Practical application of qualitative and quantitative methods

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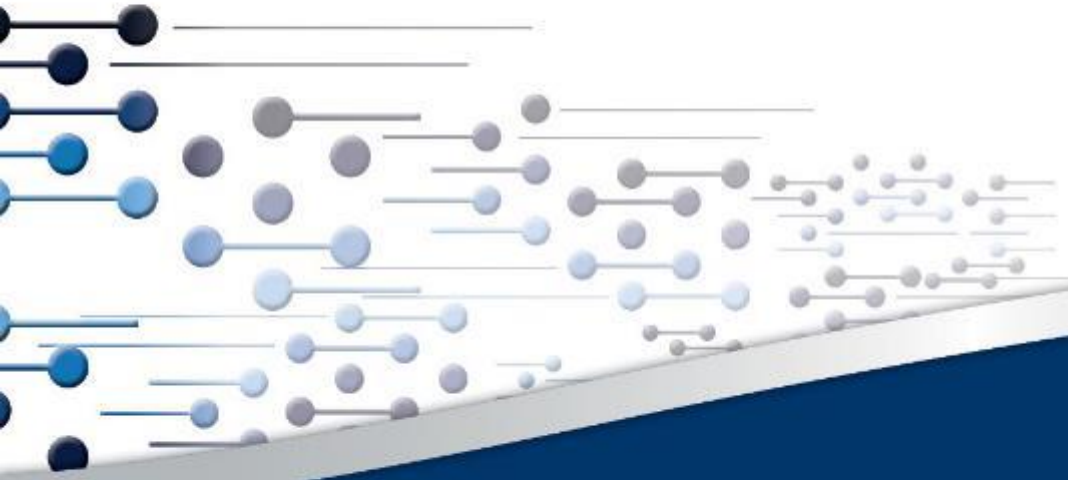


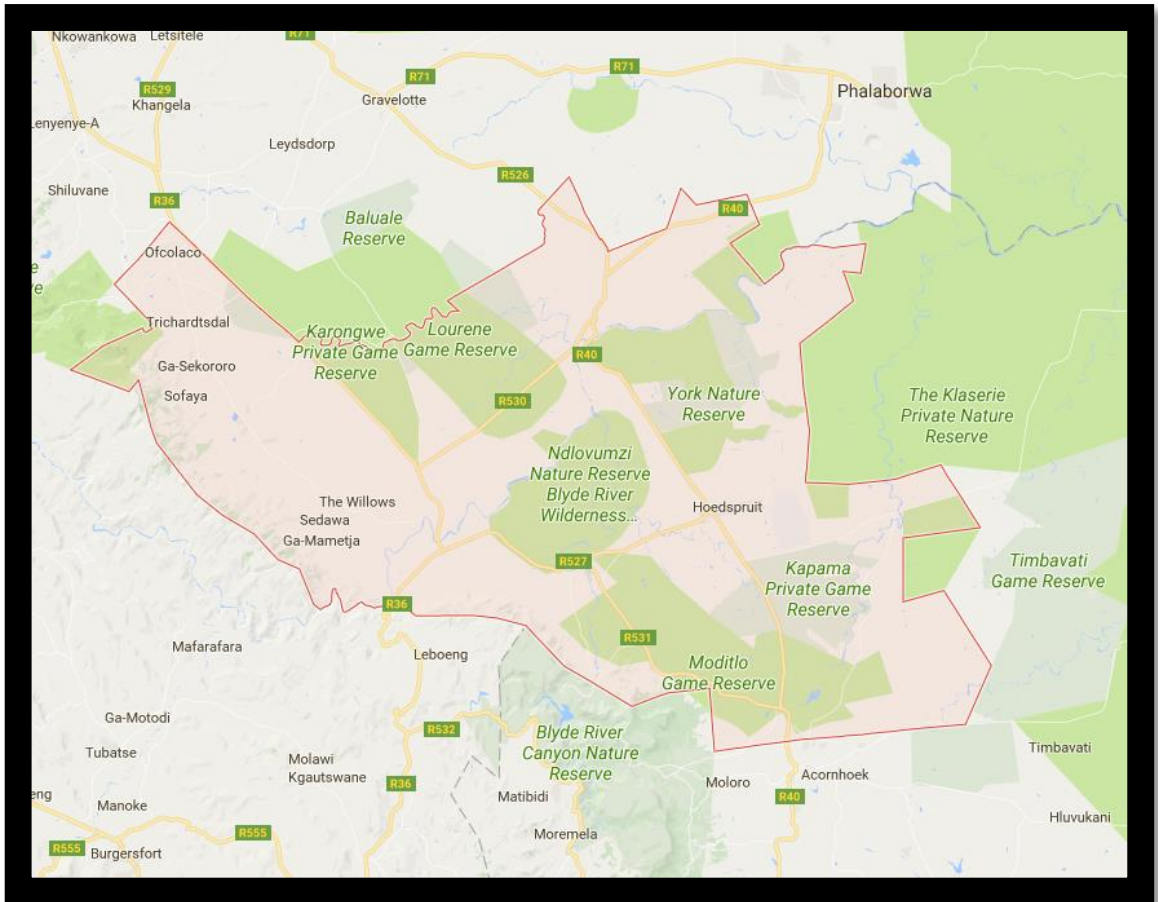
Introduction

- Importance of robustly collected and analysed data and relevant evidence-informed decision-making support tools.
- Focus of this workshop is on qualitative and quantitative data analysis.
- Links to a research project done by CSIR on effective agricultural water use in the Maruleng Municipal Area – Mpumalanga South Africa (2010 - 2014).

Background to research project

- South Africa's dual economy agricultural sector.
- Challenge: minimise productivity losses during land reform to avoid food security risks.
- Project was about **water conservation** in **food value chains** by beneficiaries of **land reform programmes** in South Africa.
- Quantitative and qualitative research.
- Series of policy-relevant outputs.

Maruleng Local Municipality



This qualitative and quantitative research method workshop

- Introduction of two research methods: typology development and cost-benefit analysis.
- Divide up into four teams – two for typology development and two for cost-benefit analysis.
- Apply these methods and discuss their strengths, shortcomings/challenges.

This qualitative and quantitative research method workshop

- Typology development – apply to identify types of conference participants and key messages coming out of the conference.
- Cost-Benefit-Analysis – apply methodology to facilitate the decision making process to invest in drip irrigation technology.

Qualitative data method - typology development

- What is a typology?
  - Way to categorise a particular phenomenon, e.g. emerging farmers, into different types to better understand it.
  - Different types form part of coherent single framework.
  - Types must be comparable.

Example of a typology – emerging farmers

Type 1	• *The "really" big players* • Generally identified as large scale commercial farmers who do not need to be in a strategic partnership
Type 2	• *The big players in training* • Generally identified as large scale commercial farmers who still need to be in a strategic partnership
Type 3	• *The entrepreneurs* • Generally identified as small scale commercial farmers with aspirations to grow their farming business
Type 4	• *The transitioners* • Generally identified as subsistence farmers well on their way to becoming commercial farmers
Type 5	• *The wishful thinkers* • Generally identified as subsistence farmers with vague aspirations to become commercial
Type 6	• *The survivalists* • Generally identified as subsistence farmers with no aspirations to become commercial

Use of a typology

How can you develop a typology – step-by-step approach (1)

- Qualitative data collection - ask the right questions.
- Qualitative data capturing – transcriptions.
- Qualitative data analysis:
  - Get a sense of the interview context.
  - Find text to characterise your types - e.g. characteristics of emerging farmers.
  - Make sense of what you find – go deeper.

Types of qualitative data: "Narrative"

- Texts
- Observations
- Interview transcripts
- Focus group transcripts
- In depth case study

How can you develop a typology – step-by-step approach (2)

- Build the typology

  - Identify a set of characteristics.
  - Identify different types as defined by these characteristics.
  - Keep the descriptions short and clear.
  - Types must be comparable.
  - Think of a name for each type – both descriptive and ‘catchy’.

Practical application of qualitative and quantitative methods

Cost-Benefit-Analysis (CBA)

Cost-Benefit-Analysis (CBA)

- New technologies, practices or innovations arise.
- We want to know if they are suitable for our current activities.
- How do we analyze viability from a practical point of view?

- Cost-Benefit Analyses consitute a framework to facilitate decision-making processes.

Cost-Benefit-Analysis (CBA)

- Framework to analyze if the cost involved for a certain decision are out weighted by the benefits generated at a determined point in time.
- Represents a suitable tool to assist in the decision making process.
- CBA can be applied to a myriad of socio-economic decisions, public and/or private sphere.

Cost-Benefit-Analysis (CBA)

Considerations from perspective	*Private*	*Public*
• Direct cost & benefits	✅	✅
• Indirect effects	❌	✅
• Third parties effects	❌	✅
• Social adjustments	❌	✅
– Social prices		

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Cost-Benefit-Analysis (CBA)

Preparation for group exercise – Case study

Community adoption of drip irrigation technology

What could be the private and public effects to consider?

Cost-Benefit-Analysis (CBA)

Considerations from perspective	*Private*	*Public*
• Direct cost & benefits	✅	✅
– Drip irrigation system		
– Agricultural productivity		
– Cost reduction		
• Indirect effects	❌	✅
– Water savings		
– Crop optimization		
• Third parties effects	❌	✅
– Technology suppliers		
– Institutional strenghtenning		
– Technical assistance		
• Social adjustments	❌	✅
– Social prices		

Cost-Benefit-Analysis (CBA)

Steps for decision making

1. Identification of planned task to be performed and their consequences
2. Quantify the effects of the interventions
3. Value assignment for each consequence
4. Value net effects in a specific point in time

We only consider differentials ! ! !

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Cost-Benefit-Analysis (CBA)

Perspectives	*Private*	*Public*
1	Investment cost crops suitability	Investment
2	Water savings crop productivity	1. Support programs for adaptation 2. Organize tech suppliers 3. Plan technical assistance
3	Cubic meters per ha Changes in crop yield	Budget for programs
4	Private market prices Volume quantities	Values per beneficiaries or hectare

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Cost-Benefit-Analysis (CBA) - example

Adoption of drip irrigation technology in beans

Balance net benefits of adopting drip irrigation versus continuing with furrow
Season of June and December

	Drip	vs.	Furrow	Differentials
• **Water use** (m^3/ha)	**3,874**	**vs**	**6,600**	**2,776** (m^3/ha)
• **Yield** (kg/ha)	**2,200**	**vs**	**2,000**	**200** (kg/ha)
• **Fertilizers** (kg/ha)	**45**	**vs**	**45**	----
• **Labour** (persons/ha)	**0.9**	**vs**	**0.9**	----

Net effect = 4,934 ZAR (Rand/ha)

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Cost-Benefit-Analysis (CBA) - exercise

Community adoption of drip irrigation technology beans & tomato

Assumptions	Private	Public
1	Investment = USD 1,000 /ha ZAR 13,000/ha crops suitability= Beans & tomato	Subsidyzing Investment: USD 200/ha = ZAR 2,700
2	↑ Water savings ↑ Crop productivity	1. Support programs for adaptation 2. Organize tech suppliers 3. Plan technical assistance (TA)
3	Water savings tomato= 4,308 m^3/ha Water savings beans= 2,726 m^3/ha Crop yield = + 10%	Budget for programs Investment USD 200/ha TA = USD 50 /ha
4	Net effect tomato= ZAR 4,300 /ha Net effect beans= ZAR 4,934 /ha	Policy cost /ha USD 250 /ha ZAR 3,400 /ha

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Thank you

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