focussed her action research on this theme. She has worked with a small co-research team in analysing relationships and interviewing role players, so that her team could assist in understanding and assessing information flows between role players. This small team has been instrumental in "waking"' the consciousness of the executive committee and to a small extent of the membership of the EFO. Mrs Makhanya and Mr Miya and who were in the co-research team are now on the executive committee and others are instrumental in setting up the Ezemvelo Packhouse Project with PlantBio. As an exercise in empowerment and capacity building this research process has been notably effective.

1.3.6 Relationship mapping

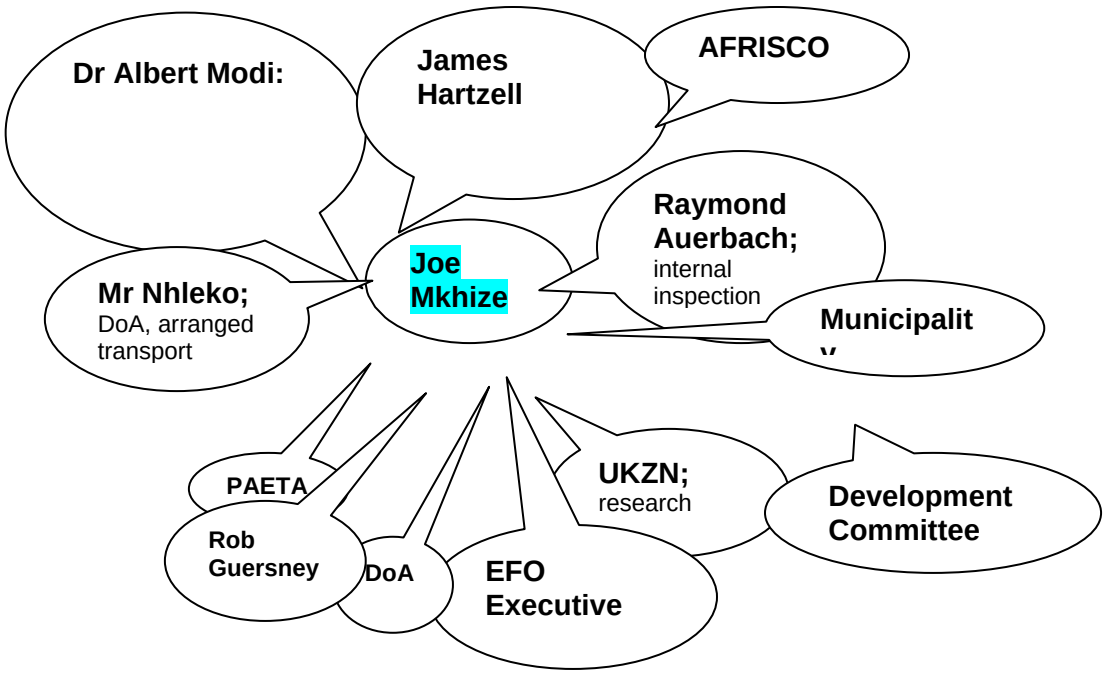
A few diagrammatic representations have been made to better understand, from the perspective of a few individuals, who the important role players are. It gives an indication of these individual\s network of contacts, information flow and understanding of their environment.

Mrs Ncele (farmer and member of EFO)

The schematic shows a clear role linking the EFO with marketing elements and gives an indication of with whom she is mostly involved.



Mr Joe Mkhize (Chairperson of the EFO 2001-2004)



Mr Mkhize's schematic shows the large number of people he is linked with and the networking role that he plays on a regular basis given his responsibilities as chairperson.

1.3.7 Relationship with Dr Modi

There is a strong relationship of trust between the EFO membership, the committee members and Dr Modi. He plays an important role in working through decisions with the group in consideration of their own and outside initiatives and to a degree manages the entry of outsiders into the area, which has a stabilising effect. He has been very active introducing many different people into the community and has actively canvassed the assistance of various individuals and organisations.

Dr Modi and the EFO have jointly pioneered almost all the interventions with the EFO to date:

- setting up the marketing relationships with Assagay Organics,
- instituting and managing the transport assistance provided by DoA,
- preparation of funding proposals for irrigation, provision of lime and fencing by the DoA,
- the research initiative through Ford Foundation
- the packhouse initiative through PlantBio.

Interestingly, in this last initiative there is change in role from facilitator to benefit/risk sharer as he stands to gain or lose with EFO members as he will also be a shareholder. Dr Modi's long term involvement and commitment has been a key element of the growth process of EFO and there is a strong relationship of trust between him and the EFO members. His connectedness to and role as an information conduit between the decision-making level of the EFO, and the "external" research and funding agents, is clearly a key factor for consideration.

1.3.8 Marketing and certification relationships

Relationships in the marketing arena have been rather complicated as many individuals and groups have been involved as one might expect. Basically the responsibility for organic certification was held by James Hartzell of Assagay Organics, who also owned the packhouse and bought the produce from EFO. He has also been the agent or linkage person for Woolworths.

During the year of 2004-2005, EFO lost their organic status and certification from AFRISCO for a number of reasons, some of which included transgressions on the part of a few of the members, farm plans and forms not being properly completed (for which the training was done) and then the fact that these were never submitted to the certification agent.

Assagay Organics decided to change certification agents and initiated a process of being certified through the Biodynamic Certification Agency (BDCA). This group is a lot cheaper than AFRISCO (R5,600 vs. R15,000) but some uncertainty is present as to the validity of their certification as they do not belong to a formal certification association. For the moment this certification has been accepted by Woolworths.

In addition there is the added complication that for a period no organically certified packhouse existed. This was due to the necessity of Assagay Organics to dissolve and create a new entity and partnership; Itheku Organics (run by James Hartzell and Kay Naidoo) in a different location. This packhouse was certified in 2005 by BDCA.

Woolworths have indicated that they are prepared to set up a relationship directly with EFO, rather than through Itheku Organics. EFO would then need to establish and run their own packhouse. The relationship with Woolworths has strengthened over time and they are now considering EFO for other organic products such as sweet potatoes and potatoes in addition to amadumbe. Furthermore, Woolworths are prepared to provide back-up in the form of agricultural plans (in the form of a support person), supply of manure and technical support. Their need is for EFO to be able to supply consistently.

Zulu Organics is a proposed consortium of support agencies in the organic development sector. These groups include Rainman Landcare Foundation, Newlands Mashu Permaculture Centre, Centre for Sustainable Development at the University of Zululand (Gavin Eichler), Reichenau Mission through Diocese of Mariannhill and ACAT. This proposal envisages setting up one central packhouse for all the small organic growers in the region. The concept includes setting up a label/brand through which these small growers will market their produce, provision of training and central co-ordination of organic certification. Certification can then be provided in a more digestible format for emerging farmers and quite large groups can be certified together (Auerbach, 2004).

1.3.9 PlantBio relationships

PlantBio is working very closely with Dr Modi and are relying on the trust he has with the community to provide a smooth entry and working relationship for them. They contacted people that they considered as key stakeholders individually prior to starting this initiative and negotiated potential collaboration with them, given the understanding that this programme is well resourced in terms of funding and as a growing commercial venture could and would become competitive. PlantBio is also working closely with some members of EFO.

There has been a lack of clarity on the side of EFO membership regarding this initiative as it is not widely understood what the project is about and there is a level of suspicion, given some focus on genetic property rights the youth group were trained in through PAETA. The trust in Dr Modi has assisted acceptance of the proposed project.

The planned project with Plant Bio will be set up as a Pty. Ltd company. The company will purchase, pack and sell produce. Shareholding will be between the Ezemvelo Farmers Organisation, PlantBio and strategic partners. Shareholding will be on an equity basis and PlantBio will withdraw once they have recovered their initial investment, planned over an 8 year timeline. The company will be responsible for marketing, rather than the farmers as it is perceived by the farmers' to be too difficult to farm and handle marketing at the same time. The company will also take responsibility for the organic certification including the payment and transporting of internal inspectors, quality control and the annual certification fee. The company will then charge a fee to each farmer for this service.

It is envisaged that a number of people will be employed; a packhouse director, an operations manager, packhouse staff and a marketing person. It is also planned that farmers' involvement in the commercial venture will be voluntary and that they will choose themselves which of the services on offer they will use. The farmer will be billed for these services and this cost will be deducted from their delivery payouts. It is seen to operate in a similar way to the Sugar Association Out-Grower schemes.

1.3.10 PAETA relationships

The KZN Department of Agriculture funded the Rainman Landcare Foundation to manage the delivery of 6 organic farming training courses and the resultant registration of 120 small and emerging organic farmers from the Durban, Pietermaritzburg and Empangeni areas. Twenty six members of the EFO, mainly the youth, were hosted by the Newlands Mashu Permaculture Centre in Durban. The courses included:

- General principles of permaculture and organic farming
- nutrition
- price making
- quality and quantity and
- seed exchange workshop

The training was facilitated to raise critical thinking and decision-making capabilities of the trainees. They were, for example, presented with a four page newspaper spread of the Ford Foundation research programme in the community. In this article the value of the funding at R1.4million was clearly stated and the question was raised by the facilitators about benefit to the community in collaborating with the research assignment. Ethical questions around the involvement of Biotech companies such as PlantBio were also raised, emphasizing the value of the communities' intellectual and plant variety property rights.

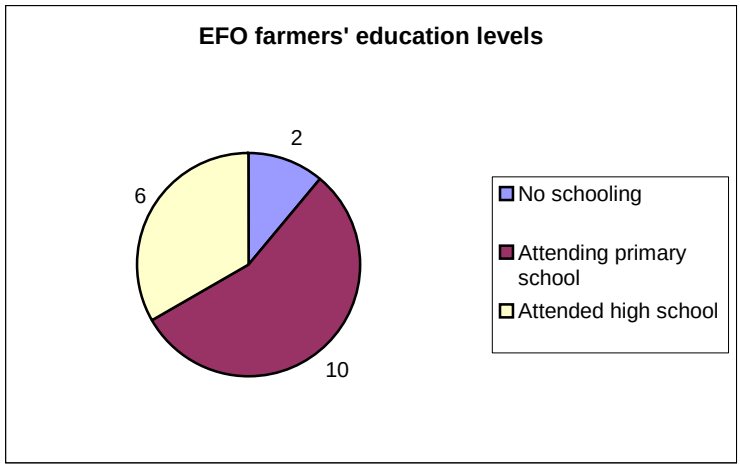
The mentorship team has written a much more comprehensive proposal of support through PAETA this year (including internships, training and support for the internal inspectors, training for farmers, cross visits and fifty learnerships.) The proposal amounts to about R1.6 million.

1.4 Institutional Development and Capacity Building

1.4.1 Information transfer and literacy

There has been no coherent strategy in terms of the interventions to date. The broader membership of the EFO receive most if not all their information and "capacity building' in the monthly meetings of the organisation. These meetings are large, agendas are long and all presentations and inputs are pressed for time and a bit rushed. Research conducted in 2003, when the organisation had 54 members, showed that there was a spread of education levels among the 18 members who participated in the study (Stefano 2004).

Figure F1.2. : Education levels of EFO farmers who participated in a research project in 2003 (n=18), (Stefano 2004).



Two members had no schooling, 10 members had not completed primary school, and 6 members (1/3rd of the participants), having entered high school, would be considered functionally literate (including 2 members who have tertiary qualifications).

The youth (18 – 35 year olds) are encouraged to attend training courses and perform EFO functions that require functional literacy levels. Courses attended include organic certification controls, enumerator training for surveys, organic farming methods. In addition group literacy is in evidence whereby literate farmers share information accessed through printed materials with members who have low functional literacy.

Members have attended cross visits to other newly converted organic farmers in Ndwedwe, KwaZulu-Natal. A few members, including traditional doctors, attended training in indigenous plant propagation at Silverglen Nursery. Members periodically present their indigenous crops and traditional farming knowledge at fairs, conferences and workshops. For instance, 30 members attended the 2004 Garden Show in Pietermaritzburg where they offered visitors traditional crops to taste. A member addressed a national workshop on Food Security at the University of KwaZulu-Natal in June on the issue of rural people's household coping strategies.

1.4.2 Institutional dynamics

Organisational arrangements – EFO has succeeded where many similar initiatives have failed. However, the organisation faces a need for new structures and systems if this success is to continue and grow. Some areas of concern are:

- Volunteer status of key office bearers who incur major transaction costs,
- Lack of bargaining power to negotiate prices with the packhouse,
- Poor understanding of crop quality for marketing to supermarkets such as Woolworths,
- Poor record keeping in some sub-wards.

Communication - The executive committee keeps written records of all decisions and proceedings of meetings. Communication with and between members happens mainly by word of mouth, with the effect that many members do not hold the same information. In addition, low functional literacy levels hamper accurate and up-to-date record keeping on the part of farmers.

External stakeholders – EFO is attracting considerable attention due to their hard earned success. There are a number of potential service providers and groupings with research interest active in the area and more that can potentially become active. It will be difficult for the EFO to manage and harness all these initiatives in a way that will be to their benefit. A comment by Mr Mkhize (EFO chairperson) for example is that "we expect help from these people, but we end up helping them". They will need at some point also to encourage cooperation between (potential) external stakeholders – as territoriality of information is clearly evident, which is there for academic purposes and does not necessarily benefit the community. Procedures for evaluating proposals from external people will need to be put in place.

EFO Independence - There is discussion around the need for EFO to move towards independence and become more of a negotiating power in the context of marketing. This would entail that the EFO would need to constitute themselves as a company or a co-operative. They would need also to have clear group vision and identity and could then clarify and strengthen their relationships with outsiders such as Woolworths. Presently the contract arrangement with Woolworths is through Dr James Hartzell of Assagay Organics and not directly with the EFO. (Many of these issues are shifting presently in the new relationships being set up with plantBio and around marketing). There is also discussion around the need to diversify marketing, especially to find alternative markets for the produce that is not A-graded (this is being dealt with in terms of the new contract negotiated with Itheku Packhouse).

1.5 Partnership Achievements and Challenges

1.5.1 Successes

1. **Leadership:** The EFO has strong and committed leadership and has been able to respond flexibly to the changing leadership skills that are needed while keeping the organisation intact. There has been a move from original traditional leadership in the original committee to individuals who are more skilled at engaging with “outsiders” in English and who are better versed in finance and contract implications.

2. **Secure market:** Notwithstanding challenges in the supply of produce and payment of farmers, an ongoing and secure relationship with the packhouse Assagay Organics (now Itheku Organics) and the critical link to supplying Woolworths has been maintained.

3. **Farming styles:** The Ezemvelo Farmers have been able to continue with their existing farming styles given the minor modifications required to move from traditional methods to organic farming, with the secure outlet of the organic packhouse.

4. **Incremental growth:** Farmers have been able to increase their production at their own pace and make their own decisions regarding which crops to grow for sale and which to keep for home. Many farmers have increased their plantings and are selling. Farmers now have a commercial reason to keep their seed and planting stock viable and they still keep enough of their produce for home consumption.

5. **Experimentation:** Farmers are willing to experiment on a small scale with new, higher value crops that could support their incomes. The information link with academic research on varieties and production methods is a catalyst to this.

6. **Livelihoods:** Farmers have re-kindled an interest in farming as a rural livelihood strategy and are trying to promote the interest of their children in this activity. Many new members have joined, swelling the ranks from about 25 to more than 170 members. Members have opened up new fields and overall production has increased substantially.

7. **Conservation:** This initiative has brought awareness about the importance of soil fertility for good production.

8. **Pioneering record:** EFO is the first smallholder farmer group to have been organically certified in South Africa and has managed to uphold its certification for 3 years to date.

1.5.2 Challenges

1. **Irrigation water:** The increase in production and interest in commercialisation has created an increased demand for rainwater harvesting and irrigation. This is both an opportunity and a challenge. Conventional opportunities for irrigation are limited and the focus for increased agricultural water draws on rainwater harvesting, both infield and in underground storage tanks.

2. **Genetic property:** Farmers do not have an appreciation of the value of their natural and genetic resources and are in a vulnerable position regarding research into the varieties they grow and keep. They also do not fully understand issues regarding the purity of their strains and keeping this comparative advantage.

3. **Organic quality:** Farmers find it difficult to appreciate the strict quality requirements for the organic market and the rejection of a substantial percentage of deliveries to the packhouse. This has been notable in the new experiment of supplying green beans, where the requirements are very strict in terms of size and shape and farmers have had up to 80% of their beans rejected. The issue of an alternative market of the “2nd grade” produce needs to be addressed.

4. **Manure:** With the increase in membership of the EFO, there has been a sudden demand for manure as farmers cannot use fertilizers and there is not enough local manure.

5. **Reduced subsidies:** EFO has thus far not carried any of the costs related to marketing, notably transport and certification costs. They have been paying the premium to the packhouse, but some feel that this has been high. They are now also having to carry additional costs and it is questionable whether their present production can support these.

6. **Packhouse feasibility:** The EFO has been promised a packhouse and a pre-feasibility has been invited with funding from the DEDT (Department of Economic Development and Tourism). PlantBio have now also taken on the potential of loan funding for this venture. There is however concern whether a local packhouse will be financially feasible. The management, financial and marketing expertise required is well out of the range of most of the farmers at Umbumbulu and there is little understanding that the packhouse will charge the farmers for its services.

7. **Extension:** The extension staff at the district office of the Department of Agriculture has very little expertise in organic farming, in particular for indigenous crops compared to the knowledge of the farmers and thus cannot provide support to the project.

8. **Mixed motivations:** The reasons for farmers joining EFO were far more diverse than to produce organic crops and sell them in a secure market. Farmers have seen that EFO members received other benefits like fences, transport to markets, regular visitors, exposure, receiving free inputs, etc. In case these benefits are not forthcoming in the foreseeable future many farmers will drop out or the EFO might shift to other agricultural production methods if the majority or leaders assume that they will benefit more.

9. **Threat of handouts:** The EFO are open to new technologies to their farming system, especially if they are free, e.g. the Department of Agriculture wants them to test a new vitamin A rich sweet potato variety and nobody of EFO asked when it was offered what impact the new variety or its source (conventional agriculture) has on an organic agricultural system. Experience in Uganda showed that farmers changed from organic to conventional if free inputs were available and the organic market was not able to buy all organic produce at a premium price from the farmer (Fischer FU, 2004). This is particularly important when yields in conventional and organic agriculture are approximately the same due to the non-availability of financial resources for buying off-farm inputs, when the same traditional farming practices are used in both organic and conventional farming, and when alternative markets are available.

10. **Certification:** Farmers need training in the requirements of certification, their roles and responsibilities, and in technical organic production, as the certification process is too abstract and is not understood by most of the farmers.

11. **Alternative markets:** A few farmers made a statement that selling to 'hawkers' (informal traders) is easier, because they harvest the crop and immediately pay cash and the better price they get for certified organic produce is not worth the effort of harvesting, sorting and transporting it to the packhouse. The commitment to supply volumes to Woolworths is thus threatened.

12. **Transport costs:** The transport to the packhouse (Assagay Organics Ltd.) was not paid by farmers but was done by the Department of Agriculture and thus was an indirect subsidy, which in the long run might not be sustained by the Dept of Agriculture. Now in 2005 the Dep. of Agriculture has withdrawn the transport and farmers will have to organize and pay for it and that will change the economic viability.

1.6 "Academic" Partnerships in the Revitalisation Context

The case of the Ezemvelo Farmers' Organisation and the informal partnership with an academic institution which has catalysed a development process, presents a number of lessons of good practice in agricultural development which can be translated directly to the revitalisation context.

Of particular importance is the clear potential that academic institutions can play as development facilitators, active collaborators and a magnet for funding, while undertaking research and gaining directly from the academic process. Some of these positive outcomes resulting from the dynamic nature of the "partnership" are arguably the outcomes of activities themselves and in-process learning, rather than the explicit intent of the initial interventions.

1. **Trust and flexibility:** This initiative has had the ongoing vision and support from a few dedicated individuals who play key roles in linking the project with external markets and sources of information for crop production. The relationship has been built on trust between a small group of lead individuals in the farmers' organisation and from the academic institution. Flexible and responsive collaboration with a supportive market agent and a wide range of opportunities has seen a slow but steady increase in project momentum. Besides the direct support in production and marketing information, their sourcing of funding for infrastructure, and their intrinsic role in the marketing of the EFO's produce, these individuals have worked on influencing policy in the Government Departments to try and ensure a more enabling environment for the farmers. There is an understanding of the complexity of the process they are involved in and the need for ongoing work and experimentation to solve ongoing problems. A good example of the flexibility and responsiveness is the evolution of the committee leadership which was initially based on more traditional leadership (unifying emphasis) to one more strategically positioned in terms of language and skills base to address the increasingly important external parties and agencies.

2. **Research as a driver:** The success of this initiative has resulted in substantial and increasing research interest and is creating credibility in the validity of traditional farming systems in an academic and scientific environment, which is still conservative. The research projects themselves have generated momentum which has been used to attract further funding, both from government and academic sources – through development grants and action research assignments (the current DWAF funded rainwater harvesting underground tanks, and WRC research into training materials for rainwater harvesting are cases in point). The academic partner has largely played a facilitation and information transfer role while using the project as a research site. At the same time there has been some buffering and control of ad-hoc and potentially destabilising interventions by ensuring coordination and strengthening the EFO. An example of this broadly collaborative approach is the entry of new initiatives such as Plant Bio through the academic partner.

3. **Existing knowledge and practice:** The core of the cropping initiative (growing organic vegetables based on traditional cropping approaches) has built on what farmers were already growing and doing. This is recognised by a wide range of people involved including the farmers themselves as being a key to the uptake and success. Crops that farmers are familiar with and have grown for many years are being marketed. New crops are only being brought

in slowly and carefully on an experimental basis. This approach has direct parallels with opportunities presented by introducing conservation agricultural approaches which build on traditional farming styles, but add complexity and introduce dense cover crops, specialised varieties etc.. A second example or more complex agricultural water interventions on conventional irrigation schemes, such as combined rainwater harvesting and supplementary irrigation. A research relationship would be an excellent basis on which to move that kind of initiative forward.

4. **Broad benefits:** Farmers are generally very positive about this initiative even though their financial gain to date has been modest. There is a sense that benefit to the community is seen more on a holistic level and that the increased interest, security in the marketing channels and broader horizons for the farmers are seen as important factors as well.

5. **Growth from small successes:** The Ezemvelo Farmers' Organisation has expanded from 20 members (certified organic) in 2001 to around 170 members this year. The EFO has managed to remain flexible and to set up internal systems of management that have been productive for them.

6. **Niche market – high value crop:** The secure market access through the packhouse as well as direct relationship with Woolworths is a key part of the project success. While some farmers argue that it is easier and quicker to sell (both low and high quality) via traders, the packhouse continues to attract a strong inflow of produce. Quality produce is clearly key to profitability. The small holder farmers in Umbumbulu are reasonably typical of many similar farmers in the region. Their present advantage rests in them producing certified organic produce and focussing on traditional/indigenous crops. They have established a clear niche market and need to expand and protect what makes them unique.

7. **Individually owned enterprise:** The smallholders are cultivating their own household fields (ranging in size from 0.25 – 8ha). There is an interest in maintaining this model and not reverting to communal cropping as the pressure for land and irrigation increases.

8. **Whole enterprise planning:** The funding from the Department of Agriculture for fencing for individuals' fields and a tractor for use by the group often, in other contexts, shows little sustainability or outcome. In Umbumbulu however, both these aspects have been positive in increasing productivity in the area and more funding will be sought for fencing for the new members and an additional tractor for the expanded group. This is because the greater agricultural production enterprise is developed and the capital investment is not made in an enterprise vacuum.

9. **Contract marketing:** Woolworths is expanding their relationship with the small holders and is prepared to increase involvement from an end-chain buyer to more direct involvement in support of the farm production cycle. They are also planning a strong marketing campaign of their planned involvement which will benefit both their social responsibility image and the produce market.

10. **Mobilising the youth:** The youth are being slowly and pro-actively drawn into farming through the success of this initiative. This has major social implications as youth turn to productive and personally challenging activities that generate income, pride and purpose.

Appendix G

Case Study No.2 – Makuleke Irrigation Scheme

1 CASE STUDY NO.2 : MAKULEKE IRRIGATION SCHEME – OUTGROWER FARMERS

This case study describes the Joint Venture (JV) between Makuleke Irrigation Scheme (MIS) and Noordelike Sentrale Katoen (Pty) Ltd. (NSK) for the production of 230ha of cotton on MIS, which totals 272 ha in extent. This is an outgrower type of JV, but is unusual in the degree of risk sharing that is included in the contract through a 50/50 agreement on profits or losses.

Makuleke was one of the schemes that were selected by the Department of Agriculture under the WaterCare revitalisation program and the partnership was initiated in that context. The background to the JV is outlined with regard to the history of the Scheme leading up to the partnership with NSK. The partnership is then described in terms of the contract established for the JV and the procedures followed in the implementation of the programme. Key features of the partnership and the lessons learned are outlined and discussed.

1.1 Brief Scheme History

1.1.1 Location

Makuleke is located in the north-eastern corner of the Limpopo Province in the Vhembe / Malamulele District. It is close to the Punda Maria camp in the Kruger National Park. The scheme is situated on land, which falls under the Makuleke Tribe, which in turn falls within the Mhinga Tribal Authority. The irrigation lands are on the banks of the Mphongolo River.

1.1.2 Homeland development

The scheme was built by the Agricultural Development Corporation in the early 1980's and experienced problems from the outset. These were mainly due to inappropriate allocation of many of the farms to homeland government officials and individuals with political influence. These beneficiaries were all part-time farmers because of their full-time jobs and other commitments. The local community were consequently very bitter about the development and did not support the Scheme.

In addition ongoing differences between the Makuleke and the Mhinga chieftainships added to the lack of progress on the Scheme. The farmers operated under the umbrella of a farmer's cooperative but the Scheme was largely managed and controlled by government through their Agricultural Development Corporation until 1994. The Scheme then fell under the responsibility of the Northern Province Department of Agriculture and the Agricultural and Rural Development Corporation (ARDC) and all financial and management support was withdrawn with the long term objective of handing over the Scheme to the farmers. Consequently MIS became moribund with large debts outstanding for unpaid electricity bills and input costs and infield irrigation equipment being stolen or vandalised.

1.1.3 Revitalisation background

A DBSA loan for tractors and agricultural equipment, which had been approved for MIS prior to 1994, remained available to the Scheme through the Department of Agriculture, subject to certain conditions which included the establishment of a farmer representative body that would be responsible for the Mechanisation units. In 1998 the consulting firm ACER was appointed by the Department of Agriculture to investigate the constraints and opportunities for MIS to benefit from the DBSA loan. A status quo report was prepared in August 1998.Then in July 1999 the consulting firm Loxton Venn and Associates (LVA) was appointed by the Department of Agriculture, with funding from the German company GTZ, to facilitate a process of establishing a scheme management committee that would be a democratically elected body representing the interests of the farmers and leading the revitalisation of the Scheme (which would include the application of the R1,2 million DBSA facility for mechanisation units).

The first facilitation workshop, which was held in July 1999, revealed that MIS was still in turmoil because of the farm allocation issue and the related conflict between the two chiefs. It was finally agreed that a process of reallocation of farming units was the only way to resolve the deadlock and LVA was appointed in April 2000 to assist the Dept of Agriculture to implement the reallocation process.

1.1.4 Management committee

An interim committee was elected by a general meeting of farmers and a highly participatory, transparent and gender sensitive process was applied that ensured the equitable reallocation of farms. The process involved the workshopping of the selection criteria, advertising for applications, the receiving and evaluation of applications by a committee consisting of representatives of the Dept of Agriculture and the Interim Committee, the selection of farmers and their announcement over the local radio and by means of public notices. The new farmers were ratified by the Dept. of Agriculture and the Mhinga and Makuleke Tribal structures.

The new farmers were settled by September 2001 and MIS was selected in February 2002 to be part of the second phase of the Water Care Programme that was tasked to facilitate the revitalisation of smallholder irrigation schemes in the Province. The first task for the Makuleke farmers was to form groups that would share water supplies and support services and work together in whatever way would be mutually beneficial to them. The groups then elected, by a secret ballot process, Group Committees of five farmers each and the Chairperson and vice Chairperson of each group became representatives on the MIS Management Committee (MC). The MC also has representatives from the Makuleke Tribal Authority and the Department of Agriculture.

The MC then set about drawing up a constitution for the Scheme with the objective of establishing the Scheme as a Water User Association (WUA) and the committee becoming the Management Committee for the WUA. The constitution was finally accepted by a general meeting of all farmers in July 2002. The WCP applied a comprehensive training and mentoring programme for the MC members in the day–to-day aspects of Scheme management and conflict resolution and for the individual farmers in the practical aspects of crop production and irrigation.

1.2 Description of the Scheme

The map in Figure G1.1 shows the layout of the Makuleke Irrigation Scheme (cotton fields as well as food plots, divided in the three different groups into which the farming community is organised within the Farmers' Management Structure).

1.2.1 Climate, rainfall and cropping

The scheme is situated in a sub-tropical environment, which is frost-free and well suited to sub-tropical fruit and nut crops, winter vegetables (including green maize) and field crops in summer. Most of the annual rainfall of 590mm is received through thunderstorms, which is evenly spread from November to March. Temperatures are very high with maximum temperatures of more than 40°C not uncommon. This results in very high evaporation that can influence the irrigation pattern. Prevailing winds are mainly light to moderate.

Crops include maize, cabbage, tomatoes, green peppers, chillies, bananas and mangos. The matter of efficient land use is considered very seriously, since it is this that led to the re-selection of members for the scheme. People feel that after the scheme's rehabilitation people who do not use their lands have to be reported to the Management Committee and the case examined. Land could in such instances be taken back from the owner. There is currently a high dependence on dry-land farming in the area, which, due to low rainfall, is considered a high-risk operation with marginal results.

1.2.2 Soil and topography

Several soil surveys were carried out in the early 1990's to determine if the area is irrigable. It was found that there are no real restrictions; in fact, the area has high irrigation potential on gently undulating topography, which is well suited to orchard crops. The soils are mainly of the Makatini, Shorrocks and Glendale series with an average soil depth of 900mm. The salinity, the available soil moisture and infiltration rate is all within accepted irrigation norms.

1.2.3 Bulk water and crop water requirements

The main water source is the Makuleke dam in the Mphongolo River, a tributary of the Shingwetzi River. Prof C Midgley of the Witwatersrand University has assessed the availability of water and expressed his satisfaction that the water sources for the irrigation scheme are adequate to be successfully operated with the known risks that occasional dry periods may occur. The crop water requirements of the general crops grown under the irrigation scheme is 5mm gross per day, although it can be considerably higher during hot spells.

1.2.4 Irrigation infrastructure

Irrigation water gravitates from the Makuleke Dam via a concrete lined canal and a pipeline to a balancing reservoir at the irrigation scheme. The irrigation water flows from the dam via a concrete canal and a pipeline to a balancing reservoir midway between the two main irrigation blocks. From the balancing reservoir water is pumped to the different plots and blocks.

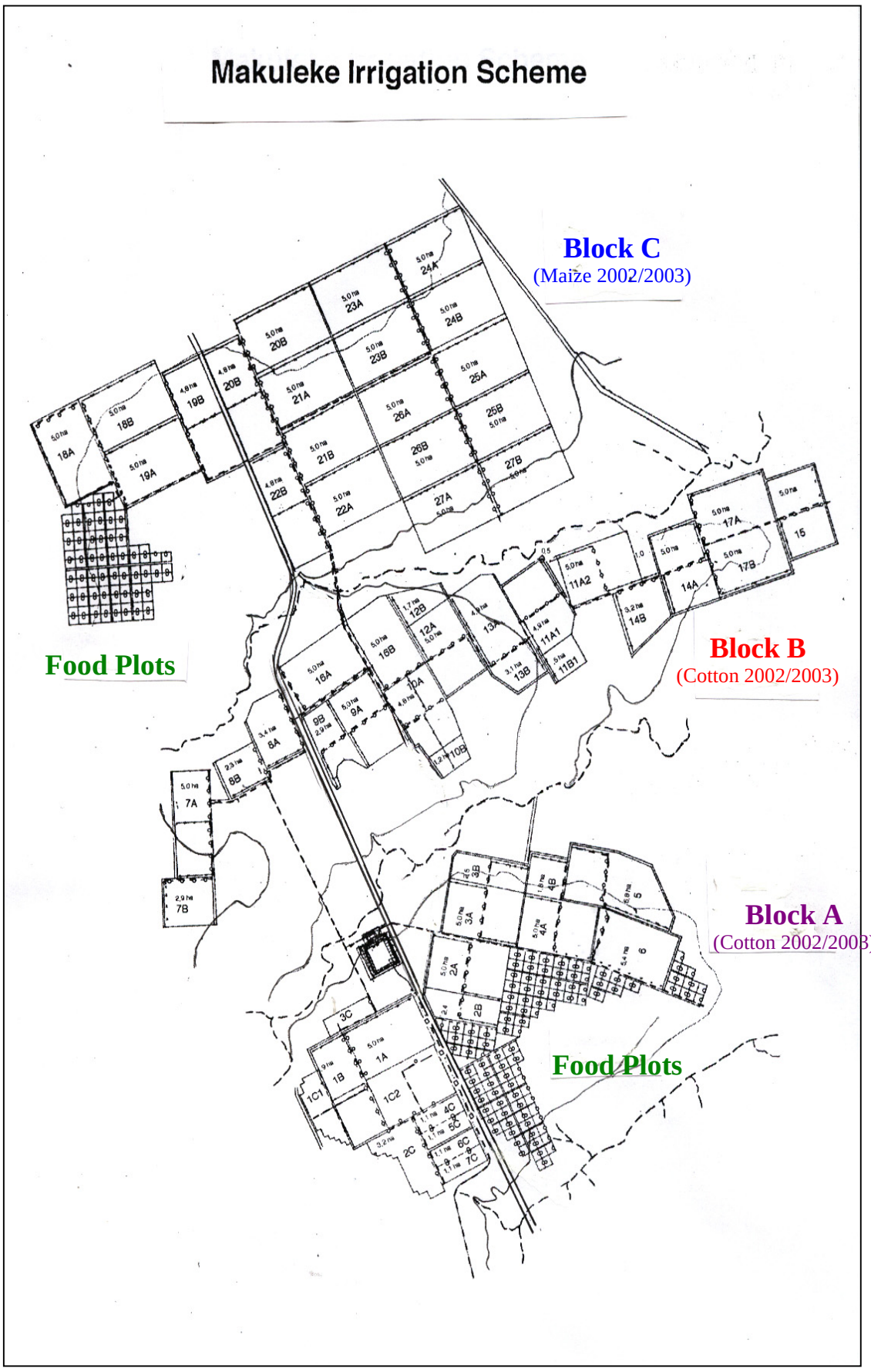


Figure G1.1: Makuleke Irrigation Scheme – layout of fields and food plots.

A balancing dam is located midway between the two main irrigation blocks. The estimated storage capacity is 7 000m3 (cubic meters). A pump station

with 4 pumps, each with a capacity of 110 litres per second, delivers water through a pipe network to the different irrigation blocks. These pumps provide controlled pressure and flow conditions for effective irrigation.

The irrigation area is divided into several groups or blocks. It has a sprinkler irrigation system with a sub-surface supply line, hydrants, quick coupling pipes and sprinklers.

1.2.5 Land holdings

The scheme can be divided into two definite farming sections or elements of land use, namely a "commercial" section with plots of ± 5,0 ha in size, and a food garden section with plots of ± 0,1 ha in size. This approach was decided on by the farmers to accommodate emerging commercial farmers as well as the need for the food security in an extremely impoverished community.

(a) Farm units of 5,0 ha blocks

A common pipeline delivers pressurised irrigation water to the 5,0 ha plots from the pump station. Each plot has its own hydrant riser valves to connect the laterals and sprinklers to. A 6-day working cycle with 2 sprinkler shifts per day was practised to irrigate the 5,0 ha plots. The peripheral plots follow a similar practice. There are 46 farmers farming on the 244,6 ha.

(b) Food plots

The food plots of 0,1 ha are also irrigated with a dragline sprinkler system. There are 277 food plots in total.

Commercial units:	Field crops:	46 x (±) 5,0 ha	=	231,4 ha
	Mango orchard:		=	13,2 ha
	Sub total		**=**	**244,6 ha**
	Food plots: 277 x 0,1 ha units		=	27,7 ha
		Total irrigation area:		**272,3 ha**

1.2.6 Operation of existing irrigation system

The existing irrigation system was not fully operational for at least 3 years. This was because most of the above ground equipment like the irrigation pipes and sprinklers went missing or were damaged beyond repair.

The spacing, which is used, is 12m (sprinklers) by 15m (laterals). The stand time used to be 2 x 10 hours per day, for a seven-day cycle. The application rate is ± 6mm/h for such a sprinkler system when a 4mm nozzle is used with a working pressure of 320 kPa.

The **average plot is 5ha** with 4 hydrants and 3 positions per hydrant and a single sprinkler line. It is therefore possible to work 6 days a week working day cycle and irrigate 2 positions per day, with 9 hours stand time per position. A seven-day cycle is ideal. All calculations are for the peak water requirements of the plants, in this case cotton. It should be noted that peak water requirements can occur for short periods only or can vary up to a week or longer. Temperature, age of the plants and whether or not the soil is kept

at field capacity, influence peak water requirements and thereby the irrigation management.

1.3 Social Infrastructure and Issues

a) ***Basic social infrastructure*** such as water and electricity are defined as among the primary needs of the Makuleke community. While electricity is available in the villages, it is not easily accessible due to connection problems. This leads to over-exploitation of natural resources such as firewood. The lack of electricity can further be linked to other problems, noticeably the high crime rate in this community where some have mentioned the need for street lighting to improve security. Improved roads and bridges and a better transport system are also seen as needs still to be addressed.

b) ***Unemployment*** is identified as one of the most important problems faced by the community. This seems to be a problem specifically among the youth who, partly out of boredom but also as part of the struggle to survive, turn to crime. Although the rehabilitation of the scheme has done a lot to improve the situation, especially regarding the creation of jobs on the cotton fields, there still seems to be a need for more job opportunities especially for the youth. It should also be noted that the food plot farmers do not contribute from the cotton farming at all and have limited job opportunities for people other than their immediate family members on the food plots. A very high dependence on income from pensions still prevails in the community, thus concerns related to the aged remains common.

c) ***Care for the aged*** received special attention in the community, with some of the needs still to be addressed being an old age home and improved pensions. The pension aspect, however, is directly linked to the high dependence the community has on pensions which are, in some cases, still used to support entire families in which no other form of income is available. The youth are concerned that if pensioners are put in old age homes, they (the youth) will not have access to the income from pensions of their elders anymore.

d) ***Crime*** was sited by Makuleke farmers as still being common in their community, although not as much as it used to be before the WaterCare Programme and the subsequent farming activities. The youth are regarded as among the primary culprits of theft of personal belongings, crops and scheme infrastructure such as pipes or aluminium bolts. This is largely ascribed to the fact that they cannot find jobs to occupy and support themselves with. Prostitution by young girls also still occurs, often involving outsiders and foreign tourists (en route to the Kruger National Park) but is not as prevalent as it used to be before the farming interventions of the WaterCare and RESIS Programmes (pers comms, Management Committee, 2005). The reasons for this statement are not known.

e) ***Wild animals*** breaking through the fences of the Kruger National Park still raise havoc in the community. Makuleke's close proximity to the Park makes it vulnerable to attacks by animals such as elephants, lions,

crocodiles and hippos. Elephants often break through the fences, allowing other dangerous animals such as lions to also come through the damaged fences into the community. Goats, cattle and people have been attacked and killed. Crocodiles make fetching water from the dam dangerous and deaths have occurred.

f) ***Community conflict*** in terms of various levels of tension between members of the community themselves, as well as the long ongoing and still prevailing dispute between the chiefs of Makuleke and Mhinga seems to remain a cause for concern to the residents of Makuleke. The dispute between the two chiefs is linked by some farmers to ritual murders in the area which seem to have had an impact on the finalisation of the individual land ownership process.

1.3.1 Profile of farmers

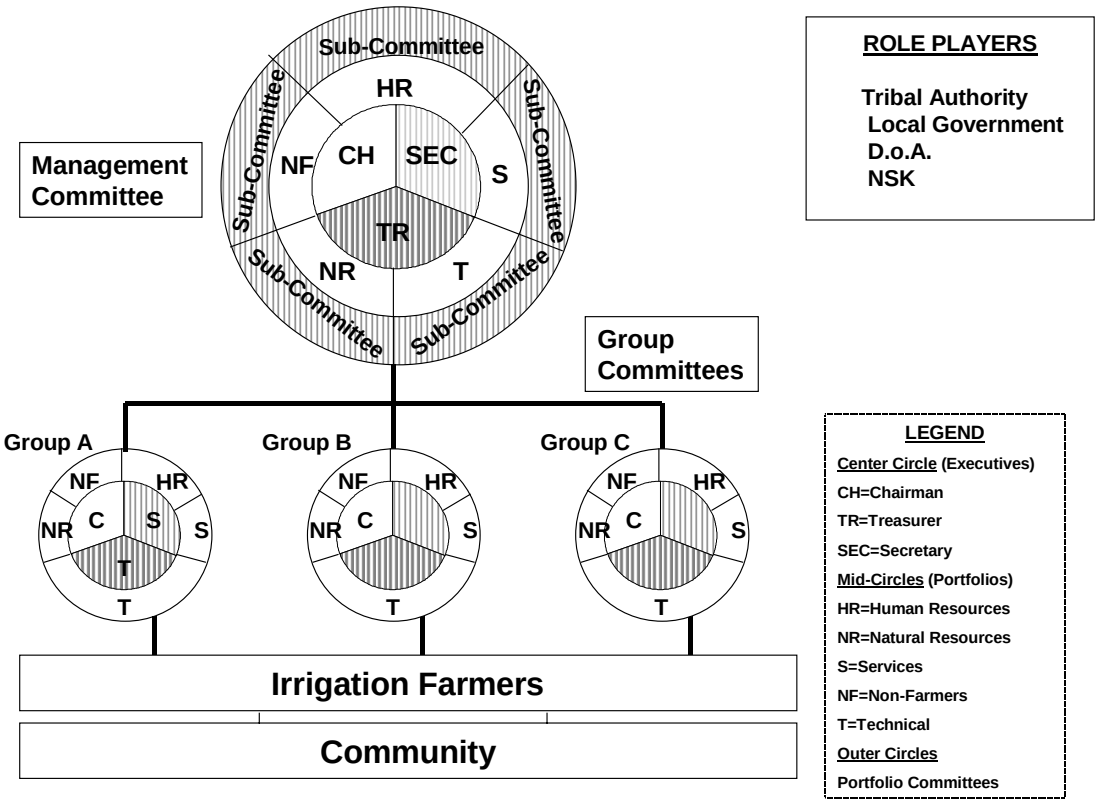
The Makuleke Irrigation Scheme is comprised of 46 cotton farmers (of which 7 are women) and 277 food plot farmers (of which 32 are men). All of these farmers are between 40 and 65 years of age. These farmers have all only recently been selected onto the scheme, due to the re-allocation of land. The newly selected farmers were, at the time of selection, regarded as the poorest of the poor in the community. The majority of these farmers had no knowledge of proper agricultural practices before receiving training within the LDA - WaterCare programme.

1.3.2 Farmers' organisation / structures and constitution

Figure G1.2 below shows the current Organisational Structure in place and operational at Makuleke Irrigation Scheme. The Structure was developed and incumbents elected by the farmers themselves, during the WaterCare programme, after the farmers received training on Institutional Organisation within their scheme. They have their own fully functional Scheme Constitution, developed by the management Committee and the farmers themselves, also after receiving training on the function and development of a Constitution within the WaterCare training.

The structure seems to be operating well and all portfolios are fulfilling their functions sufficiently. Conflict management and enforcement of discipline within the scheme is successfully handled within this structure. The farmers are satisfied with this structure and the performance of the individuals occupying the different portfolios – a strong sense of trust and respect is evident between the farmers and the Management Committee.

Figure G1.2: Makuleke Irrigation Scheme – Management Structure



1.3.3 Land ownership

The farmers on the Makuleke Irrigation Scheme are awaiting formal certification of land ownership. According to the agreement reached during the land claim negotiations and the subsequent re-settlement, the land currently occupied by the residents of Makuleke as well as the farming land / food plots currently allocated to farmers, will become the property of the people / farmers themselves. This process is delayed due to the ongoing dispute between the chiefs of the area, Chief Makuleke and Chief Mingha. According to the people, the real cause of this dispute, which has been ongoing for several years, even since before the land claim and re-settlement, is unclear.

What is clear is that residents / farmers of Makuleke are anxiously awaiting the day on which they will receive the certificates proving their ownership of the land. In the meanwhile, the community have decided to stand together and work together, overcoming hardship and obstacles as if they already officially own the land, based on the original promise in the land claim agreement reached in the 1990's. They view this as a "common goal and purpose" to work towards, which seems to be the major driving force behind their success and achievements as an irrigation scheme over the past two to three years, despite many difficulties and trials.

1.4 WaterCare Programme

The revitalisation of Makuleke Irrigation Scheme through the WaterCare Programme of the LDA commenced in January 2002 and came to an end in February 2004 with the commencement of the LDA-RESIS Programme. During this period of two years, the following was achieved at Makuleke:

a) A pre-development survey of the scheme and its farmers was done to determine their problems, fears, needs and aspirations for their scheme.

b) A technical evaluation of all scheme infrastructures and a prioritisation of rehabilitation were done.

c) The establishment of an appropriate institutional structure through which the farmers of Makuleke can own and manage their scheme and produce crops in a profitable and sustainable manner was achieved. As part of this structure, a technical committee was formed to lead the rehabilitation of infrastructure and to take responsibility for water distribution to farmers and the maintenance of scheme infrastructure.

d) Capacity building through training of the management committee and group committees as well as the farmers in scheme management and crop production (maize) was achieved.

e) Facilitation of the involvement of the NSK as a joint venture partner for the farmers was done.

1.4.1 Mechanisation

Although hoeing and application of fertiliser (according to the Adendorff 'proppie' method as taught to the farmers within the WaterCare training) is done by hand, ploughing, planting and herbicide application is done mechanically. Tractor contractors' services are used for this. There are four local contractors who are residents of Makuleke and own tractors. One outside contractor's services was used during the past season who is a white farmer with six tractors and he also trained the four local contractors on an 'on-the-job' basis. The farmers are satisfied with the contractors' working standards and the quality of their equipment. Some planters were supplied by the NSK as part of the joint venture agreement and are stored at the baling site next to the co-op. The farmers do quality control of the ploughing and planting on their lands themselves by being present during the actual activities. When a farmer is not satisfied with a contractor's performance, the contractor is stopped and reported to the Management Committee who has the right to withhold payment to the contractor, should he not rectify the situation. However, this only happened once since the start of the joint venture farming at Makuleke in 2002 and was due to inexperience of the contractor at the time.

1.4.2 Financing

As described in Chapter 1 (Introduction) of this section, financing of the farming activities at Makuleke are done by the NSK within the joint venture agreement.

1.4.3 Farmers' skills / training

The farmers of Makuleke received the following training within the WaterCare Programme:

a) **Institutional training and capacity building courses**

- Understanding your project (what is the project all about?).
- The roles and functions of the management committee:
    - Chairperson
    - Vice-chair
    - Secretary
    - Treasurer
    - Additional members
    - Project cycle management
    - Identification of project management gaps / problems
    - Prioritisation of project management gaps / problems
    - The project-planning matrix (PPM)
    - How to combine the PPM with the existing management structures.
    - The management structure portfolios' roles and functions – clarity on our actions.
    - The management structure portfolios – training audit.
    - Management and leadership skills
    - Basic bookkeeping
    - Development of the community as a group within the project
    - Constitutions
    - Conflict resolution
    - Joint ventures and partnerships
    - Day / operation management

Specific objectives of the training:

After completion of the training, the management committee is expected to be able to:

- Identify and map their own scheme (physically);
- Pinpoint problems (structural and human resources), that caused/causes the scheme not to function as it was designed to do;
- Identify the main stumbling blocks;
- Identify and describe these stumbling blocks and setbacks so that they could demonstrate that they have an understanding of the problems at hand and the realities to be faced to revitalise their scheme;

- Identify what skills (training), interventions (help from outside) and resources are needed to help with this journey to self-sufficiency and independence;
- Prioritise which actions to address first;
- Identify feasible rehabilitation within the budget and time constraints;
- Handle the day-to-day tasks of managing the rehabilitation process and to keep all the interested and affected parties informed and co-operating;
- Implement their skills to operate and maintain a successful and sustainable scheme.

b) **Agricultural training and capacity building courses**

- Soil preparation to establish a maize crop
- Establishing a maize crop
- Fertiliser application for maize by small-scale farmers
- Weed control in maize production
- Control of Witch weed (*Stricha hermonthica*) in a maize crop
- Pest control in a maize crop
- Soil-pH and its effects on the maize plant
- Utilisation of natural resources
- Establishing homestead gardens for food security
- Vegetable production on food plots

c) **Water management and infrastructure maintenance training and capacity building courses**

- Basic irrigation principles
- Flood irrigation – construction, operation and evaluation
- Sprinkler irrigation – equipment, operation and evaluation
- Scheduling of water for:
    - Field level
    - Secondary canal or pipeline
    - Section of scheme
    - Scheme level

- Maintenance of infrastructure and equipment:
    - Weirs and silt traps
    - Main canal and its infrastructure
    - Long weirs and outlets
    - Secondary canals and diversion methods
    - Balancing dams
    - Buried pipes and hydrants
    - Sprinklers and movable pipes
    - Measuring devices
    - Pump stations

- Specific outcomes of training: (after training farmers are expected to be able to:)
    - Realise the effect of over- and under-irrigation
    - Understand the basic interaction of soil – plant – water – air
    - Identify problems with their infrastructure and equipment
    - Use and adapt their water management plan
    - Do basic maintenance on their infrastructure and equipment
    - Integrate all the training received to manage their scheme successfully.

According to the farmers of Makuleke, they still desperately need more intensive training on financial control / management, marketing and record keeping.

1.5 Share-Cropping JV – Process to Implementation

1.5.1 Cotton gin demand for crop

NSK is a cotton processing company with a cotton gin situated in Makopani which obtains cotton for processing mainly from white commercial farmers in Limpopo Province. One of the company's strategic objectives was to increase the proportion of cotton for the gin from smallholder farmers in the Province.
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Makuleke was identified as an excellent potential supplier and joint venture partner because of the recently established strong leadership structure, the involvement of the Scheme in the Revitalisation programme and the high potential for cotton production on the Scheme.

NSK approached the Scheme through the MC in October 2002 to establish what was locally called a 'Joint Venture' but is, according to the categorisation adopted in this report (Mayson, 2003) and is a share-cropping arrangement. The generic term JV is adopted in this report but more specifically in this case relates to share-cropping. The aim was to produce cotton on the commercial (5.0ha) areas of the scheme.

1.5.2 Financial pressure on farmers

Initially there was considerable resistance from the Makuleke farmers to the idea of cotton production via a joint venture because of the perception that there was "no money in cotton" and with their new-found independence, reluctance to being bound into a long-term relationship with a private company. There was a feeling that they needed to 'find their feet' as independent farmers before committing to a partnership.

However the farmers had a major constraint to the development of their scheme because the Revitalisation programme only funded bulk infrastructure and not in-field irrigation equipment which was to be the responsibility of the farmers themselves.

NSK then offered to fund the irrigation equipment which could be repaid from the profits of the cotton crop over a period of five years and at Land Bank interest rates. This was a very attractive offer which the farmers saw as a simple solution to their barrier to development. They recognised the

opportunity that the JV would provide in establishing themselves while gaining faming experience over the five year period, with the possible long-term prospect of converting to higher value sub-tropical fruit or nut crops. The excellent conditions the Scheme provides for banana production is of great interest to the Makuleke farmers.

1.5.3 Momentum provided by existing initiatives

The initiation of the MIS/NSK JV had the advantage of coinciding with the introduction of the Water Care Programme (WCP). This programme was responsible for the revitalisation of the scheme through a farmer empowerment process and the rehabilitation of bulk infrastructure.

NSK has acknowledged that dealing with a well constituted Management committee which (a) truly represents its farmers, (b) has individuals with strong leadership skills, (c) which works within the framework of a strong constitution and, in terms of that constitution, is responsible to its constituent farmers, made the implementation of the JV so much easier than on any of the other smallholder schemes where they were involved.

1.5.4 Trusted advisors on finance and contract

The WCP facilitation team assisted directly in the establishment of the JV by providing an on-going sounding board to the MC and individual farmers on issues over which they had fears and uncertainties. Of particular significance was the facilitation of the JV contract workshop which led directly to the decision to form the partnership. The facilitation process assisted also in the establishment of trust between the two parties which consequently had enormous value when the inevitable problems arose.

Whereas commercial JV partners (or potential partners) may well have the in-house skills to provide a facilitation role, they often do not have the time to address the needs of the smallholder farmers adequately and furthermore the independence of an external facilitator is appreciated by the smallholder farmers who see the facilitator as their advisor on the many complex aspects of a JV partnership.

1.5.5 Negotiations

NSK was then invited by the MC to submit a proposal for their involvement on the Scheme. A draft contract was prepared and presented to the MC. As a result of ongoing opposition to a JV with NSK by a number of farmers, LVA was requested to hold a workshop (to which all farmers were invited) to analyse the contract and to debate the advantages and disadvantages of cotton production and a JV partnership with NSK. The workshop was held on 13 October 2002 and was attended by about 20 farmers (including the MC representatives), the local Extension Officer and a Tribal Authority representative. It is important to note that NSK was not invited to this meeting.

There was a great deal of uncertainty and fear over the implications of the contract which was not clearly understood – it is likely that the contract had not even been read by the majority of the farmers. Following a detailed review of the contract by the facilitator and clarification of many concerns raised by the meeting, a list of advantages and disadvantages of the JV were tabled as a basis for a consensus decision. The pros and cons listed are shown in Table 1.

Table G1.1 : Comparison of the NSK joint venture as identified at a workshop to decide on the Scheme's involvement in the proposed partnership.

Advantages	Disadvantages
In-field irrigation secured with no cash outlay	Net returns relatively low for cotton
Mechanisation services provided by NSK	Risk of high price fluctuations from year to year
NSK to provide a production manager with mentorship and training responsibilities	A commitment to a cotton contract for five years to pay off an irrigation equipment loan.
NSK to provide all bulk equipment to handle cotton – free of charge	The viability of the JV being dependent on double cropping cotton with wheat. Concern about maintaining this rotation if cotton hand picked (time factor)
NSK to pay electricity deposit/ connection fee to ESKOM	Loss of independence of individual farmers
Guaranteed market at a pre-harvest (April) confirmed price	Have not yet established a working relationship with NSK and unsure about a major commitment so soon
Farmers can provide labour, for which they will be paid monthly (thus providing a short-term income)	The lateness of the season. Concern that with all that still had to be done that the crop would be planted too late
Favourable profit share(50/50) arrangement	
NSK's profit share to be used for purchase the following season's inputs. This will reduce production loan requirements	
NSK will take responsibility for the raising of finance for production loans or any other financing which may be necessary	
Farmers retain "ownership" of their farms while consolidating them for production purposes	
Farmers retain responsibility for irrigating, weeding and harvesting on their own farms and will benefit from the actual yield from their farm as opposed to an average yield from the whole crop	

A majority vote decided on going into the partnership. The farmers opposing the resolution accepted the decision although somewhat reluctantly. A group of three farmers with lands on the periphery of the scheme were given permission to remain outside of the JV as their farms would not interfere with the cotton production operations.

The Contract was finally signed by the MC on 20 November 2002.
The programme that followed included the following key activities:

- Purchase and installation of irrigation equipment
- Pre-plough irrigation
- Ploughing and seedbed preparation
- Planting (mid December to early January)
- Maize (100ha) replaced cotton on Block C after the cotton planting cut-off date in early January
- Harvesting of cotton was completed in September 2003

1.5.6 Crop production outcome

During the first season, the main crop produced at Makuleke was cotton under the joint venture partnership with the NSK. The following table summarises the results of the 2003 season for cotton.

Table G1.2 : Cotton Production Margins (2003)

COTTON	Total income / expenditure	Average per farmer (19 farmers)
Ha	123	6,5
Kg	166 698	8 773
Average yield	1355 kg/ha	
Projected Income at R4/kg	R637 688	R33 563
Actual income	R466 281	R24 541
Expenditure:	R730 896	R38 468
Chemicals	R68 049	R3 581
Cotton slashing	R18 976	R999
Fertiliser	R142 883	R7 520
Harvesting cost	R66 554	R3 503
Irrigation labour	R133 043	R7 002
Insurance	R43 546	R2 292
Land preparation	R141 135	R7 428
Planting	R84 575	R4 451
Pumping cost	R25 655	R1 350
SARS	R6 480	R341
Gross income before interest at R4/kg:	-R 93 208	-R 4906
Interest capital	-R 25 230	-R 1 328
Interest cotton	-R 82 824	-R 4 359
Net income after all interest at R4/kg	-R201 262	-R10 595

During the first season of the JV the best cotton yield was 1 723 kg/ha or 11 372 kg from a 6,6 ha field (Block 11A & B). The farmer who produced this yield, still had a net income of only –R1 441, 00. The overall low results was brought about by a low yield and because not all of the cotton had been harvested. The budgeted yield had been 2 500 kg/ha.

Maize has been planted on the scheme in the past, up to 99ha. The following table summarises the results of the (2003) season for maize.

Table G1.3 : Maize Production Margins and Makuleke

MAIZE	Total income / expenditure	Average per farmer (20 farmers)
Ha	99	5
Kg	498 420	24921
Average yield	**5035 kg/ha**	
Income at R4/kg	**R436 118**	**R21 806, 00**
Expenditure:	**R482 641**	R24 132
Chemicals	R34 887	R1 744
Fertiliser	R123 213	R6 161
Harvesting cost	R91 406	R4 570
Irrigation labour	R96 258	R4 813
Land preparation	R108 845	R5 442
Maintenance-irrigation and fence	R3 522	R176
Pumping cost	R19 568	R978
SARS	R4 942	R247
Gross income before interest	**-R46 523**	**-R2 326**
Interest capital	-R25 230	-R1 262
Interest maize	-R55 216	-R2 761
Net income after all interest	**-R126 969**	**-R6 348**

The maize farmer who produced the best maize crop, had a yield of 7 305 kg/ha or 36 526 kg from 5,0 ha (Block 25B) and a net profit of R3 636,00 of which his portion was R1 818,00 (50%).

In contrast to the cotton, the maize could have performed better as a yield of 6 000 kg/ha or more was possible. However, theft was a very big problem: some farmers "stole" their own maize (they did not market the maize through the joint venture, but took it from their own lands at night). Village residents also stole some farmers' maize from the land. One of the farmers only harvested 4 426 kg from 5,0 ha – his land is directly next to the village. It was decided not to plant maize again because of the theft issue, but to rather rotate the crops with wheat instead, starting from next season.

The outcome of the first year of the contract is summarised as follows:

- Very late planting which put the whole programme on the back foot.
- Yields were below target as a direct consequence of this.
- Wheat, as the selected rotation crop, could not be planted.
- The price of cotton fell from the budgeted R3.50 /kg to R3.00/kg as a result of the softening of the world price and the strengthening of the Rand.
- A few farmers made a small profit, many ended in a break-even situation and some ended with a negative income.

1.6 Description of the JV Structure

1.6.1 Communicating the contract content

The contract was presented to the Makuleke MC by NSK as a standard draft agreement for discussion, amendment (where appropriate) and approval. This approach was quite acceptable, particularly as there was a major time constraint to get the cotton crop planted before the cut-off date. However if there had been enough time, a more sustainable approach would have been to hold a workshop of the key role players to draft jointly the heads of agreement for the contract which could then have been put together by the NSK lawyers into a draft contract format for final amendment and approval by both parties.

That approach would have engendered a greater sense of ownership and trust on the part of the Scheme farmers and would have helped to avoid the perception of exploitation that often pervades this type of JV, particularly when things go wrong. The contract, because it was drafted by NSK, does give the impression of a document structured mainly for the needs of the commercial partner. This could have been avoided if the above approach had been applied.

Despite the lack of time at the start of the cropping programme to explain and discuss the contents of the contract thoroughly with farmers, there were numerous meetings held later in the first season and in subsequent seasons, to discuss problems and misunderstandings, and NSK were always willing to have a senior representative visit the scheme to deal with these issues. Consequently the level of trust between the partners was good despite the problem of declining cotton price which undermined the viability of the enterprise over the life of the JV.

Key positive elements of the contract are:

- The 50/50 profit share arrangement.

- The commitment of NSK to plough back their share of the profits into the JV in any way that they felt would secure the success of the crop. NSK's main objective was to secure throughput for the cotton gin and not to make profit out of the primary production.

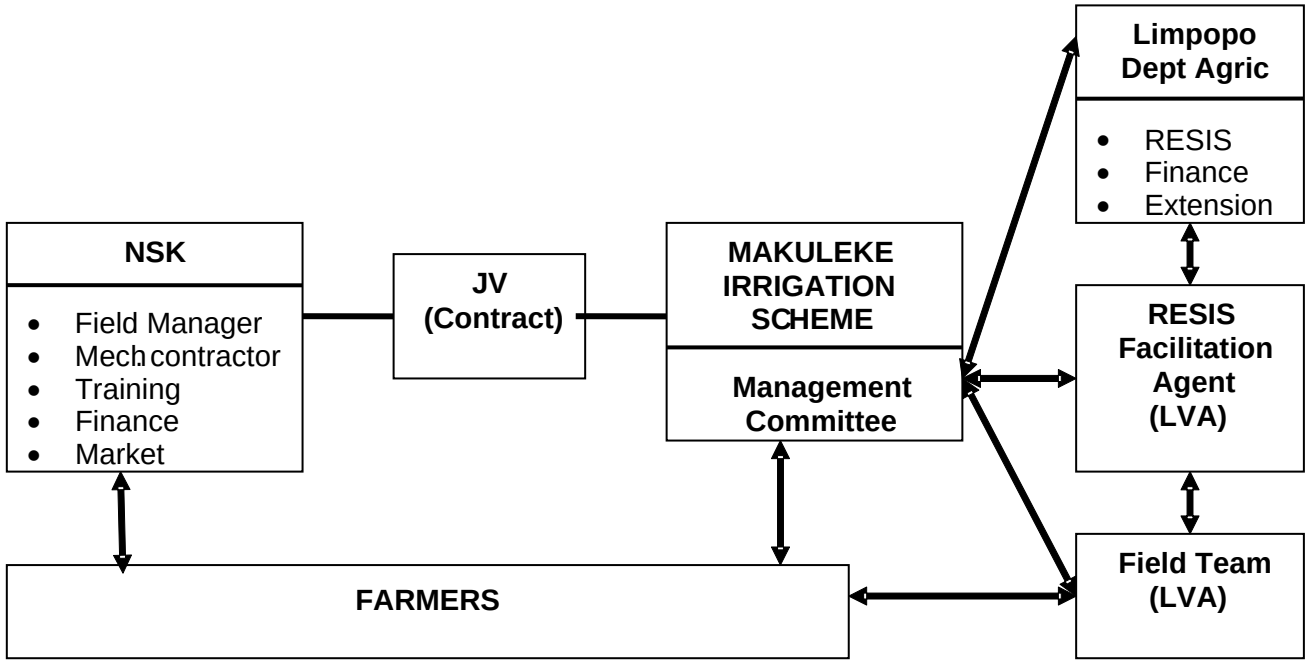
- The record keeping structure, auditing requirements and the provision of regular financial statements to keep farmers updated and informed of cost and income details.

1.6.2 The JV operating structure

The most positive feature of this JV was the operating structure that was applied for the day-to-day guidance, control and management of the cotton enterprise. The structure is illustrated in Figure G1.2.

Figure G1.2

MAKULEKE IRRIGATION SCHEME / NSK JOINT VENTURE OPERATING STRUCTURE



Success features:

- Management Committee (MC) democratically elected by legitimate farmers.
- Strong leadership capacity within the M.C.
- Transparent JV Contract.
- Regular information sharing and awareness creation (no surprise shocks that negate trust)
- Independent facilitator available at key stages of process (seen by farmers as their advisors).
- Facilitators regularly on site (build trust).

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A number of key factors emerged as being important in the structure of the JV:

- A farmer-representative committee (The Management Committee) which was democratically elected by legitimate farmers and which had members with strong leadership characteristics who were able to focus on issues and solutions that were for the good of the JV as a whole and for the good of the farmers as a whole rather than on self-serving interests.

- A fair and transparent contract. As indicated earlier, the contract would have been even more acceptable to the farmers if it had been jointly prepared.

- Regular information sharing and awareness creation. The regular meetings with the MC and with participating farmers, to deal with problems and misunderstandings, assisted significantly in maintaining good working relations between the two parties.

- The presence of an experienced production manager to supervise the day-to-day production activities.

- The role of the independent facilitation agents of the WCP who became involved in assisting the Scheme's farmers in their participation in the JV.

The importance of the **legitimacy and strength of leadership** in this type of JV cannot be overemphasised. There are many examples, within the RESIS programme in Limpopo Province, where a well implemented revitalisation programme, with all the necessary elements for success and sustainability, has failed because of weak leadership. A good example of this sad occurrence is Boschkloof irrigation Scheme on the Steelpoort River in the Sekhukhune District where a thorough facilitation process over a period of two years proved unsuccessful with the Scheme reverting largely to its old state as a direct result of a weak (though well trained) Management Committee

The committee was not able to resist the self-centred interests of a powerful group of three farmers and the tribal authority who systematically undermined the authority of the committee. This led to a loss of respect and confidence in the committee in the eyes of the other farmers – particularly the women farmers. The women farmers who had been very effective in establishing the new management (and ownership) structure for the scheme and had responded well to the crop production training, gradually withdrew from the management structures and farming activities.

1.6.3 Financing arrangements

NSK undertook to raise finance for a number of key activities of the JV. These included:

- The payment of the deposit for the connection of ESKOM electricity to the Scheme,

- The purchase of in-field irrigation equipment for the 230 ha of irrigated cotton / maize,

- The purchase of all crop production inputs such as seed, fertilizer, plant protection chemicals, mechanisation services and labour,

NSK approached the Land Bank and a number of commercial banks to finance the farmers for the above items. It was a disturbing reality that despite the favourable JV structure and the Department of Agriculture's support through their Water Care Programme, **none of the banks approached** were prepared to finance the smallholder farmers without full guarantees from NSK. It was therefore decided that NSK would finance all the listed items themselves and recover these costs from the return on the crop as spelled out in the contract. It is clear that without this commitment from the Commercial partner the JV would never have got into production.

1.6.4 Local mechanisation contractors

In the first year NSK appointed a commercial mechanisation contractor on behalf of the JV to undertake all the mechanisation activities for the project including ploughing, planting, spraying and transporting.

Towards the end of the first season the process of acquiring the DBSA funding for the establishment of three local mechanisation contractors at Makuleke was completed. It then became necessary to ensure that the local contractors who were in the process of being trained and equipped to provide basic mechanisation services to the Scheme and to surrounding dryland farmers, could be integrated into the more specialised mechanisation services required by the JV.

A new commercial contractor was appointed by the JV in terms of a contract that was synchronised with the main JV contract. The new contractor, based in Limpopo Province, was well equipped to cope with the specific needs of a cotton crop including heavy slashers and cultivation equipment to bury the heavy residues of the previous crop and prepare a good seedbed for the new crop.

The mechanisation contractor's contract was thoroughly workshopped with the Makuleke MC to ensure that the newly formed local contractors would be appropriately incorporated into the Commercial contractor's suite of services and would get the necessary support, training and mentorship from the commercial contractor. The local contractors with their lighter equipment were given specific tasks such as slashing, spraying and transporting.

Despite numerous teething problems faced by the local contractors and consequently the limited value of their services to the JV in the second season, the commitment of the commercial contractor to supporting them and involving them in the JV ensured that they were able to gain experience as mechanisation contractors and allowed them to provide a ploughing service to dryland plots off the scheme. However with the curtailment of the WCP, government support to the local contractors through a proper training and mentorship programme came to an end at a critical stage in their establishment which has left them very vulnerable to collapse.

1.7 Key Limiting Factors for the Joint Venture

1.7.1 Cotton price

The decline in the purchase price of cotton from a planned first-season price of R4.00/kg to an actual first season (2003) price of R3.50 and then a further decline to a third season price of R2.20/kg was the major limiting factor for the JV. With cotton gross margins being squeezed by the declining price, the returns to farmers became more marginal and a larger proportion of the farmers made losses. This understandably undermined their confidence in the JV and started to put great strain on the relationship between the partners and affected the good trust that had been established. It says a lot for the strength and effectiveness of the MC and the resilient operating structure that had been established, that the JV endured through three seasons despite the lack of financial viability resulting from the low cotton price.

NSK wrote off farmers' debts in 2003 resulting from the late planting and initial learning curve although was not contractually obliged to carry risk of losses. It is true that if the cotton price had been firm at the original budget level and the late planting had not resulted in reduced yields, then the JV would have achieved some of its core objectives (Table G1.3 - planned column). However, these net returns are arguably so small that the risk of incurring losses would not justify engaging in farming. Risk of failure was de-facto carried by NSK who effectively wrote off the losses and this is likely to be the key reason farmers continued with the cotton.

Table G1.3 : Actual and theoretical returns from cotton at Makuleke

Description	Unit	Planned yield and market	Planned yield Actual market (2003)	Actual (2003)
Yield	Kg / ha	2,500	2,500	1,355
Price	R / kg	R 4.00	R3.50	R3.50
Net Return JV	Rand / ha	R3,608	R2,358	-ve R2,340
Net Return Farmer	Rand / ha	R1,804	R1,179	-ve R1,170
Net Return Farmer	Rand **/ 5ha holding**	R9,021	R5,895	-ve 5,850

Note: The market price of cotton declined further to R2.20 per kg in 2005 making the ventures significantly less viable than presented above.

In addition to the above planned net income, the farming family would have benefited from a monthly labour payment for cultivation and picking during the cropping cycle of six months. Whether the theoretical net return would have sufficed to continue farming without de-facto risk shedding onto NSK remains uncertain but seems somewhat unlikely.

1.7.2 Timing of the commencement of the JV

The late start to the planting programme was a serious setback to the JV. Planting in late December and early January in the first season had two serious implications. Firstly, yield potential was reduced increasingly with each week of delay in planting from mid November (the optimal planting time under irrigation at Makuleke is between mid October and the end of November). Secondly the late planting meant late maturing of the cotton which prevented the planting of a winter wheat crop which further reduced the viability of the JV.

The delay could only have been avoided if the initial negotiations on the formation of the JV had commenced earlier. It is a common occurrence in many agricultural JV's of this nature that in the haste to try and "catch" a season, the whole enterprise is put in serious jeopardy with very late plantings. Examples of projects in the RESIS programme which were either seriously compromised or failed as a result of a very late start to the planting of the first crop include maize at Elandskraal (hit by frost during the flowering stage), and paprika at Dingleydale (yield and quality seriously reduced).

As difficult as it is to contemplate delaying an operation for a year because of the need to plant the crop at the right time, there is no doubt that it is the right thing to do because it is very difficult to overcome a poor start to any agricultural initiative.

Trying to manage a crop which has been planted late results often in crisis management. In turn, crisis management requires instant decision making which can have significant financial and technical implications as well as place major stress on JV partners communication and institutional relationship. In a JV environment like Makuleke this can lead to confusion and mistrust amongst the farmers who see things happening that were not planned or scheduled according to the original production plan (for example a sudden decision to aerial spray a crop instead of using tractor spraying). There must be time to discuss any significant changes to the production programme with the farmers before the change is applied to avoid a conflict situation later.

1.7.3 Hand-picking of cotton

The decision to hand-pick cotton was a logical one as it provided jobs for local unskilled labour for which there seemed a huge demand in the surrounding community. Hand-picking, if done at the correct time, also produces a higher quality crop which commands a higher price.

Unfortunately the decision proved inappropriate for a number of reasons. Firstly the picking was extremely slow as the families that were operating on their farms were reluctant to employ additional pickers for fear of forfeiting too much of the income that could be derived from the operation. This in turn set the picking programme back very seriously and also resulted in a reduction in cotton quality when mature bolls were exposed to rain for long periods before being picked. Secondly the price the pickers received per kilogram of cotton picked provided very low return for a days work. The task therefore became unpopular and the farmers struggled to meet their targets. On the other hand it was not possible to increase the picking rate significantly without reducing the gross margin for the crop to a negative return. This in turn was influenced by the low price for the cotton.

In the second season NSK was forced to bring in pickers from outside the Makuleke community because the quality of the crop was deteriorating and the lands needed to be prepared for the following season. This decision raised much resentment from farmers and the community, as it was seen to be taking income away from them. This impasse was finally solved by the mutual decision that the JV would change to mechanical picking. The last of the second season's crop was therefore picked mechanically.

1.8 Lessons for Revitalisation

The Makuleke JV outgrower arrangement is unusual in the sharing of risk by the JV partner, through the profit share arrangement. Typically, the outgrower scheme is *"a commitment on the part of the farmer to provide a specific commodity in quantities and at quality standards determined by the purchaser and a commitment on the part of the company to support he farmer's production and to purchase the commodity"* (FAO, 2001). What differentiates Makuleke is that in addition to providing input support and a contract market, the production risk is carried (50/50) between the farmer and the partner. This arrangement is inherently more equitable than the outgrower relationship as profits or losses are shared jointly.

Success factors and lessons emerging from the Makuleke case are noted below.

1. **Strong farmer leadership:** Makuleke is well-known as one of South Africa's most successful and biggest restitution claims and there is an unusual sense of self-determination that prevails, which is different from the dependency on many other smallholder schemes in the country. A strong and representative management committee for the scheme provided leadership and cohesion to resolve complex issues that arose in negotiating and preparing the partnership. The Makuleke Irrigation Scheme Management Committee (MC) has the support of its members and in terms of the constitution of the scheme (that the farmers drew up themselves) the farmers can replace their representatives every two years if they feel they are not getting the service they require. The MC has provided a vehicle through which NSK could negotiate with the farmers and establish the JV. It is not workable in a JV of this nature for the Commercial partner to deal with individual farmers either in the establishment or the management of the JV. An important aspect of an effective MC is the regular feed-back from the committee to the farmers on decisions and progress relating to the JV and farmers who confidently bring field issues and problems to the committee for attention.

2. **Independent facilitating agent critical:** A key success factor to the formation of the JV is the significant influence of an independent facilitating agent (either public or private sector) in the establishment of a JV and the building of trust between the two parties. An independent facilitator, who is readily available to the local farmers and their committee and who can advise on institutional, financial and contract complexity is a critical success factor. This can significantly speed up the process of establishing the JV and drawing up a mutually acceptable contract. This will ensure that the farmers see themselves

as genuine partners in a JV that they have been party to and have contributed to. JV partners (or potential partners) may well have the in-house skills to provide a facilitation role but even if they are prepared to carry the transaction costs, their vested interest makes them unsuitable for this role.

3. **Process strong:** The Makuleke cotton JV has commendable features that provide a good model for future JV initiatives in terms of the process that led to its implementation. The JV was to a large extent successful in the institutional process that was followed even though it has failed on a financial basis due to low yields and declining global market prices. Emphasis on consultation and ownership of group decisions was central to the formation of the JV.

4. **Financial model weak:** It is questionable whether the financial basis of the cropping plan was justified even if the cotton price remained stable and target yields were met. The income provided by commodity crops such as cotton, maize and wheat, even on 5 ha farms typical of Makuleke, does not seem to justify engagement with commercial style farming given inevitable risks. The ongoing project momentum from year to year despite losses can only be attributed to the fact that NSK effectively carried the risk and wrote off annual debts although they were not contractually required to do so. Realistic yield and price modelling, rather than optimistic modelling, as well as pro-actively addressing risk allocation is critical.

5. **Early success needed:** The reduced yield and incomes impacted negatively on the enthusiasm and self-confidence of the farmers. It gave strength to the view of those farmers who had originally opposed the JV and thus created a dividing force between farmers and their management committee. Early success is critical to build confidence among farmers and planning should maximise the likelihood of positive returns in the first year. Strategies could include phasing to more manageable sizes, phased out subsidies and intensive mentoring and support to the entire production cycle.

6. **Use available momentum:** The presence on Makuleke of an existing revitalisation initiative focussed on bulk water and farmer training created an environment for developing the JV. It is easier to build on projects where there is some existing parallel momentum than on completely new initiatives.

7. **Loan finance from partner:** NSK provided loans for substantial capital investment for the purchase of in-field irrigation equipment, the payment of electricity deposits and the purchase of production inputs. Without this support it would not have been possible for the farmers to operate on a commercial basis. The lack of any meaningful support from the Land Bank or any commercial banks for smallholder farmers is very concerning and places a major development constraint on the many smallholder irrigation farmers in South Africa.

8. **Possible success with bananas:** Taking into consideration the positive institutional aspects of the partnership it is likely that the JV could have been successful if it had been based on a higher value and less volatile crop than cotton. However it is also true to say that in the present agricultural climate in South Africa there are not many enterprises that can be readily adopted for such JVs. One such crop that is well suited to Makuleke is banana and it is possible that the development process undertaken to date with Makuleke farmers could provide a platform for a successful partnership farming a higher value perennial fruit crop.

Appendix I

Case Study No.4 – Giba Community Trust

1 CASE STUDY NO. 4 : GIBA COMMUNITY TRUST – SHARE CROPPING WITH MANAGEMENT FEE

The partnership between the Giba Communal Property Association and the agribusiness company SA Farm Management, a subsidiary of the Boyes Group, is a case of a share cropping arrangement with potential for 709 ha of irrigated bananas.

This is a major project in either the land reform context or the smallholder irrigation context in terms of its size. It is also the most typical arrangement of the five case studies and reflects the mainstream concept of a JV. There is mutual risk sharing and profit sharing through both the share cropping arrangement (50/50) and the percentage turnover management fee. The JV experiences from the land restitution case study applies as readily to the irrigation revitalisation context, with the proviso that the collective land tenure issue on schemes is addressed.

1.1 Background to the Project

1.1.1 Locality and climate

The Giba Community Trust farms were obtained through land restitution and are situated in Burgershall close to Hazyview in Mpumalanga. Hazyview is nestled in-between the Kruger National Park and the timber plantations around Sabie and Graskop. The area receives around 700 mm rainfall a year, has a mild winter climate with little to no frost, an early spring and hot summers.

1.1.2 Crop production

This area is one of the most intensively farmed parts of South Africa with dense fruit and nut orchards; bananas, avocados, litchis, mangoes and macadamias. Bananas have been grown in the area for many years, but due to the continued problems of Panama disease (a sudden-death soil born disease which builds up over time) they are slowly being phased out and replaced by Avocados. In the really hot areas like Komatipoort the bananas fruit within 12 months of planting. In the slightly cooler areas, including Hazyview, this may take 16-18months.

The banana crops on the farms are old with actual yields being significantly lower than potential yields. SAFM is planning to replant some 25 hectares each month, starting from September 2005. At the time of writing, 400 hectares are capable of producing bananas, but only 150 hectares are used so far. Only five out of the fifteen farms are considered productive.

Most of the 709 hectares that is part of the partnership agreement is overgrown by herbs and weeds and lacks water or electricity or harbours a stand of bananas that is too old.

Roads on the farms are in a very bad state and transport of harvested bunches to the packhouses often causes considerable damage to the fruit. Nevertheless the quality of the produce is slowly improving whilst the yields have steadily increased from November 2004 to date.

1.1.3 Irrigation system

Irrigation water is drawn from the state-owned Da Gama Dam some 10 km away from the farms. Water availability had not been a problem so far although Burgershall is located in between two water restricted areas, Hoedspruit and Komatipoort. After the water enters the farms via the concrete lined canals, it is distributed by lined canals to 18 small reservoirs from which water can be pumped to either overhead sprinkler or micro sprinkler systems. It has been demonstrated that micro sprinkler systems used 29% more water than drip systems in both the Burgershall (cool subtropics) and the Komatipoort (hot subtropics) regions. The senior managers at Giba regarded drip irrigation as too expensive and problematic with regard to fertilization. The sprinkler systems are used in a rotation of 10 to 20 days, each block of 4ha taking about 4 days to irrigate. The micro-jets are switched on every day for 4 hours.

1.1.4 Land restitution

There is inconsistent data on the exact magnitude of the Giba land claim. Most sources specify a land claim of about 1,645 ha (www.southafrica.info and www.mg.co.za) although 4000 ha is commonly mentioned in discussions with beneficiaries and local leadership. According to the agreement between the strategic partner and the Giba Community Trust the community holds 1,709 ha of which 709 hectares of the land is under irrigated cultivation (Giba Shareholders' Agreement). The farms were handed over in November 2003 after a seven year process which was celebrated in Hazyview and presided over by Chief Sikhotha Matsebula the present leader of the Giba people and the main claimant in the restitution claim.

The Giba Communal Property Association was formed in order to manage the commercial agricultural land that the beneficiaries received as a group along the lines of the Communal Property Associations Act, No. 28 of 1996. The Act was especially designed to enable disadvantaged communities to form juristic persons, 'to be known as communal property associations in order to acquire, hold and manage property on a basis agreed to by members of a community in terms of a written constitution; and to provide for matters connected therewith' (Act 28 of 1996).

The Regional Land Claims Commission (RLCC) took the initiative to bring in a commercial partner (pers comms, Luthuli) to assist the beneficiaries in developing the necessary management and marketing skills to run their land in a sustainable way. The first farms were bought in 1999 but there was no farm production equipment (pers comms, X.Botha). Between 1999 and 2003 (the date when the Giba officially received the Burgershall farms) there had been a deterioration of assets and infrastructure on the farms due to a lack of maintenance, theft and vandalism. The Giba Community Trust thus received land which needed capital investment and agricultural rehabilitation in order to realise the land's commercial potential.

1.2 Roleplayers at Giba

1.2.1 SA Farm Management and the Boyes Group

The Boyes Group has worked together with the Provincial Department of Agriculture in Limpopo and has a positive reputation in government circles with AgriBEE and partnerships with land reform communities, particularly in irrigated citrus. The Zebediela Citrus partnership is one of the flagships of the "strategic partnership" approach and is an initiative by the Limpopo Agricultural and Rural Development Corporation, the Zebediela farmworkers and the Boyes Group.

Subsidiaries of the Boyes Group involved in partnerships include Boyes Slipknot Investment, Henly Farm Properties and SA Farm Management (SAFM) which is a black empowerment management company who work closely with the Limpopo Department of Agriculture (see Hobson and Le Roux, 2005). SAFM has worked in Limpopo with communities and the Provincial DoA at Zebediela, Mamahlola and Levubu farms.

1.2.2 Ali Nkosi - Chairperson of the Giba Communal Property Association

Ali Nkosi was elected as leader of the Communal Property Association when the government decided that SA Farm Management was the right strategic partner for the Giba farms.

As Chairperson of the CPA he represents the community on the Board of Directors of SAFM in their dealings with the Giba farms. He had to make a strong motivation for a community representative to have access to SAFM's financial records in regard to Giba dealings. His reasons were that the beneficiaries have to know the financial affairs in order to understand the business. In this capacity he can criticize the transparency of SAFM's bookkeeping. Ali Nkosi has respect for the business acumen of Charles Boyes and this presents a sound foundation for the relationship.

1.2.3 Chief Matsebula

Chief Matsebula played a lead role in the land restitution process and has a following along traditional lines. Beneficiaries render support to the Chief on the basis of his role in the land reform process and some consider the restitution of the land as his accomplishment. He is further respected for his reputed power as a sangoma (pers comms, A.Nkosi).

Chief Matsebula does not play an important official role in the Giba - SAFM arrangement. He takes part in meetings but is not on the CPA board anymore. He now has a board function ex officio, i.e. without voting power, but exerts influence through his traditional following and through his sons who are on the CPA Board and are employed by SAFM on one of the farms as managers.

1.2.4 Government departments

Government is actively represented by the Department of Land Affairs, even though there is no post-settlement financial support from the government. The Government's interest is one of concern about the potential danger of project collapse due to infighting. The farms were previously important contributors to the Mpumalanga and national economy (pers comms, Len Coetzer, DLA, 2005). Government is now monitoring events on the ground by attending important meetings and talking to different stakeholders.

1.3 The Partnership

1.3.1 The Shareholders' Agreement

The Giba Communal Property Association was formed in order to manage the commercial agricultural land that the beneficiaries received as a group. Lawyers of both the SAFM and the Giba formed a company with following key elements:

- 50% shareholding to SAFM
- 50% shareholding to the Giba Communal Property Association
- proviso for transfer of 10% of SAFM share to a Worker's Trust
- SAFM would have sole management control over the company.
- SAFM would receive a 5% management fee on gross annual sales, or alternatively on farm establishment costs for overall project execution and organizational responsibilities.
- SAFM to finance running expenses of up to R15 Million through a revolving account
- 15 year lease agreement to 709 ha of irrigable land, orchards and infrastructure for R500,000 per annum
- The operating company would use local staff except for supervisors
- SAFM will provide extensive training in technical and managerial matters to allow members to fill key positions of the company at a later stage

The Giba Shareholders' Agreement was signed in 2004 by: Chief Land Claims Commissioner, Tozi Gwanya; Reverend David Gondwe on behalf of SA Farm Management and Mr. Ali Nkosi in his capacity as the chairperson of the Giba CPA.

Key positions in the company are filled by SAFM employees and these will see to the general management of the company. Furthermore the parties agreed that the strategic partner will provide extensive training in technical and managerial matters in order to allow the members of the CPA and workers' trust to fill positions in the company (Bubesi, 2004).

It was also agreed between the parties (SAFM and the CPA) that SAFM would investigate and advise on the future expansion of the business, in order to increase income and create more job opportunities. The CPA in turn is not allowed to permit any other partners, besides SAFM, to carry out agricultural development on the property of the CPA.

The activities concerning empowerment of black people which were to be undertaken by the strategic partner were to be extended to the workers in the employ of the company (approximately 200 people by March, 2005) and the members of the CPA. The empowerment in this case comprised job opportunities and associated technical and managerial on-the-job training. In addition it was agreed that SAFM would ensure the training of local youngsters in international marketing and operational management.

The CPA is responsible for the equitable distribution of benefits and dividends accruing to the CPA from the shareholding in the new company for the 1680 Giba beneficiaries (500 households).

1.3.2 Land lease agreement

Under the land lease agreement, it is specified that the land (709 hectares of land under cultivation) will be leased for fifteen years and that SAFM will pay the CPA an annual rental of R 500,000 for the 709 hectares of land, to be increased to a maximum of R 1,500,000, once more land would be allocated by the DLA.

SAFM was also contractually obliged to maintain the infrastructure on that land and insure the buildings against all foreseeable risks, at its own costs. In return, the CPA would refrain from using the land as a collateral security and make the following improvements to the land assisted by government grant in the amount of R 8,500,000;

- Security fence constructions and repairs;
- Provision of agricultural equipment;
- Maintenance of office and residential buildings;
- Provision of office equipment and furniture;
- Provision of transport machinery and equipment;
- Irrigation systems construction and repairs;
- Central pack house construction and equipment (Bubesi, 2004).

1.3.3 Management structure

There are a number of paid employees including labourers and the two tiers of managers comprising two senior managers and six farm managers. The farm managers each run the day to day operations on one or two of the farms. All are employed by SA Farm Management.

A typical case is Eunoch Mabuza, who is a beneficiary and a member of the CPA (Community Property Association) committee. He manages 280 ha and supervises the irrigation, weeding, fertilization, bagging of bananas and harvesting. He also shows the beneficiaries where their blocks are so that they can weed, take care of irrigation and do the harvesting. He “receives orders” on a daily basis from Mr Botha, the one of the senior general managers employed by SA Farm Management and makes all management and watering decisions.

The two senior farm managers that have been appointed by SAFM are knowledgeable and see themselves as having a mentorship role. The two senior farm managers have complete autonomy on a day-to-day basis and

delegate managing responsibilities to six farm managers. These farm managers meet daily and then work with teams in the plantations, irrigating, fertilizing and harvesting. There was an understanding that five more farms would be incorporated late in 2005. There is a stated intention by the SAFM managers to empower the community members in such a way that they can take over the farm in ten years time, with a 5-year transition period for SAFM to get out of the business. Currently the emphasis is on the basics of production given the relatively new teams, systems and relationships that are in place.

The managers indicated that they now achieve average yields of 15 tons per hectare, which they want to raise to 30-40 ton per hectare. The managers and most other people working at the farm indicated that irrigation was not their main problem so far. Most problematic at present are the state of the roads, packhouses, equipment, machinery, buildings, lack of fencing and old orchards.

1.4 Lessons for Smallholder Irrigation Revitalisation

1.4.1 Comments on the partnership

1. The partnership arrangement is in principle the same as the Tyhefu model (Case No. 5) in terms of control and autonomy, although the financial responsibilities, shareholding division and management fee in the Tyhefu arrangement seem rather more favourable for the partner and with lower risk than the Giba arrangement.

2. The operational control of the project is wholly in the hands of SAFM for the 15-year period. They maintain operational control and full decision-making authority with beneficiaries effectively following instructions and ostensibly learning through the process of doing the work. The need for operational control is understandable and would clearly be related to the need for quick and informed decision-making in agricultural production and business management, especially during the establishment phases of the project. But in essence the contract is one where the land owners will be labourers and apprentices with no authority. This is a low risk approach on the part of the company and may be essential given the uncertainties of agricultural economics; what is key is that everyone understands this reality so that it does not cripple the project at a later stage.

3. There is clear intention in the contract for skills transfer to take place as the process evolves, with increasing authority linked to skills growth. This approach has parallels with the Build, Operate, Train and Transfer approach used in the water and engineering sectors with some success. There is a contradiction as higher skilled jobs in management are likely to require additional education outside of the workplace, not simply on-the-job training.

4. The agreement fails however to outline how skills development and empowerment principles will be implemented and assessed. It seems

that the commercial partners methods are assumed to be self-evident or successful beyond doubt. People will be trained in order to perform their business tasks better, but devolution or sharing of power (in their own business) is locked out. The parties agreed 'to always regard the interests of the (joint) company as the most important'. Company interests hence prevail over personal interests.

5. It is important in adopting a model such as this, that farmers understand their own non-executive role effectively as labourers very clearly upfront and take informed decisions with alternatives in mind. Alternatives would include mentoring (such as at Noko), or outgrower / contract farming such as at Makuleke. Discussion of alternatives and implications does not seem to have happened at Giba and SAFM seems to have been presented as the partner and the partnership model, fait accompli.

1.4.2 Related issues

- Some of the neighbouring commercial farmers in the area are apparently keen to be brought on board as mentors and feel that they have a lot of relevant experience, rather than using employed managers from outside of the locality. It seems that the neighbouring white farmers growing bananas are also concerned as they have an interest in seeing this smallholder initiative working.

- According to the interviewees, neighbouring commercial farmers would be prepared to lease some of the orchards directly from the Trust and feel that this would provide better returns for the community than the strategic partnership where profits and losses are shared with the management company. This is another alternative to the options discussed above.

- There is clearly an awareness and concern from the Government agencies who are involved with the process, that conflict potential exists both within the CPA and between the beneficiaries and the partner. The need for direct and close involvement by a neutral 'regulator' with conflict resolution capability is, as in the other cases, a priority at Giba.

Appendix I

Case Study No.4 – Giba Community Trust

1 CASE STUDY NO. 4 : GIBA COMMUNITY TRUST – SHARE CROPPING WITH MANAGEMENT FEE

The partnership between the Giba Communal Property Association and the agribusiness company SA Farm Management, a subsidiary of the Boyes Group, is a case of a share cropping arrangement with potential for 709 ha of irrigated bananas.

This is a major project in either the land reform context or the smallholder irrigation context in terms of its size. It is also the most typical arrangement of the five case studies and reflects the mainstream concept of a JV. There is mutual risk sharing and profit sharing through both the share cropping arrangement (50/50) and the percentage turnover management fee. The JV experiences from the land restitution case study applies as readily to the irrigation revitalisation context, with the proviso that the collective land tenure issue on schemes is addressed.

1.1 Background to the Project

1.1.1 Locality and climate

The Giba Community Trust farms were obtained through land restitution and are situated in Burgershall close to Hazyview in Mpumalanga. Hazyview is nestled in-between the Kruger National Park and the timber plantations around Sabie and Graskop. The area receives around 700 mm rainfall a year, has a mild winter climate with little to no frost, an early spring and hot summers.

1.1.2 Crop production

This area is one of the most intensively farmed parts of South Africa with dense fruit and nut orchards; bananas, avocados, litchis, mangoes and macadamias. Bananas have been grown in the area for many years, but due to the continued problems of Panama disease (a sudden-death soil born disease which builds up over time) they are slowly being phased out and replaced by Avocados. In the really hot areas like Komatipoort the bananas fruit within 12 months of planting. In the slightly cooler areas, including Hazyview, this may take 16-18months.

The banana crops on the farms are old with actual yields being significantly lower than potential yields. SAFM is planning to replant some 25 hectares each month, starting from September 2005. At the time of writing, 400 hectares are capable of producing bananas, but only 150 hectares are used so far. Only five out of the fifteen farms are considered productive.

Most of the 709 hectares that is part of the partnership agreement is overgrown by herbs and weeds and lacks water or electricity or harbours a stand of bananas that is too old.

Roads on the farms are in a very bad state and transport of harvested bunches to the packhouses often causes considerable damage to the fruit. Nevertheless the quality of the produce is slowly improving whilst the yields have steadily increased from November 2004 to date.

1.1.3 Irrigation system

Irrigation water is drawn from the state-owned Da Gama Dam some 10 km away from the farms. Water availability had not been a problem so far although Burgershall is located in between two water restricted areas, Hoedspruit and Komatipoort. After the water enters the farms via the concrete lined canals, it is distributed by lined canals to 18 small reservoirs from which water can be pumped to either overhead sprinkler or micro sprinkler systems. It has been demonstrated that micro sprinkler systems used 29% more water than drip systems in both the Burgershall (cool subtropics) and the Komatipoort (hot subtropics) regions. The senior managers at Giba regarded drip irrigation as too expensive and problematic with regard to fertilization. The sprinkler systems are used in a rotation of 10 to 20 days, each block of 4ha taking about 4 days to irrigate. The micro-jets are switched on every day for 4 hours.

1.1.4 Land restitution

There is inconsistent data on the exact magnitude of the Giba land claim. Most sources specify a land claim of about 1,645 ha (www.southafrica.info and www.mg.co.za) although 4000 ha is commonly mentioned in discussions with beneficiaries and local leadership. According to the agreement between the strategic partner and the Giba Community Trust the community holds 1,709 ha of which 709 hectares of the land is under irrigated cultivation (Giba Shareholders' Agreement). The farms were handed over in November 2003 after a seven year process which was celebrated in Hazyview and presided over by Chief Sikhotha Matsebula the present leader of the Giba people and the main claimant in the restitution claim.

The Giba Communal Property Association was formed in order to manage the commercial agricultural land that the beneficiaries received as a group along the lines of the Communal Property Associations Act, No. 28 of 1996. The Act was especially designed to enable disadvantaged communities to form juristic persons, 'to be known as communal property associations in order to acquire, hold and manage property on a basis agreed to by members of a community in terms of a written constitution; and to provide for matters connected therewith' (Act 28 of 1996).

The Regional Land Claims Commission (RLCC) took the initiative to bring in a commercial partner (pers comms, Luthuli) to assist the beneficiaries in developing the necessary management and marketing skills to run their land in a sustainable way. The first farms were bought in 1999 but there was no farm production equipment (pers comms, X.Botha). Between 1999 and 2003 (the date when the Giba officially received the Burgershall farms) there had been a deterioration of assets and infrastructure on the farms due to a lack of maintenance, theft and vandalism. The Giba Community Trust thus received land which needed capital investment and agricultural rehabilitation in order to realise the land's commercial potential.

1.2 Roleplayers at Giba

1.2.1 SA Farm Management and the Boyes Group

The Boyes Group has worked together with the Provincial Department of Agriculture in Limpopo and has a positive reputation in government circles with AgriBEE and partnerships with land reform communities, particularly in irrigated citrus. The Zebediela Citrus partnership is one of the flagships of the "strategic partnership" approach and is an initiative by the Limpopo Agricultural and Rural Development Corporation, the Zebediela farmworkers and the Boyes Group.

Subsidiaries of the Boyes Group involved in partnerships include Boyes Slipknot Investment, Henly Farm Properties and SA Farm Management (SAFM) which is a black empowerment management company who work closely with the Limpopo Department of Agriculture (see Hobson and Le Roux, 2005). SAFM has worked in Limpopo with communities and the Provincial DoA at Zebediela, Mamahlola and Levubu farms.

1.2.2 Ali Nkosi - Chairperson of the Giba Communal Property Association

Ali Nkosi was elected as leader of the Communal Property Association when the government decided that SA Farm Management was the right strategic partner for the Giba farms.

As Chairperson of the CPA he represents the community on the Board of Directors of SAFM in their dealings with the Giba farms. He had to make a strong motivation for a community representative to have access to SAFM's financial records in regard to Giba dealings. His reasons were that the beneficiaries have to know the financial affairs in order to understand the business. In this capacity he can criticize the transparency of SAFM's bookkeeping. Ali Nkosi has respect for the business acumen of Charles Boyes and this presents a sound foundation for the relationship.

1.2.3 Chief Matsebula

Chief Matsebula played a lead role in the land restitution process and has a following along traditional lines. Beneficiaries render support to the Chief on the basis of his role in the land reform process and some consider the restitution of the land as his accomplishment. He is further respected for his reputed power as a sangoma (pers comms, A.Nkosi).

Chief Matsebula does not play an important official role in the Giba - SAFM arrangement. He takes part in meetings but is not on the CPA board anymore. He now has a board function ex officio, i.e. without voting power, but exerts influence through his traditional following and through his sons who are on the CPA Board and are employed by SAFM on one of the farms as managers.

1.2.4 Government departments

Government is actively represented by the Department of Land Affairs, even though there is no post-settlement financial support from the government. The Government's interest is one of concern about the potential danger of project collapse due to infighting. The farms were previously important contributors to the Mpumalanga and national economy (pers comms, Len Coetzer, DLA, 2005). Government is now monitoring events on the ground by attending important meetings and talking to different stakeholders.

1.3 The Partnership

1.3.1 The Shareholders' Agreement

The Giba Communal Property Association was formed in order to manage the commercial agricultural land that the beneficiaries received as a group. Lawyers of both the SAFM and the Giba formed a company with following key elements:

- 50% shareholding to SAFM
- 50% shareholding to the Giba Communal Property Association
- proviso for transfer of 10% of SAFM share to a Worker's Trust
- SAFM would have sole management control over the company.
- SAFM would receive a 5% management fee on gross annual sales, or alternatively on farm establishment costs for overall project execution and organizational responsibilities.
- SAFM to finance running expenses of up to R15 Million through a revolving account
- 15 year lease agreement to 709 ha of irrigable land, orchards and infrastructure for R500,000 per annum
- The operating company would use local staff except for supervisors
- SAFM will provide extensive training in technical and managerial matters to allow members to fill key positions of the company at a later stage

The Giba Shareholders' Agreement was signed in 2004 by: Chief Land Claims Commissioner, Tozi Gwanya; Reverend David Gondwe on behalf of SA Farm Management and Mr. Ali Nkosi in his capacity as the chairperson of the Giba CPA.

Key positions in the company are filled by SAFM employees and these will see to the general management of the company. Furthermore the parties agreed that the strategic partner will provide extensive training in technical and managerial matters in order to allow the members of the CPA and workers' trust to fill positions in the company (Bubesi, 2004).

It was also agreed between the parties (SAFM and the CPA) that SAFM would investigate and advise on the future expansion of the business, in order to increase income and create more job opportunities. The CPA in turn is not allowed to permit any other partners, besides SAFM, to carry out agricultural development on the property of the CPA.

The activities concerning empowerment of black people which were to be undertaken by the strategic partner were to be extended to the workers in the employ of the company (approximately 200 people by March, 2005) and the members of the CPA. The empowerment in this case comprised job opportunities and associated technical and managerial on-the-job training. In addition it was agreed that SAFM would ensure the training of local youngsters in international marketing and operational management.

The CPA is responsible for the equitable distribution of benefits and dividends accruing to the CPA from the shareholding in the new company for the 1680 Giba beneficiaries (500 households).

1.3.2 Land lease agreement

Under the land lease agreement, it is specified that the land (709 hectares of land under cultivation) will be leased for fifteen years and that SAFM will pay the CPA an annual rental of R 500,000 for the 709 hectares of land, to be increased to a maximum of R 1,500,000, once more land would be allocated by the DLA.

SAFM was also contractually obliged to maintain the infrastructure on that land and insure the buildings against all foreseeable risks, at its own costs. In return, the CPA would refrain from using the land as a collateral security and make the following improvements to the land assisted by government grant in the amount of R 8,500,000;

- Security fence constructions and repairs;
- Provision of agricultural equipment;
- Maintenance of office and residential buildings;
- Provision of office equipment and furniture;
- Provision of transport machinery and equipment;
- Irrigation systems construction and repairs;
- Central pack house construction and equipment (Bubesi, 2004).

1.3.3 Management structure

There are a number of paid employees including labourers and the two tiers of managers comprising two senior managers and six farm managers. The farm managers each run the day to day operations on one or two of the farms. All are employed by SA Farm Management.

A typical case is Eunoch Mabuza, who is a beneficiary and a member of the CPA (Community Property Association) committee. He manages 280 ha and supervises the irrigation, weeding, fertilization, bagging of bananas and harvesting. He also shows the beneficiaries where their blocks are so that they can weed, take care of irrigation and do the harvesting. He “receives orders” on a daily basis from Mr Botha, the one of the senior general managers employed by SA Farm Management and makes all management and watering decisions.

The two senior farm managers that have been appointed by SAFM are knowledgeable and see themselves as having a mentorship role. The two senior farm managers have complete autonomy on a day-to-day basis and

delegate managing responsibilities to six farm managers. These farm managers meet daily and then work with teams in the plantations, irrigating, fertilizing and harvesting. There was an understanding that five more farms would be incorporated late in 2005. There is a stated intention by the SAFM managers to empower the community members in such a way that they can take over the farm in ten years time, with a 5-year transition period for SAFM to get out of the business. Currently the emphasis is on the basics of production given the relatively new teams, systems and relationships that are in place.

The managers indicated that they now achieve average yields of 15 tons per hectare, which they want to raise to 30-40 ton per hectare. The managers and most other people working at the farm indicated that irrigation was not their main problem so far. Most problematic at present are the state of the roads, packhouses, equipment, machinery, buildings, lack of fencing and old orchards.

1.4 Lessons for Smallholder Irrigation Revitalisation

1.4.1 Comments on the partnership

1. The partnership arrangement is in principle the same as the Tyhefu model (Case No. 5) in terms of control and autonomy, although the financial responsibilities, shareholding division and management fee in the Tyhefu arrangement seem rather more favourable for the partner and with lower risk than the Giba arrangement.

2. The operational control of the project is wholly in the hands of SAFM for the 15-year period. They maintain operational control and full decision-making authority with beneficiaries effectively following instructions and ostensibly learning through the process of doing the work. The need for operational control is understandable and would clearly be related to the need for quick and informed decision-making in agricultural production and business management, especially during the establishment phases of the project. But in essence the contract is one where the land owners will be labourers and apprentices with no authority. This is a low risk approach on the part of the company and may be essential given the uncertainties of agricultural economics; what is key is that everyone understands this reality so that it does not cripple the project at a later stage.

3. There is clear intention in the contract for skills transfer to take place as the process evolves, with increasing authority linked to skills growth. This approach has parallels with the Build, Operate, Train and Transfer approach used in the water and engineering sectors with some success. There is a contradiction as higher skilled jobs in management are likely to require additional education outside of the workplace, not simply on-the-job training.

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that the commercial partners methods are assumed to be self-evident or successful beyond doubt. People will be trained in order to perform their business tasks better, but devolution or sharing of power (in their own business) is locked out. The parties agreed 'to always regard the interests of the (joint) company as the most important'. Company interests hence prevail over personal interests.

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1.4.2 Related issues

- Some of the neighbouring commercial farmers in the area are apparently keen to be brought on board as mentors and feel that they have a lot of relevant experience, rather than using employed managers from outside of the locality. It seems that the neighbouring white farmers growing bananas are also concerned as they have an interest in seeing this smallholder initiative working.

- According to the interviewees, neighbouring commercial farmers would be prepared to lease some of the orchards directly from the Trust and feel that this would provide better returns for the community than the strategic partnership where profits and losses are shared with the management company. This is another alternative to the options discussed above.

- There is clearly an awareness and concern from the Government agencies who are involved with the process, that conflict potential exists both within the CPA and between the beneficiaries and the partner. The need for direct and close involvement by a neutral 'regulator' with conflict resolution capability is, as in the other cases, a priority at Giba.

Appendix J

Case Study No.5 – Tyhefu Irrigation Scheme

1 CASE STUDY NO.5 : TYHEFU IRRIGATION SCHEME – PROFIT SHARE PARTNERSHIP WITH MANAGEMENT FEE

This case study describes the JV between the Tyhefu Community Project Steering Committee, the Eastern Cape Department of Agriculture (ECDA) in a financing and regulatory role and Gili Kubbutzsa a South Africa horticultural production company with access to major national and international fresh vegetable markets.

The Tyhefu initiative has been slowly moving forward for more than 7 years with some R44 million invested by various Government departments. It has not yet achieved any significant crop production even though a tender for the partnership was awarded in late 2004 and production support finance was available in the 2005 departmental budget. Reasons for the slow progress relate to inherent political and organisational instability outside of the prospective partners' locus of control. These realities are reported in some detail to fully illustrate just how complicated and unexpected the reality on schemes can be. This case gives valuable insight into the structural and procurement challenges in establishing partnerships on collapsed schemes even with the best of intent by all parties, including the Government officials involved.

1.1 Scheme Overview

1.1.1 Geography

Tyhefu irrigation scheme is located on the north bank of the lower Fish River, approximately 35 km east of Grahamstown in the Eastern Cape. Rainfall is low at 475mm with a high coefficient of variation (40%). Annual evaporation is 2100mm.

1.1.2 Homeland history

The scheme was developed in stages from 1977 by the former Ciskei homeland Government and was operated by the Ciskei Agricultural Corporation (CAC), or Ulimocor as a centrally controlled estate operation.

Initially water was pumped from the Fish River, but serious problems with high salinity were a limiting factor to production. In 1985 the Lower Fish River Greater Water Supply Project brought better quality water from the Orange River via a bulk main from Glenmore Dam. Tyhefu was never fully developed and in 1990 funding for infrastructure was terminated with only 263 ha of the total reported potential of 1,440 ha provided with bulk water infrastructure.

The motivation for the scheme is linked to the introduction of betterment planning in the early 1960s where the idea was introduced in order to buy community support for betterment planning, with the promise that they would get access to irrigation in return. Scheme implementation was delayed substantially. Initially the villages of Piloki, Kalikeni and Ndlambe joined the scheme. The village of Ndwayana initially opposed the scheme but joined a few years later. Glenmore, a resettlement village, was linked into the scheme in the 1980s.

The scheme started off with the development of 121 hectares at Ndlambe location in 1977, followed by 109 hectares at Pikoli in 1978, and completed by adding 106 hectares at Kalikeni in 1981. The land was divided as follows;

- 22 'commercial farms' of 4 ha each
- 223 compensation plots of 0.25 ha for subsistence food production allocated to persons who held dryland arable allocations before the scheme.
- 3 tribal farms totalling 183 ha formerly operated by Ciskei Agricultural Corporation on behalf of the tribal authorities. In this situation the tribal authority was paid out a profit share each year.
- 66 allotments of 0,16 ha each leased to persons who had no land rights but wished to augment their domestic food supply.

The scheme grew in size since 1981 from 336 ha to 644 ha in 1996. After this period the tribal farms discontinued operations due to the withdrawal of management support. Parts of this land was then reportedly subdivided into 0,2 ha food plots (now called small plots by the farmers) and 0,16ha allotments.

1.1.3 Subsidy cuts and reinvestment

In 1996 operating subsidies for former homeland irrigation schemes were cut by Government and the scheme collapsed completely. In 1998, the then Minister of Water Affairs and Forestry (Min. Kasrils) visited Tyhefu and was concerned with the poverty and lack of production at the scheme. A scheme restoration programme then commenced, initially of the pumped system and subsequently of the bulk water supply pipeline that would increase the irrigated area to its current capacity of 774 ha.

1.1.4 Bulk water and irrigation infrastructure

The 5.6 km long, 1.2 m diameter pipeline from Offtake 4 at Ndwayana to Offtake 7 at Ndlambe leidam was completed in 2004 with funding from the Department of Agriculture at a cost of R38 million. By the end of 2005 bulk water supply was available for a total of 774 ha covering what used to be food plots and the 'commercial farms'. During the entire process of the restoration of the scheme, the intention on the part of government has been to provide bulk water supply to open the opportunity for a commercial partnership arrangement with the community.

The land areas which have bulk water supply are:

Scheme sub-section	Commercial Farm Area (ha)	Food Plot Area (ha)	Level of Infrastructure
Glenmore	104	85	Bulk and infield
Ndwayana	55	50	Bulk and infield
Ndlambe	360	40	Bulk
Pikoli	80	---	Bulk
TOTAL	**599**	**175**	

Of these, Glenmore and Ndwayana have fully rehabilitated infield sprinkler irrigation systems, including booster pump stations, which were rehabilitated between 2002 and 2005 by the Department of Water Affairs and Forestry (DWAF).

1.2 Roleplayers

In the course the past 9 years there have been a number of government and non-governmental organisations that have had some dealings with Tyhefu. Each of these organisations came in with a short timeline of engagement. The organisations included;

- Restructuring Authority (RA): The body was responsible for managing the process of a smooth transfer of schemes to communities around 1996/97.

- Department of Water Affairs and Forestry (DWAF): DWAF was directly involved with Tyhefu between 2000 and 2003. DWAF came in as custodians of national water resources, providing funding for infield infrastructure at Glenmore and Ndwayana for approximately R5 million. In 2003 DWAF also made available a further R5 million which was partly used towards the bulk infrastructure and the setting up the Water User's Association. The institutional development aspects of this work were abruptly terminated at the end of 2003 when DWAF funding was cut with no functional WSA in place.

- The Tyhefu PSC which was formed in 1999 and underwent 2 years of training and capacity building process to equip it for a leadership or partnership role. It operates voluntarily and with substantial energy and interest in an attempt to take the project into a productive mode of operation. Skills are relatively modest within the PSC, but it functions well at an administrative level.

- Department of Land Affairs: In 2003 the DLA contracted service providers to undertake a land rights inquiry with a view to clarification and resolution of land issues.

- Industrial Development Corporation (IDC): IDC's involvement with Tyhefu was around 2002 as part of an effort of a feasibility study for the possible sugarbeet project. This project did not go ahead.

- Eastern Cape Department of Agriculture. The Department of Agriculture spent R24 million in 2002 and a further R14 million in 2003 for the bulk water supply system. Both the District and Local offices of the Department of Agriculture have also played some support role to Tyhefu.

- Eastern Cape Development Corporation (ECDC): The ECDC's involvement in Tyhefu has been limited to the investigation of feasibility for cotton plantation. Trial plots were planted at Glenmore in both 2003 ad 2004 and 2005. While the trials for cotton are taking place, it is not clear how this would link with the vegetable production.

- Masifunde: An NGO based in Grahamstown has been involved with Tyhefu community since 1998. Masifunde has played a limited institutional development at Tyhefu, providing organisational development and agricultural training for the farmers. The NGO also supports the community in the area of setting up of farmers associations and HIV/Aids education. While Masifunde has been participating in PSC meetings, its specific role in respect of rehabilitation of the scheme remained peripheral and ad hoc.

- The District and Local Municipalities have an interest in seeing the scheme becoming productive as it is perceived as a possible source of employment and will bring economic growth into the area.

- The Mhala Tribal Authority which has authority over the Ndlambe and Pikoli sections of the scheme. There are tensions between this TA and the civic structure of the PSC.

1.3 Evolution of the Partnership

1.3.1 Intentions of irrigation management transfer

The process of rehabilitation of Tyhefu irrigation scheme has been a long and tedious extending over more than seven years. Discussions for the possible future development model for the revitalisation of the scheme started 1997 under the direct auspices of the then Restructuring Authority (RA). The RA's mandate was to oversee the restructuring of irrigation schemes as well as smooth transfer of schemes and associated assets to communities. In hindsight it is very clear that the RA's plan was quite an ambitious plan which was largely informed by government wanting to rid itself of the financial and management burdens of the schemes. The bottom line was that government did not want to shoulder the historical debts of the schemes and also did not see itself taking that responsibility in future.

The Restructuring Authority's intention was to set up a Section 21 legal entity to take over the schemes and assets of the schemes, receive training and subsequently take over the management of future operations of the scheme. This was based on some understanding of the global process of Irrigation Management Transfer (IMT) since the 1980's which essentially shifts full responsibility from the state onto the farmers for scheme management and operation. IMT is discussed in some detail in Appendix E.

In the case of Tyhefu the Section 21 Company was made up of elected village representatives as well as representatives of the Mhala Tribal Authority. With the liquidation of agricultural parastatals in 1997, the scheme's moveable assets were instead sold by public auction and the reason for the existence of the Section 21 Company was never realised.

1.3.2 Revitalisation strategy – capital investment and commercial partnership

Since 1999, the Department of Agriculture has been actively working with the four affected communities around Tyhefu with the intent of facilitating a commercial partnership arrangement. In July 2000 the Section 21 Company was replaced by a Project Steering Committee (PSC) made up of 2 representatives per village which is still in place to-date. Unlike its predecessor organisation the one key feature of the PSC is that it did not have any representation of the Tribal Authority. While it cannot necessarily be considered a flaw in representation or institutional and representative design, the rift between traditional and civic authorities proved to be an unexpected Achilles heel of the whole process. Feet are still being dragged at the time of writing as a result.

Institutional development initiatives included the formation of a Community Development Trust[1] and a Water User's Association[2] over 3 years, from 2001 to 2003. The process of water use registration and setting up of the WUA was terminated when the DWAF funding for this was cut in 2004.

The Community (represented by the Project Steering Committee) concluded a signed agreement on 20 December 2003 that the community would lease out the commercial portion of the scheme and retain the food plot areas. The design and construction of the 1.2m diameter pipeline to extend the scheme to Ndlambe area followed this agreement.

1.3.3 Call for partners

In October 2004, the Department of Agriculture put out a tender for interested commercial partners to submit proposals for further development and productive use of the commercial farms. Eleven expressions of interest were received out of which six were short-listed by the Department of Agriculture. The six short-listed bidders were requested to make presentations to a joint sitting of the PSC and representatives of the Department of Agriculture. By November / December 2004 a choice of the preferred bidder had been made, that being Gili Kibbutz South Africa Management (Pty) Ltd (GKM). In summary, GKM's approach entailed:

- leasing of 90% of the serviced land from the community,
- 5-year lease with first option to renew,
- complete autonomy in managing the farming operations in all respects,
- Fixed monthly management fee,
- marketing the crops,
- financing of all day-to-day farm operations, inputs, mechanisation etc by the Department of Agriculture
- financing of additional infield irrigation equipment by the Department of Agriculture

The PSC accepted that this model was more suitable to a community that prioritised job creation rather than development of farmers and understood that they would have no say in the farming operation whatsoever.

Gilli Kibbutzsa's approach to the partnership is contained in a 5 year business plan which was drafted for the Department of Agriculture (Gilli Kibbutzsa, May 2005). The Gilli Kibbutzsa's proposal is essentially a combined management and profit-share arrangement with all farming costs carried by the Department of Agriculture. GKM are involved at two institutional levels.

Shareholder of new company with community: GKM proposes to farm 90% of the land as a single commercial unit, and 10% to be famed by the households as food plots. GKM will be a Shareholder (26%) with a Community Trust (74%) in a new company Gili Tyhefu Kibbutzsa (Pty) Ltd who will have joint authority with the Department of Agriculture to make expenditure relating to all aspects of the farming operation. By October 2006 the Department of Agriculture made promises of investing R7.5 million rand in the first year. This will include investment in heavy machinery, irrigation equipment, storage and packing, trucking etc. in keeping with the project proposals submitted by GKM. The new company (GTK) will be wholly responsible for financing the farm operations and will divide net profits as per the shareholding.

[1] Thyefu Community Development Trust was established on paper but never operationalised
[2] The Water Users' Association was never finalised.

Farm management company: Gilli Kibbutzsa will be solely responsible for the management of all farming, production and marketing decisions, including crop selection, crop production methods, marketing strategies and market sale agreements for a period of 5 years. In terms of the business plan Gilli Kibbutzsa will receive a FIXED fee for managing the entire farming enterprise, which will terminate after 5 years, but with provision for renewal should both parties agree.

The structure of the partnership is such that minimal risk is carried by GKM. Their management costs are covered by a fixed fee. They take a smaller share of profits from the sale of the produce but are responsible in their own separate agri-processing enterprises for all packaging and international marketing, the profits of which they do not have to divulge or share with the community. This strategy of gaining access to primary resources, operating finance and securing produce for separate higher-value post-processing enterprises, all with minimal risk in the event of crop failure or price collapse is astute business practice and has drawn criticism.

The argument in response is that the size of an irrigation scheme like Tyhefu, with potentially more than 700 ha of high value horticultural crops in production demands access to consistently large national and international markets in order to succeed. Local market saturation would be immediate. GKM are understood to provide such access which is critical for any level of success.

The issues with the contract arrangement relating to the control of decision-making that are discussed in the earlier Giba case (comments on the partnership) are similarly valid to the Tyhefu contract.

1.3.4 An alternative partner - meteoric returns

At the end of May 2005 the PSC members learnt of a second commercial partner, Space Age International which had produced a business plan to use land allocated under the December 2003 PSC agreement and the subsequent tender award by ECDA to GKM.

Space Age International, a private company with links to East Africa, had the support of Mhala Development Trust which is the development wing of the Mhala Tribal Authority and which has control of the Ndlambe section of the scheme. The proposed appointment of Space Age International was procedurally problematic in that it fell outside of the supply chain management processes used by the Department of Agriculture as it was not tendered and related to the use of state assets and land. Regardless of this minor technical detail, it remains a fact that Space Age International's partnership approach had the support of a small section of the community. Space Age International's business plan was to provide input support to individual enterprises on 4ha, with a separate contract for each farmer. This was completely different from the communal lease, management and profit share agreement of GKM. Very attractive gross margins in excess of R100,000 per ha per annum were shown in the business plan which seemed a little unrealistic for any legal field crop. Space Age International would charge a fixed management fee of some R40,000 per ha per annum for providing the support to achieve these very attractive returns, regardless of yield or profit actually achieved. Some farmers found this option considerably more appealing than the returns in the GKM arrangement, which were in line with conventional COMBUD returns.

1.3.5 Ciskei legacy – land dispute

A dispute arose over which partner to engage with and was divided along lines of contested land ownership on the scheme. The factions were divided not only on questions of development strategy, but also on their understanding of the nature of land rights to the land in question. The Tribal Authority placed emphasis on land rights after the scheme was established and allocated to new land-holders.

The PSC recognised the complexity of rights before and after the creation of the scheme and that it was an illegitimate homeland government that had allocated land to people of power at that time. These divisions were not new in rural Ciskei as they drew their history to the struggles before 1994 and were in essence part of the broader reflection of the current power politics between democratically elected civic structures and tribal structures.

1.3.6 Two steps backward – inappropriate approach to conflict

In a bid to resolve the impasse a meeting convened by Department of Agriculture's Amathole District in June 2005 took a decision to adopt a compromise position, by engaging both commercial partners in different areas, GKM at Glenmore and Ndlambe locations and Space Age International at Ndlambe and Pikoli locations.

It is not clear what the motives were behind this compromise in view of its implications of flouting tender procedures. The provincial Department of Agriculture later distanced itself from the compromise, standing firm by the decision which led to the appointment of GKM. This resulted in major divisions within the community, with supporters of the PSC standing by the original position of appointing GKM, while Tribal Authority supporters in favour of the compromise position. This particular intervention literally set the whole process back by about two years and further resulted in the commercial partner GKM threatening to terminate relations due to the need to fulfil contract obligations for produce and commence planting at another location.

The tribal authority refused to take part in the day to day decision making processes of the PSC and instead set up a parallel structure. On a number of occasions Mhala Tribal authority leadership set up meetings with the MEC for Agriculture to express their side of the story. Unfortunately, before the MEC could actively engage he was removed from office to face corruption charges linked to an (unrelated) agricultural empowerment deal. In any case these off site meetings further undermined the Department's approach of dealing with matters relating to Tyhefu through a single body as three senior departmental officials were involved but were not coordinated in their efforts. This led to further widening of the divide between the two sides.

1.3.7 One step forward

During all of this time, the Provincial Department of Agriculture, GKM and the Project Steering Committee which represented the majority of farmers and the community, continued to meet regularly and attempted to take forward the funding and institutional elements that were possible, but on a reduced irrigated land area.

1.4 District Municipality Intervention

1.4.1 Sustainability plan for DM support to Tyhefu

In September 2005, the District Municipality appointed a specialist agricultural and rural development consultant to identify an appropriate role for the District in support of the project, and one that was based on sustainability principles. This firstly entailed taking a holistic perspective of the project and the drafting of a business plan which would direct the District Municipality to spend its R3.2 million infrastructure grant in support of sustainable production on the scheme, or not at all. A business plan had already been drafted by Gili Kibbutz South Africa (Pty) Ltd (May 2005). Because of the late involvement of DM in the process there was a limitation in terms of the extent to which the DM appointed team could change the overall framework but it was decided to engage parties as constructively as possible with a conflict resolution approach.

On their first interaction with the Tyhefu community in September, the team undertook a quick appraisal of the scheme and the social, institutional and community dynamics. In order for the team to achieve its objectives, a three pronged strategy was adopted that includes (i) passive and active information gathering, (ii) focussed intervention, and (iii) support to the overarching planning processes.

Information was gathered on the overall context and dynamics of the project. This entailed secondary reading, attending or participating in PSC meetings[3] and holding individual meetings with some of the key stakeholders such as the Department of Agriculture. The initial impression of the team that visited the area was that the climate and level of conflict within the community had potential to undermine the entire project. After consultation with key local stakeholders all parties agreed to a facilitated mediation process. Besides the community level conflict, it also became clear that there was very little common understanding between the community and other stakeholders (the Local Municipality, Regional and Provincial Department of Agriculture, GKM etc).

1.4.2 Another step forward – agreement to collaborate

The District Municipality gave permission for the team to make an intervention in the form of a mediation workshop with a view to help the feuding factions to come to some common understanding of their differences, if not agreement on their positions. In this process the District Municipality team convened a conflict resolution workshop between the PSC and Mhala Tribal Authority. The one-day workshop held in September 2005 was successful in bringing the two feuding factions under one roof and in helping the parties to table issues in the same forum which had not happened once in the previous 6 months.

The outcome of the conflict resolution meeting was that the PSC and the Mhala Tribal Authority unanimously agreed to work together in a Joint Project Steering Committee. This outcome had a very short lived observable success. Within a week the oppositional politics returned with groups holding separate meetings. The bright idea of a Joint Project Steering Committee which emerged from the first meeting did not see the light of day.

[3] The first PSc meeting attended by the ADM appointed team was on 08 September 2005.

1.4.3 Two steps backwards again

A week later the PSC retracted its decision and at the same meeting a letter written by legal representatives to Mhala Tribal Authority was also tabled, demanding the appointment of Space Age International as a partner for Ndlambe and Pikoli.

The same meeting saw a counter-resolution by the PSC to write a letter to the Department of Agriculture giving government a go ahead to proceed with the implementation of Phase 1 on the limited area (ie. Glenmore and Ndwayana). The Phase 1 go-ahead was based on the understanding that at Glenmore and Ndwayana there was consensus on how to proceed in line with the Department of Agriculture, the PSC and Gili Kibbutzsa joint approach. The PSC's opinion was correctly based on the understanding that conflict was only centred around Ndlambe and Pikoli, and that it only affected Ndlambe and Pikoli. The PSC's decision was also based on the thinking that if Phase 1 would proceed, it would generate some positive momentum with the farmers from Ndlambe and Pikoli and thereby help to resolve the conflict.

1.4.4 Institutional support to tendered partnership

Part of the support strategy entailed bridging the gap between the community and other stakeholders such as the Department of Agriculture and the commercial partner. This strategy entailed direct support to the ongoing planning process with a view to map out a role for Amathole District Municipality in support of the project as well as to develop consensus on how the ADM contribution, which was tied to infrastructure alone, would be spent.

1.5 Partnership on Half of the Scheme

1.5.1 Revised cropping plans for reduced area

The 5 year business plan which was drafted by Gili Kibbutzsa Pty (Ltd) was already in place before the involvement of the District Municipality, with key role-players broadly in agreement on the approach as well as process. By September 2005, almost one year since the decision to appoint Gili Kibbutzsa Pty (Ltd) was taken, the exact process to disburse monies in a new arrangement such as this were not yet clear within the Department of Agriculture. There was an understanding, at least from the Department of Agriculture that the business plan would be refined later in the year based on actual available funding. The land and tribal authority conflict was an ongoing undercurrent of uncertainty.

In the process, Gili Kibbutzsa Pty (Ltd), who was engaged in the relationship for explicit business reasons, had incurred substantial transaction and opportunity costs through the extended period of meetings over more than a year. There was no clarity on when the actual planting operations would commence. The cyclical backward and forward movements in the project simply were not conducive a commercial farming operation who needed to plant the crop, because the delays impacted negatively on their supply contracts with local and international markets (Pick n Pay, Spar etc.).

By the end of September Gili Kibbutzsa pointed out that failure to move forward with the project in the space of four weeks would result in the crops having to be

planted elsewhere. In the background, behind the scenes debates on the appropriateness of the partnership arrangement still continued.

1.5.2 The revised plan comes together

By the beginning of October the Department of Agriculture confirmed its financial commitment to R7.5 million, a method of warehousing funds with ECDC, and a set of payment procedures approved by the Department and Provincial Treasury. This was in addition to some CASP funding for fencing which had been approved earlier in the year. There was also an understanding among the key stakeholders that the Department of Agriculture's funds would cover all of the initial capitalisation (tractors, implementation, infield irrigation), production costs and management fees for the commercial partner, as per the tendered business plan.

The District Municipality's contribution to the scheme was inflexibly committed to infrastructure in the amount of R3.2 million. In addition, the Local Municipality made available an amount of approximately R53,000 to be used for the food plots portion of the scheme. Each of the funding parties had their own objective they wished to achieve through their funds. The key issue in respect of the various funding streams was a need to have them synchronised in some way to maximise the sustainability of the initiative within the bounds of the revised business plan which was being drafted in November 2005 by the commercial partner.

As the process of drafting the revised version of the business plan and choreographing of the funding was taking place, the Department of Agriculture started engaging the Eastern Cape Development Corporation (ECDC) for the general purpose of managing the interests of the provincial Department of Agriculture in the business, as a funder. At a meeting held on 05 October a memorandum of agreement between the Department of Agriculture and ECDC was signed to effect the new arrangement. In terms of the agreement, the ECDC was to receive R7.5 million in advance for the purpose of implementing the business plan. In addition ECDC would warehouse the community shareholding until such time that the community has made decisions on how its shareholding would be used.

1.5.3 The revised plan falls apart due to procurement regulations

Various approvals by provincial treasury were cleared in order to create a financial pathway in support of the project during the preceding months. A month or so after the memorandum of agreement was signed the Department of Agriculture finance department realised belatedly that the procurement arrangement (of warehousing funds with ECDC) was contrary to National Treasury regulations. In mid-January the R7.5 million project funding initially promised by the Department of Agriculture had been withdrawn in the 2005/06 financial year leaving the entire project without any finance.

This decision had serious implications for other funding streams for the project. Firstly, the District Municipality's R3.2 million value-add to the project also could not be spent outside the broader scheme, given that it was specifically earmarked for infrastructure development. Had the District Municipality's contribution come without explicit conditions, it would have been possible to adjust the scale of the project in line with available budget and at least begin a production process. Investment in infrastructure alone without the financial support for the greater project seemed unsustainable. Thus, unless the funding situation with the Department of Agriculture could change drastically during 2006,

there was no possibility of continuation with the project at Tyhefu in the current financial year.

The sudden turn of events also affected the R53 000 grant that had been made available by the Local Municipality. Based on the understanding that Kibbutz South Africa (Pty) Ltd was to have presence in Tyhefu in 2006, the community requested the commercial partner to draw up another business plan for the food gardens, based on funding provided by Local Municipality. The community had hoped that they would get technical support from Gili Kibbutz for the food garden production.

1.6 Cancellation of Partnership

1.6.1 A turn of strategy

At the time of writing this report new information was coming to light that senior management in the Department of Agriculture had decided to completely the change the strategic direction of engagement with Tyhefu. These decisions were made following visits to Israel in late 2005 to investigate the success of irrigated agriculture there.

At a meeting held in March 2006 the PSC and departmental officials who had been involved with the project for the last 8 years and more specifically the attempt to mobilise the partnership over the previous 14 months, were informed that high level decisions had been taken and the proposed partnership efforts were to be cancelled.

A revised strategy was outlined which involved the importation of high-tech specialist irrigation systems from Israel under the guidance of Israeli engineers and that the Department of Agriculture would subsequently play a central role in scheme operation. Little information is available for review on the proposed business plan, marketing models or management and land arrangements. The PSC was not consulted nor was it part of these centralised decisions which came as a surprise and have resulted in substantial confusion to everyone involved and part of the recent scheme history.

1.6.2 Disconnected ad-hoc activities

Some inputs for the food gardens (butternut seed, fertilizer and some herbicides) were delivered during December. However, as the partnership had failed there was no one to provide the necessary technical support. At the time of writing this report the inputs were still being kept at the scheme because there was no fencing at Ndlambe and because there was no technical support to guide the process.

Somewhat ironically, despite the reality that the project had been practically suspended, fencing started in earnest at Glenmore and Ndwayana around mid-January 2006. This was based on an application that had been approved by CASP in September 2005 under the Provincial Department of Agriculture. This is a further negative reflection of the institutional and communication problems that were evident during the project.

1.7 Lessons for Revitalisation

The Tyhefu case, which is still unfolding and which has been prioritised for renewed funding by the Department of Agriculture for 2006/2007 financial year, presents a series of important issues that are likely to be found on many schemes in the country. These are particularly relevant to those developed in the 70's and 80's under the homeland government's modernist paradigm of development thinking (van Aberbeke, 1998) and which are characterised by capital intensive systems (pumps, pipelines, centre pivots, sprinklers etc) as opposed to the simpler flood systems that arose from the 1955 Tomlinson Commission.

Hidden undercurrents: The events at Tyhefu between June 2005 and February 2006 highlighted the strong undercurrents that can remain unseen even though a thorough process had taken place on institutional development, financial planning and on developing a conducive environment for a commercial partnership. Agreements with the wider community had been made in writing but were reversed when better alternative opportunities were perceived to be available. Differences around land rights surfaced and the divisions polarised around these. There is a need for astute and skilled sociologists who can gain insight into the deep seated and often invisible issues on which revitalisation plans can inadvertently or inappropriately be constructed. Thorough consultative planning with appropriate teams can prevent this.

Overlays of land tenure : There is a distinct form of tenure that is associated with the period before the introduction of the scheme, which is based on PTO tenure. When the scheme was constructed, new land rights were created based on the new layouts which are not in line with the underlying rights. Some of the original land rights holders claim to have lost their rights as a result of homeland government's top-down approach to implementing the scheme. New land rights benefited those who were aligned to the political elite of the former Ciskei government. The implementation of the scheme left behind a complicated picture of overlapping land rights. Under the current circumstances it is not clear what the current nature and content of the new rights is. The Ncora scheme and many others face a similar undermining undercurrent on which sound intervention strategies of any kind simply cannot be built.

Weak land rights enquiry: In 2004 a rights inquiry was conducted by service providers contracted by the Department of Land Affairs. The report only describes the current form of tenure rights without consideration of the underlying rights, which is currently at the heart of the arguments of the different factions. A clear opportunity to identify and resolve issues prior to collapse of the partnership was missed due to either incompetence or inexperience.

Jobs versus 'emerging' farmers: The differences in perspectives between Mhlala Tribal Authority and the members of the PSC are based on different emphasis on the nature and content of the institutional arrangement of the partnership. On the one hand supporters of Mhlala TA supporters tend to be more inclined towards a decentralised production and control system that will result in individual farming enterprises. This perspective is largely informed by bad experiences of a centrally managed unit during the times of Ulimocor and very promising gross margins of the one partner. This group emphasises the individual rights after the introduction of the scheme. On the other hand the members of the PSC tend to be more inclined towards an approach that is based

on a centrally managed scheme, whereby 90% of the land would be farmed commercially, with benefits mainly accruing as a result of employment and a possible dividend payout from the JV company.

Facilitation needed: There was a clear need for an independent and skilled facilitator to engage with the three parties when the differences first arose publicly in June 2005. The Department of Agriculture, as one of the partners to the tendered process, could not be impartial and was furthermore not sufficiently skilled to play this role. Throughout, the programme has lacked a neutral and mutually trusted driver that could play a coordinating role between various actors and advise the community on complexity, contract and financial content.

Cohesive leadership: The events at Tyhefu reflect the great difficulty of coordinating different role-players who report to different leadership and institutional structures. The Tyhefu PSC was established through a long process of generic training in organisational functioning which resulted in an acceptably representative elected civic structure and one which is reasonably strong and cohesive. The training did not however equip the PSC members to engage with either the implications of irrigation or of commercial partnership and substantial additional support to the process was desperately needed, but not provided. The tension between civic and tribal authorities overlaid on contested land is the crux of the frustrations at Tyhefu that resulted in the failure of the partnership even before it commenced. The presence of a willing Department, a willing representative and elected committee and a willing commercial partner was not sufficient to address the instability posed by the scheme crossing tribal boundaries, and the inflexibility of Departmental procurement systems required by law.

Coordination responsibility: By its very nature, the revitalisation of an irrigation scheme is a multi-disciplinary effort. In all of the years of activity and substantial investment at Tyhefu there has been no single body or institution with sufficient skills to facilitate the whole process. The case of Tyhefu Irrigation scheme presents a classical case of a need for a **neutral body that plays an overarching coordination role** between parties involved in the scheme. Such a body would have the following roles;

- Programme management (including identification of gaps and mobilisation of new role player).
- Alignment of policies, approaches
- Facilitating flow of information between various stakeholders, with a particular emphasis on empowering community stakeholders.
- Alignment and integration of technical, social and institutional aspects of the project.

Institutional development lacking: While the institutional structures proposed in the GKM business plan have been subject to a long process of discussion among different stakeholders of the scheme, there are indications that the final institutional mechanisms have not been fully accepted and understood by all the parties concerned.

Institutional collaboration missing: If there is anything that has manifested clearly it is that institutional inertia is not only problematic between institutions but also within institutions. The strategies and approaches adopted by the political head of the Department, the Provincial Department of Agriculture, the District office and local offices lack synergy and consistency. The Department of Agriculture has in the course of 2005 driven the project single-handedly, with very little effective support from other agencies or spheres of government. The levels

of perceived risks were different between the various stakeholders and there was no one dedicated institution that had the sole purpose of dovetailing the process,

Lack of clarity on policy: There does not seem to be coherent accepted policy or a framework on revitalisation of smallholder irrigation schemes. The indications from observation of processes at Tyhefu suggest a lack of commitment from a senior management team that takes over political and financial responsibility as well as general policy direction. The implications of lack of a policy framework mean that each government department or institution engages in such programmes with little regard for integration. As a result there are no standards which can be used as benchmarks for implementation of programmes of this kind.

Talkshop fatigue: The PSC has deteriorated to a powerless community representative structure, unclear about what decision making powers it has within the proposed partnership and in its relationship with Government. This results from government departments continually making decisions that impact on the scheme without a meaningful involvement of its representatives. In speaking to PSC members one gets an impression that the PSC is tired of going through the same seemingly fruitless processes year after year. The government departments and agencies that form part of the PSC lacked consistency in participation in PSC meetings as well as and understanding of how, who and where decisions are made.

Institutions within project context: While the community had gone through a process of setting up various institutions, including a Trust and a WUA, which date back to about three years back, there were no signs of functionality of these structures. Both the WUA and Trust were neither registered nor functional and there was no indication of when this would take place. While a lot of investment may have been put into setting up as well as training of some of the institutional structures, a lot of this investment has been eroded because it took place outside of a project context. The proposed institutional arrangements need to be finalised and implemented with all the associated training and capacity building tied to it.

Chaotic and inconsistent strategic direction: The Department of Agriculture has been engaging with Tyhefu with a strategy towards a commercial partnership for some years. There was a clear lack of consistency within the Department on two levels. First the farm funding component (‘warehousing of funds at ECDC’), was approved by the Finance Department and then months later retracted at a late stage in negotiations and after substantial process with the community. Secondly at a macro-level, the strategy has suddenly shifted from a consultative one with the scheme plotholders and a potential partner to a top-down strategy where direction and decisions on new initiatives with Israeli equipment suppliers are made in the Provincial capital without any consultation with those living on the scheme, or those who have been involved with the process over the last few years. This serves to seriously undermine trust and sets a more difficult starting point for new initiatives.