Towards sustainable livelihoods through water use security: insights from small-scale irrigation schemes in Limpopo Province

KD Naidoo, JM Chitja and SH Shimelis

Overview of Presentation

- Introduction
- Objective of the study
- Methodology
- Results
- Conclusions & Recommendations
- Acknowledgements

Introduction

- Most smallholder irrigation schemes are found in the former homelands of South Africa, where the incidence of poverty peaks (May, 2000; Aliber, 2003)
- Livelihood: a livelihood comprises the capabilities, assets and activities required for a means of living, a livelihood can be sustainable when it can cope with and recover from stress and shocks to maintain or enhance its capabilities and assets, and provide a sustainable livelihood opportunities for the next generation (Chambers and Conway, 1992).
- Livelihoods consists of four parts:
  - people and their livelihood capabilities;
  - assets, including both the tangible (resources and stores) and intangible (claims and access), which provide the material and social means that are used to construct livelihoods;
  - activities, i.e. what people do; and
  - a living, which refers to the outcomes of what people do.

Introduction continued…

- Water is crucial for sustainable livelihoods
- Agriculture is a large water user and can be relatively labour intensive and an important source of employment and livelihoods
- Water use security
- However, limited access to clean and safe water associated with poor water supply, hygiene and sanitation at household level and significant demand for crop cultivation is widening the poverty gap and gender inequalities (Gender and Water Alliance (GWA), 2006).

Objective

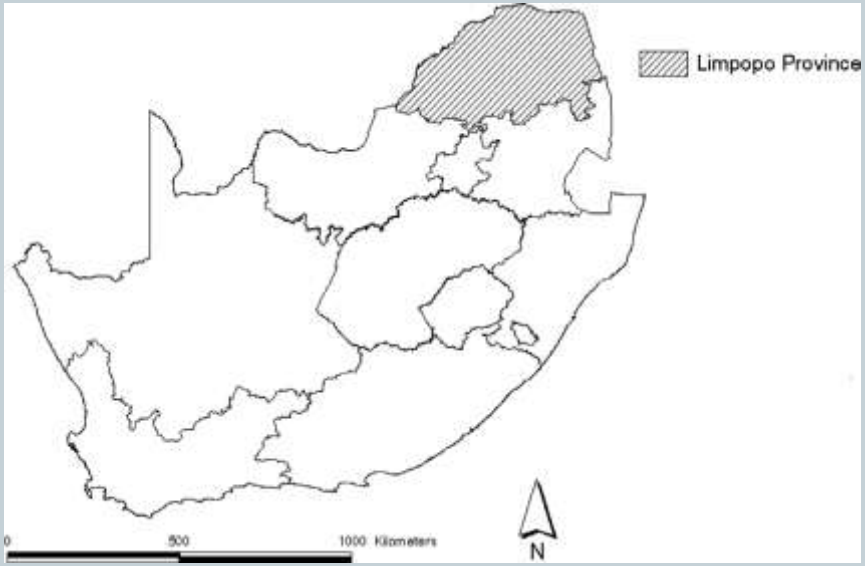
- South Africa is classified as a water scarce country (Seckler and Amaransinghe, 2000), which could have adverse effect on livelihoods

- The objective of this paper is to document the role of water in agriculture and livelihoods for smallholder irrigation schemes in Limpopo province, to assess water supply, water availability and associated challenges and to identify opportunities for their future development.

Methodology

OBJECTIVE	TYPE OF DATA	SOURCE OF DATA	METHOD OF COLLECTION	METHOD OF ANALYSIS
• **To document the role of water in agriculture and livelihoods for smallholder irrigation schemes in Limpopo province**	To elicit the role of water in agriculture and livelihoods	• Irrigation scheme members	• SLA	• Content analysis • SLA analysis
• **To assess water supply, water availability and associated challenges and to identify opportunities for their future development.**	Water supply, water availability and challenges	• Irrigation scheme members • Department officials • Policy Documents	• Water audit • Face to face interviews • Key informant interviews	• Content analysis • Desktop analysis

Study site



Location of Limpopo province within South Africa

Limpopo province with districts

Assets	Steelpoort Drift (Ga-Malekane)	Mafefe (Mashushu)	Rambuda (Matshavhawe)
Natural	• Steelpoort, Rivers • 72 hectares of Land' (Small scale farming) •	• Natural Wetlands • Mothlatipse River • 42 hectares of Land (Small scale farming) • Fruit Trees • Wetlands and springs	• Tshala River • 120 hectares of Land (small scale farming) • Fruit Trees
Physical	• Canals • Communal Boreholes • Rain water tanks • House or brick structure and concrete wall and corrugated iron/ zinc roof • Clinic • Libraries • Community centers • Police station • Grid Electricity • Farming equipment (Axe, Wheelbarrow, hoe, panga) • One or more cell phones at home • Tap water house/plot (not always available) • Pit Toilets, Pit Latrine ventilation (VIP)	• Canals • Water ways • Fence and gate of houses or gardens/ small farms • Hall • Grid Electricity/ Wood and coal • Boreholes • House or brick structure and concrete wall and zinc roof tiles • Hospital and clinics • Farming equipment (Axe, Wheelbarrow, hoe, panga • Pit Toilets, Pit Latrine ventilation (VIP	• Canals • Water ways • Taps (private and communal) • Fence and gate • Hall • Grid Electricity/ Wood and coal • Boreholes • House or brick structure and concrete walls • Clinics • Irrigation schemes • Farming equipment (Axe, Wheelbarrow, hoe, panga • One or more cell phones at home • Pit Toilets, Pit Latrine ventilation (VIP
Social	• Health services • Schools (education) • Community centres • Land access • Water committee	• Land access and land tenure • Water committee • Schools (Primary and Secondary • Church	• Land access and land tenure • Water committee • Schools • Health services • church

Human	• Labour force(mainly elderly women with low education levels) • Untapped large youth population • Artisan Builders • Limited agricultural training	• Labour force(mainly elderly women with low education levels) • Untapped large youth population • Limited agricultural training	• Labour force(mainly elderly women with low education levels) • Untapped large youth population • Artisan builders • Limited agricultural training
Financial	• Active Mining (some local people are employed in the mines, mainly young men) • Land (privately owned and some under traditional governance) • Roads • Remittances • Grants (old age and child support)	• Main road • Irrigation schemes • Food crops and cash crops • Donkeys • Cattle • Maize crops • Schools • Agriculture • Land (privately owned and some under traditional governance) • Grants (old age pensions, Child support) • Remittances • Trading and shop keeping • Small livestock rearing • Tourism	• Active mining (platinum and Chrome) • agriculture • Main road (poor condition) • Irrigation schemes • Food crops and Maize cash crops • Donkeys • Cattle • Milling (privately owned and some under traditional governance) • Tourism • Block making • Grants (old age pension, child support, remittance, income from petty trade) • Small livestock rearing • Piece job creation for foreigners from Zimbabwe mainly young men and women

Results

- Demographics of participants
  - Gender: 79% of participant are women
  - Age of the majority of women were over 50 years
  - The finding on the women ‘age’ is important in that the intention and incentive for production and involvement in the irrigation skill may differ drastically with the younger people.
  - Age –less likely to embrace new technology and modern demands for selling produce.
  - Education

Gender				
Site	Male	Female	Total	Proportion of female %
Rambuda	14	23	37	62%
Steelpoort	3	25	28	89%
Mashushu	2	22	24	92%
Total	19	70	89	79%

	Age group in (years)						
Site	<25	25-30	30-40	40-50	50-60	>65	Total
Rambuda	2	2	8	7	12	6	37
Steelpoort	0	0	0	7	7	14	28
Mashushu	0	3	1	2	9	9	24
Total	2	5	9	16	28(31%)	29 32%)	89

Site	Level of formal education				**Total**
	Primary	Secondary	Tertiary	None	
Rambuda	12	21	3	1	37
Steelpoort	10	5	1	12	28
Mashushu	10	10	0	4	24
Total	32	36	4	17	89

Results: Water Supply & Use

- Naturalized water flow

Site (River)	Annual water Flow (Million Cubic Meters)
Rambuda (Mutale River)	126.99
Mashushu (Motlapitse River)	42.14

Data obtained from Water Resource Database (2005)

Results: Water Supply & Use

- Lack of water storage infrastructure
- Water used for:(drinking, cooking, washing clothes, cleaning and personal hygiene)
- Participants relied on four main water sources

Site	Do you share the water source (canal) with your household?			Total
	No Responses	Yes &%	No	
Rambuda	1	29 (78%)	7	37
Steelpoort	1	26 (92%)	1	28
Mashushu	3	19 (79%)	2	24
Total	5	74	10	89

- Mashushu- low natural water flow of the Mohlapitse river (41.14 Mill Cubic Meter/annum) with a low rainfall that fluctuates from 480mm to 875mm
- Rambuda – high natural flow of the Mutale river (126.99 mill cubic meter/annum) with rainfall that ranges from 400mm to 800mm per annum
- Steelpoort rainfall averages a low 440mm per annum

- Reliability of water sources

Site	Reliability of water supply during dry seasons				Total
	No Responses	Not reliable	Often reliable	Very reliable	
Rambuda	2	7	12	16 (43%)	37
Steelpoort	1	0	18	9 (32%)	28
Mashushu	1	2	16	5 (21%)	24
Total	4	9	46	30 34%)	89

- Competition on water supply
  - Mining
  - Commercial farmers and tourism sector

Institutional arrangements

- Comprehensive Water Institutional reform program was implemented in 1994
- These institutional changes covered
  - Policy
  - Legal
  - Organizational dimensions of water allocation and management
- This has culminated in a new National water policy, National water act and National water resource strategy.

Conclusions and recommendations

The complexity of these issues resulted in poor livelihoods for participants who experience poor water access for current and future water use. Competition on the water supply coupled with climate change was also identified and a serious threat due to expanding mining operations in Limpopo. The study concludes that water use management and water policy reform intentions require serious and robust investments in capacity building of small farmers in rural areas in order for access to water and its management to improve.

Acknowledgements

- Dr. Joyce Chitja and Prof. Shimelis
- The Water Research Commission
- National Research Foundation
  - Scarce Skill Scholarship
- Department of Agriculture Limpopo Province
- Department of Water Affairs Limpopo Province
- The Participants: Rambuda, Mashushu and Steelpoort
- My loved ones

Thank You!